



EUROPEAN  
PRESSURE  
ULCER  
ADVISORY  
PANEL

# *Nutritional Guidelines for Pressure Ulcer Prevention and Treatment*

## **MISSION STATEMENT**

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The European Pressure Ulcer Advisory Panel's objective is to provide the relief of persons suffering from, or at risk of pressure ulcers, in particular through research and the education of the public.

Registered Charity No: 1066856

## **CLINICAL NEED FOR THIS GUIDELINE**

Pressure ulcers are the result of a complex interplay between myriad extrinsic and intrinsic risk factors – excessive mechanical loading, immobility, incontinence, advanced age, among many others. While the consequences of immobility are often viewed as the key predisposing factors in prompting the development of a pressure ulcer, it is often assumed that there is also a direct causal relationship between nutrition and pressure ulcer development. The scientific basis for this assumption is unclear with as yet no sound studies linking impaired nutrition and an increased incidence of pressure ulcers. However, it is possible that impaired nutrition may influence tissue vulnerability to extrinsic factors such as pressure. It is important to note that only a few risk factors can be influenced by our actions – tissue loading and nutrition being two key issues we can address. The perceived importance of malnutrition in pressure ulcer development and management is briefly considered within existing EPUAP guidelines, for example:

- ‘a full risk assessment in patients to include: general skin condition, skin assessment, mobility, moistness and incontinence, nutrition and pain’
- ‘Following assessment nutritionally compromised individuals should have a plan of appropriate support and/or supplementation that meets individual needs and is consistent with overall goals of therapy’
- ‘Ensure adequate dietary intake to prevent malnutrition to the extent that this is compatible with the individual’s wishes or condition’.

The purpose of this guideline is to expand upon the references to malnutrition within existing EPUAP guidelines and provide clinicians with specific guidance upon nutritional screening and assessment, and following assessment, appropriate intervention. It is intended that the guidelines be appropriate for all care settings although it is recognized that the access to specific tools such as weighing scales and personnel such as dieticians may be limited in some sectors. EPUAP recognize that other clinical guidelines on nutrition exist (for example: Obesity in Scotland, Integrating Prevention with Weight Management, SIGN Guideline no. 8; 1996) and that the specific guidance EPUAP offers on nutrition and pressure ulcers should be considered within the context of general guidelines on nutritional management.

The recommendations offered in this guideline have been graded using the following systems:

*Source of evidence that underpins the recommendation*

- I Evidence from systematic review or meta-analysis of randomised controlled trials or at least one randomised controlled trial.
- II Evidence from at least one controlled trial without randomisation, or at least one other type of quasi-experimental study.
- III Evidence from non-experimental descriptive studies, such as comparative studies, correlation studies, and case-control studies.
- IV Evidence from expert committee reports or opinions and/or clinical experience of respected authorities

### ***Recommendation Grading***

- A Directly based on category I evidence,
- B Directly based on category II evidence or extrapolated recommendation from category I evidence,
- C Directly based on category III evidence or extrapolated recommendation from category I or II evidence,
- D Directly based on category IV evidence or extrapolated recommendation from category I, II or III evidence.

Both grading systems were adapted from Eccles M, Mason J (2001). How to develop cost-conscious guidelines. Health Technology Assessment 5:8.

## **STRUCTURE OF THE GUIDELINE**

The recommendations of this guideline are considered to apply to both the prevention and management of pressure ulcers. Where guidance relates solely to pressure ulcer treatment this will be highlighted in the text. It should also be noted that the EPUAP considers all recommendations to be equally valid regardless of the grade of evidence upon which they are based. In the following recommendations where a source and level of evidence is not explicit, the recommendation should be considered as a level IV, D recommendation.

