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Original article

Poor performance of mandatory nutritional screening of in-hospital patients

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SUMMARY

Background & aims: Since 2006 it has been mandatory at Copenhagen University Hospital Gentofte to screen all patients for nutritional risk within 24 h of admittance. Audits conducted by department staff estimate that 70–80% of assessments are correctly executed, but the validity of this estimate is unknown. The aim of the present study was to discover the true proportion of hospitalized patients receiving nutritional risk screening within the stipulated time limit and to evaluate the validity of the screening by comparison with medical records.
Methods: Retrospective examination of medical records of all patients ($N = 3278$) hospitalized in September 2008 in 11 different medical specialities were analysed in 2009–2010.
Results: Of 2393 medical records 24% of the patients were screened, of these only 65% were screened within the stipulated time limit. Half of the conducted screenings were inaccurate, the most common error being underestimation of nutritional status. Forty-six percent of patients required a secondary nutritional risk screening and 30% were found to be nutritionally at risk.
Conclusion: Only 8% of patients received the mandatory nutritional risk screening without procedural errors. We conclude that pre-scheduled, self-conducted audits are not viable as the basis of an assessment of the use of nutritional risk screening.

1. Introduction

Several international studies have revealed a prevalence of 20–60% of moderate to severe malnutrition in hospitalized medical and surgical patients.[3,5,9,11,12,14,16,19,20] A large proportion of these patients were malnourished on admittance and malnourishment increased in most of these patients during hospitalization.[10] Malnourished patients are found to have prolonged convalescence and admittance, to require more medication, to be susceptible to additional infections and more severe disease, and to have a higher mortality and cost.[2,3,5,11,21] There is solid scientific documentation that unintentional weight loss in obese, normal and underweight patients increases all cause mortality.[1,5,6,22] In order to alleviate this problem national and international organisations recommend routine nutritional risk screening of hospitalized patients to identify those likely to benefit from nutritional intervention (ASPEN (1995), British Dietetic Association (1999), Department of Health (2001), BAPEN (2000), Council of Europe (2002) and ESPEN.[10,8] Nutritional risk screening of hospitalized patients has thus become mandatory in some countries, e.g. United Kingdom and Denmark,[4] NHS Quality Improvement Scotland 2003, National Institute for Health and Clinical Excellence 2006). Several tools have been developed to assess and register nutritional status uniformly, and to identify malnutrition in clinical practice, including Mini-Nutritional Assessment (MNA), Nutrition Risk Screening (NRS 2002) and Malnutrition Universal Screening Tool (MUST).[10] To respond to and improve patients' nutritional status, reliable assessment and documentation of nutrition status upon admittance is needed. In Denmark guidelines have been developed and the health authorities have declared malnutrition in hospitals an area of priority.[4] The Copenhagen Health Authority has attempted to evaluate the implementation and use of NRS 2002 by conducting half-yearly, pre-scheduled audits, based on hospital staff's self-reporting of a self-selected sample of 20 patients per department. The results of these audits have indicated that 70–80% of patients are screened for nutritional risk (Audit from Capital Region: 8500 beds in 10 hospitals, unpublished). The aim of the

Abbreviations: A-score, Degree of malnutrition; B-score, Grade of disease; MNA, Mini-nutritional Assessment; NRS 2002, Nutrition Risk Screening; MUST, Malnutrition Universal Screening Tool; GS, Groent System (Electronic patient handling system); OPUS, Electronic patient handling system.

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present study was to discover the true proportion of hospitalized patients receiving nutritional risk screening within the stipulated time limit and to evaluate the validity of the screening by comparison with medical records.

2. Materials and methods

A retrospective method was used to study medical records of all patients hospitalized in the period 1st–30th September 2008 at Copenhagen University Hospital Gentofte. Since 2006 it has been mandatory in the capital region of Denmark to screen all hospitalized patients for nutritional risk within 24 h of admittance, followed by repeated screening performed once each week thereafter if patients still are admitted. All nutritional risk screenings are to be performed by hospital health staff.

All medical records were retrieved manually and examined by the first author (NG) from February to October 2009. Hospitalized patients were defined as being admitted to a ward and occupying a prescribed bed, and as such they were registered in two different electronic patient handling systems (GS and OPUS). Patient information such as social registration number, diagnosis, day of admittance and discharge, patient type (acute/elective), as well as medical ward and section at the Copenhagen University Hospital Gentofte, were collected from GS. The medical records were thoroughly examined for the presence of the NRS 2002, day of primary nutritional risk screening, and the results of the nutritional risk screening. Data registered in NRS 2002 was controlled for coherence with information on nutritional status otherwise registered in the medical record. The length of stay was recorded and calculated.

