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### Tackling Undernutrition in Hospitalised Patients: The Belgian Experience

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**Undernutrition is frequent but often unrecognised in hospitalised patients with nutritional status deteriorating during their stay. Consequences for undernourished patients include higher risks of infection, complications and an increased length of stay. This in turn is costly for healthcare institutions. Nutritional screening can improve both patient outcomes and cost-effectiveness.**

#### Definition

Malnutrition is a broad term covering any imbalance in nutrition from over-nutrition or obesity to undernutrition. Undernutrition is usually defined as a deficiency of energy, protein and other nutrients causing adverse effects on tissue, body form (body shape, size and composition) and function, as well as on clinical outcomes and quality of life. It is a condition that is characterised by clinical depletion, undesired weight loss or being underweight.

Nutrition deficits result in major body dysfunctions altering daily activities (autonomy), increasing the prevalence of additional pathologies (vulnerability) and delaying recovery after acute events (clinical outcome), and ultimately jeopardising the economic system of healthcare institutions.

Recently the definition of malnutrition (or undernutrition) has been clarified by ESPEN (European Society for Clinical Nutrition and Metabolism, [www.espen.org](http://www.espen.org)) to underline the differences between cachexia, sarcopenia (loss of muscle mass and function in elderly persons) and undernutrition (Muscaritoli et al. 2010). Malnutrition observed in hospitalised patients is often a combination of cachexia (disease-related) and malnutrition (inadequate consumption of nutrients) as opposed to malnutrition alone. The definition of malnutrition refers to a complex interaction between underlying diseases, disease-related metabolic alterations and the reduced availability of nutrients (due to reduced intake, impaired absorption and/or increased losses).

Poor nutritional intake, physical inactivity, chronic diseases and ageing pave the way for undernutrition. These conditions are generally not recognised as "risk situations" and are therefore not medically taken into account in due time in order to allow optimal treatment, including timely nutritional support.

The diagnosis of severe undernutrition is based on the presence of at least one of the following criteria:

- Weight loss  $\geq 10$  percent over one month or  $\geq 15$  percent over six months;
- Body mass index (BMI)  $< 18$  kg/m<sup>2</sup>;
- Serum albumin  $< 30$  g/l.

#### Prevalence and Consequences

It has been demonstrated over many years that disease-related undernutrition occurs in 20-60 percent of hospitalised patients and that the nutritional status deteriorates during their hospital stay (Baker et al. 2011). The consequences of undernutrition are various: Increased morbidity including higher infection and complication rates; impaired wound healing; increased muscle loss; prolonged length-of-stay (LOS); delayed rehabilitation; impaired quality of life; and increased mortality rates.

Moreover, undernutrition dramatically increases the cost of healthcare. A recent study performed in UK showed that disease-related malnutrition accounts for about 10 percent of health expenditure in the country (7.3 billion pounds) (Elia et al. 2010).

#### Why Screen for Undernutrition?

Severe undernutrition is difficult and costly to cure. As prevention is both easier and more cost-effective, screening for the risk of undernutrition is therefore a first important public health measure to identify people at risk (Rasmussen et al. 2010).

In clinical practice it seems important to distinguish the tools that are used for evaluating the nutritional status of a patient (such as the subjective global assessment) and the tools or scores that have been developed for assessing the risk of undernutrition (Raslan et al. 2011).

**Nutrition Risk Screening** refers to a rapid and simple set of usually few questions that have been validated to predict malnutrition risk. Patients who are identified through screening "at risk" are subsequently referred for further nutritional assessment (Kyle et al. 2006).

**Nutrition Assessment** is defined as a "comprehensive approach to define nutritional status using medical, nutritional and medication histories; physical examination, anthropometric measurements and laboratory data" (AD, 1994).

There are several tools for assessing the risk of malnutrition (Velasco et al. 2011). The Malnutrition Universal Screening Test that has been developed by the British Association for Parenteral and Enteral Nutrition (BAPEN) and the Nutritional risk score-2002 that has been developed and validated by ESPEN include nutritional parameters as well as severity of the underlying diseases (Kondrup et al. 2003). In both of the scores, involuntary weight loss within the few months before hospital admission is one major factor.

The Mini Nutritional Assessment (MNA) has been frequently used in the geriatric population (Persson et al. 2002). Comparing the MNA and the NRS-2002 and their association with markers of protein malnutrition, Dreschler et al reported that NRS-2002 seems to be superior compared to

MNA and serum proteins in identifying patients at risk of malnutrition during acute undercurrent illness (Dreschler 2010). Other parameters may be used for screening undernutrition on a local or national level.