### ***Screening and Assessment of nutritional status***

Screening and assessment of an individual's nutritional status can be performed using a number of measures ranging from tools such as the Subjective Global Assessment (Detsky et al 1987) to relatively simple measures of height and weight (combined as Body Mass Index). However some measurements (height, laboratory tests, skin fold thickness) may not be readily available in all care settings. Undesired weight loss (>10% of normal body weight in the past six months, or >5% in the past month) may provide an indication of malnutrition although where possible reasons for this unintentional weight loss should be explored with the individual patient.

Accurate measurement of body weight and height, and hence Body Mass Index, may be problematical in many settings through lack of available equipment or challenges in measuring body length among some patient groups. BMI measures have also been found to be less valid within some patient groups, such as children and the very elderly, due to their altered/different fat/lean body mass ratio.

Recording patient weight should follow a specified protocol, where the individual is weighed ideally at the same time of day using the same scales with an appropriate weight range (up to 350kg). Before weighing, any outdoor clothes and shoes should be removed. If possible all weight measurements should be made by a single recorder. In addition to weight measurement, waist circumference is a reliable marker for intra-abdominal fat mass. The waist measurement should be carried out at a specific location half-way between the superior iliac crest and the rib cage, in the mid-axillary line.

Nutritional assessment may also include nutritional intake over the past one, three or seven days; this information may be gathered using 24-hour recall, self or carer reported food intake records or through the involvement of a dietician, where available. It is important to consider why the intake of food and fluids is at the reported level.

Biochemical measurements such as serum albumin, hemoglobin and potassium may be helpful when considering the nutritional status of the ill although these indicators may provide more information upon chronic, rather than acute depletion of specific nutrients. In general it is unlikely that biochemical measurements will provide more information than other indicators such as undesired weight loss although a number of studies cite an association between albumin and pressure ulcers.

The use of nutritional screening or assessment tools appears to be becoming more prevalent in managing patients at risk of/with pressure ulcers. These tools require to be validated and reliable, and like general risk assessment tools should not replace clinical judgement. However, the use of validated nutritional assessment tools may help to foster attention upon the need to consider nutrition when assessing vulnerability to pressure ulcer development.

Nutritional status should be re-assessed regularly following an individualized assessment plan which includes an evaluation date. The frequency of assessment should be based upon the condition of the individual and should occur following specific events such as surgery and any development of infections or other catabolic processes likely to stress the nutritional status of the individual.

While looking at the individual patient the clinical judgement of appropriately trained health professionals may provide sound evaluations of probable nutritional status, it should be acknowledged that excess of body weight may mask nutritional deficiencies – for example morbidly obese individuals may still be malnourished.

### ***Nutritional intervention***

Where an assessment or screening of nutritional status indicates that malnutrition may be present, nutritional intervention should be considered. The primary goal of nutritional intervention is generally to correct protein-energy malnutrition ideally through oral feeding. When considering any limitations on normal food and fluid intake, consider the local environment such as ease of access to food, social and functional issues along with the texture of the diet. Changes in these aspects may encourage or facilitate increased oral intake. Overall the goal should be to consider the quality and energy-density of the food intake rather than its quantity. Considering fluid intake quantity is equally important as quality.

Where enhanced normal feeding is not possible, protein-energy rich oral supplements may be considered (Recommendation 1B; Benati et al 2001, Bourdel-Marchasson et al 2000, Breslow et al 1993, Chernoff et al 1990, Delmi et al 1990). The value of vitamin and trace element supplementation in pressure ulcer prevention is unclear (Recommendation 1B; Taylor et al 1974, ter Riet et al 1995).

Where normal feeding and oral supplementation fail to resolve apparent malnutrition then other routes (for example tube-feeding) may be undertaken although the risks associated with these interventions should be considered.

While the amount of supplementation required by individuals will vary, general guidance can be offered where an individual may require a minimum of 30–35 kcal per kg body weight per day, with 1 to 1.5 g/kg/day protein required and 1ml per kcal per day of fluid intake.