The primary nutritional risk screening consisted of each patient's weight, height, calculated BMI, reported dietary intake in the past week, unintentional weight loss over the past three months, and the severity of the illness that gave rise to admittance to the hospital (B-score, Table 1). A secondary nutritional screening is required if the patient's BMI < 20.5 kg/m^2, if the patient's dietary intake has decreased in the past week, if the patient has lost more than five percent body weight in the last three months, or if the illness is severe (B-score $= 3$). The degree of malnutrition (A-score) is evaluated and given a score of 0–3, an additional point being added if the patient is 70 years old or more. Nutritional therapy is initiated if the sum of the A-score, B-score and the age related score is equal to three or more (Table 1).

The nutritional risk screening was classified as insufficiently performed if one or more of the following criteria were present:

- Discrepancy between information found in the NRS 2002 and information elsewhere in the medical records, e.g. two different body weights recorded on the same day.
- Failure to register a recent unintentional weight loss.
- Incorrect A-score, e.g. a calculated BMI of 17 kg/m^2 and appetite reduced by 50% with A-score noted as 1, correct A-score being 3.
- Lack of repeat screening in accordance with time of hospitalization.
- Lack of secondary nutritional risk screening.
- Incomplete nutritional risk screening

All statistical analyses were performed using Microsoft Excel and SPSS version 15.0 for Windows. All data was non-parametric, and differences between groups were analysed by Wilcoxon Signed Ranks, Sign test and ANOVA. Data is presented as median (range).

3. Subjects

Of 3287 medical records for patients admitted in the period 1st–30th. September 2008 a total of 2393 (72%) were found in the patient record archives, the remaining records probably still being on the various clinical wards. All patients had been admitted to Copenhagen University Hospital Gentofte in the period 1st–30th. September 2008. The median length of time of hospitalization was two days (1–128), with a variation between the various medical specialities. Table 2 shows the distribution of patients in the medical specialities and the length of hospitalization.

Neither the Department of Gynaecology and Obstetrics nor the Department of Paediatrics performed nutritional risk screenings during the investigated period in the present study; this was due to lack of nutritional risk screening tools suitable for these two patient groups.

4. Results

Seventy-six percent ($N = 1819$) of the 2393 patients were not screened for nutritional risk at all during their hospitalization (Fig. 1). A total of 24% ($N = 574$) were screened and 35% of these were screened later than 24 h after admittance. Thirty percent of patients screened for nutritional risk were at risk of malnutrition, and thus required nutritional therapy. Nutritional status was correctly assessed and recorded within the stipulated time limit for a total of 8% ($N = 194$) of patients hospitalized in September 2008.

Forty-six percent of the patients administered the primary nutritional risk screening required a secondary nutritional risk screening (Fig. 2). However, a secondary nutritional risk screening was conducted in only 14% of these cases.

Forty-eight percent (28–63%) of all the conducted nutritional risk screenings were inadequate, or had A- or B-score in disagreement with data registered in other places within the medical record. In example there was noted a 10% weight loss the past month in the medical record but patients was only given a score of one in B-score where a score of three would have been correct

Table 1
Score for secondary nutritional screening.

	A Under nutrition	**B** Severity of illness in regards to nutritional needs (i.e.)
Score = 0 None	Normal nutritional status	Normal needs
Score = 1 Light	>5% weight loss in 3 months **or** intake 50–75% of dietary needs past week. BMI not an issue her	■ Collum femoris fracture ■ Chronic patients with exacerbations: liver cirrhosis, COPD ■ Chronic dialysis ■ Diabetes ■ Cancer
Score = 2 Moderate	>5% weight loss in 2 months **or** intake 25–50% of dietary needs past week **or** BMI 18.5–20.5 + affected general condition	■ Large abdominal surgery (colectomy, gastrectomy, hepatectomy) ■ Post operational ATN ■ Apoplexia ■ Severe pneumonia
Score = 3 Severe	>5% weight loss in 1 month **or** intake 0–25% of dietary needs past week **or** BMI less than 18.5 + affected general condition	■ Cranial trauma ■ More than 50% burn ■ Severe infections (sepsis) ■ Patients in intensive therapy with multiple organ failure