#### **Is Systematic Nutritional Screening Routine Practice?**

Schindler et al. recently reported the results of a survey of 21,007 patient findings from the 2007-2008 cross-sectional Nutrition Day survey (Schindler et al. 2010). 1217 units from 325 hospitals in 25 European countries were included in this survey. 52 percent of the units in the different regions reported a screening routine which was most often performed with locally developed methods and less often with national tools, the NRS-2002 or MUST. 27 percent (range 21-73 percent) of the patients were subjectively classified as being "at nutritional risk". Independent factors influencing the classification of nutritional risk included age, BMI < 18.5 kg/m<sup>2</sup>, unintentional weight loss, reduced food intake in the previous week.

In conclusion, this survey showed that frequency and type of nutritional risk assessment varied between units and countries. Moreover, because the units that participated in this survey have an interest in clinical nutrition, we may estimate that the real percentage of units doing a systematic nutritional screening is lower than 50 percent.

#### **What are the Barriers for Implementing Nutrition Screening?**

It is well recognised that undernutrition is frequent in hospitalised patients. It has been repeatedly shown that undernutrition may impair the global outcome of the patient and may deeply influence the cost of healthcare. However, recent survey indicated that a systematic screening tool is heterogeneously used in European units. Even if some screening tools are validated, they are not commonly used in daily practice. So what are the barriers for implementing screening of malnutrition?

##### **Lack of Evidence-Based Data**

Despite numerous data indicating that patients who are nutritionally compromised suffer worse outcomes, it is difficult to distinguish the role of the underlying disease and the role of undernutrition on the outcomes (Amaral et al. 2010).

The lack of unequivocal findings of the benefits of nutritional intervention in malnourished patients is likely related to difficulties in performing high-quality randomised controlled trials owing to the ethical concerns of withholding nutrition support to patients identified as at risk of undernutrition (Starke et al. 2011).

Additionally, parameters for assessing the impact of a nutritional support for hospitalised patients should be reviewed and adapted taking into account actual medical practice and economic concern that encourage to shorten the LOS. Social and professional rehabilitation after hospital discharge and quality of life should be more frequently used as parameters (Marin Caro et al. 2007).

##### **Lack of Information and Awareness**

Background on clinical nutrition and metabolism for care providers including physician, nurses and even dieticians is quite weak (Mowe et al, 2008). Moreover, awareness about the risk of malnutrition is low not only amongst caregivers but also for patients and their relatives and other stakeholders.

##### **Lack of Human Resources**

Asking a few questions to a patient for nutritional screening takes only a few minutes. However, screening thousands of patients/ year may represent a significant increase of workload. Moreover, the screening procedure requires good organisation. Who is asking these questions? The nurse? The dieticians? The doctors?

In addition, the implementation of a screening programme for undernutrition requires simultaneous organisation of nutritional assessment, adequate nutritional support, monitoring of nutritional parameters and counselling at discharge. In other words, nutritional screening is useless if a global nutritional approach is not determined. For achieving such goals, any institution should have a multidisciplinary nutritional support team (NST).

##### **Lack of Financial Support**

A systematic nutrition screening programme followed by a global nutritional strategy has a cost not only for covering human resources but also for providing adequate food, oral nutritional supplement, enteral and parenteral nutrition.

Policy makers at the healthcare ministerial level as well the hospital administration should be convinced that investing in nutritional support may not only improve patient outcomes but also reduce the costs in the global healthcare system.

#### **Actions in Belgium**

Belgian medical and political players were concerned by the resolution of the Council of Europe on malnutrition in hospital and home care settings released in 2003. So when the Federal Public Service (FPS) of Public Health Food Chain Security and Environment decided to launch a National Food Health Plan for the period 2005-10, axe 5 devoted to "Malnutrition: prevention and treatment" was incorporated.

In the global axe 5 of the National Nutrition Health Plan, action 50 was to elaborate an action plan for identifying a nutrition responsible as well as a multidisciplinary nutrition support team (NST) into each hospital. Action 55 was designed to define a strategy for transferring and exchanging nutritional data between hospitals, home care and care homes in the form of an individualised nutrition chart. This project includes implementation of nutrition screening, elaboration of protocols for selection and provision of adequate food and nutrition support, monitoring of nutrition strategy, information and sensitisation of caregivers and recommendations about nutrition at discharge. In brief, the goal was to include nutrition in the global journey of the patients. The scheme was prolonged and extended to 70 hospitals in 2009 and to 96 hospitals in 2010. These hospitals represent 60 percent of all Belgian hospital beds.

Alongside Nutrition Day 2009, a campaign of awareness was introduced in the Belgian hospitals involved in this action. Posters were created informing of the prevalence, impact and treatment of undernutrition in hospitalised patients. The posters were placed in the entrances and departments of each hospital and received significant media attention. These actions are still ongoing.

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