Specific guidance on energy expenditure may be provided through the use of standard equations such as the Harris-Benedict or Schofield formulae although it is recommended that advice on their use and interpretation be sought from a dietician (where available) or the multidisciplinary care team.

The success of nutritional intervention should be reviewed within the on-going regular nutritional assessments and may be indicated by outcomes such as increased weight or improved functional ability and/or enhanced health-related quality of life. Successful nutritional intervention may also be marked by a reduced incidence of new pressure ulcers and the healing of established pressure ulcers.

Regular evaluation of the effects of nutritional interventions is required but it should be borne in mind that where individuals are malnourished the effects of feeding and/or supplementation may not be immediately apparent, probably because there first needs to be a restoration of already depleted reserves.

Where patients have established pressure ulcers then a similar strategy of nutritional intervention should normally be considered (normal feeding, then oral supplements and finally tube-feeding) although the demands may be greater. There are a number of observations upon the role of nutritional deficiencies and pressure ulcer

healing that can be extracted from controlled trials – protein and calorie supplementation, along with the use of arginine, vitamins and trace elements with antioxidant effects appear to have a positive effect on healing (Recommendation 1B; Benati et al 2001, Bourdel-Marchasson et al 2000, Breslow et al 1993, Chernoff et al 1990, Delmi et al 1990). The evidence for the value of ascorbic acid supplementation is equivocal (Recommendation 1B; Taylor et al 1974, ter Riet et al 1995) and the evidence for zinc supplementation is weak (Recommendation 1B; Norris 1971).

Specific issues may need to be resolved if normal feeding is to be enhanced – for example control of wound odour, altered body image, pain associated with the pressure ulcer and loss of self-esteem because these issues can reduce nutritional intake.

Where individuals present with severe pressure ulcers (Grades 3 and 4) then the multidisciplinary team should consider their basal energy expenditure and pay particular attention to the increased fluid loss through such wounds.

The nutritional requirements of specific groups may be different from those outlined in these guidelines, for example the spinal cord injured.

Nutritional assessment and intervention should of course be combined with all other appropriate interventions including pressure management.

These guidelines have not addressed several specific issues – nutritional assessment and intervention in neonates and paediatrics, the role of parenteral nutrition and specific needs of individual patient groups such as the immuno-suppressed, those with cancers, orthopaedic, trauma and surgical patients and those who have experienced burns. Pharmacological interventions such as the use of anabolic steroids also are not included.

In all of the preceding recommendations regarding nutritional assessment and supplementation all decisions should be taken with regard to patient choice and in light of the overall goals of treatment.

## **EDUCATION**

There is a requirement for all staff (including but not limited to health professionals, untrained staff, catering and porters) to be aware of the importance of nutrition and to understand their role in improving the nutritional status of patients. This education will range from the performance of nutritional screening and assessment, the preparation of attractive, appetizing meals and the delivery and presentation of meals dependent upon the needs of individual staff members. There is a need to establish a nutritional culture within healthcare prompting the appropriate availability and presentation of meals through to continuity of nutritional care across departments and care settings.

## **SUMMARY OF RECOMMENDATIONS**

The EPUAP recommends that as a minimum, assessment of nutritional status should include regular weighing of patients, skin assessment, documentation of food and fluid intake. Additional procedures including anthropometric measurements and laboratory tests may also be performed although these may best be viewed as more advanced assessment techniques. Nutritional intervention should focus upon improving the individual's intake of food and fluids – through consideration of the quality of what is offered along with removing physical or social barriers to its consumption. Nutritional supplementation may be considered where it is not possible to enhance the individual's own consumption of food and fluids.

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The EPUAP would suggest that a sound starting point for further exploration of the links between nutrition and pressure ulcers would be the publication:

Mathus-Vliegen EMH. Nutritional status, Nutrition and Pressure Ulcers. Nutrition in Clinical Practice 2001; 16: 286–291.

*Text prepared by Michael Clark on behalf of the Guideline Group, 16 November 2003.*