

## Ten top tips: nutrition and wound healing



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It goes without saying that nutrition plays an important role in the treatment of pressure injuries. Both macronutrients (protein, calories and fat) and micronutrients (vitamins and minerals), as well as fluid, are needed for repair of body tissues for patients with pressure injuries, surgical wounds and other forms of skin breakdown. According to Munoz et al (2020), a decreased intake of food and fluids and/or weight loss are associated with the development of pressure injuries and with difficulty with wound healing.

The Academy of Nutrition and Dietetics believes that registered dietitian nutritionists (RDNs) are the best qualified healthcare professionals to deliver nutrition education and medical nutrition therapy (MNT) services for disease management (The Academy of Nutrition and Dietetics, 2021). For that reason, in a perfect world, all patients with pressure injuries or chronic wounds would be referred to an RDN for a comprehensive nutrition assessment and personalised nutrition intervention. Unfortunately, that is not always possible for a variety of reasons.

If an RDN is not available, nutritional care should still be a key component of treatment to support wound healing. The European Pressure Ulcer Advisory Panel/National Pressure Injury Advisory Panel/Pan Pacific Pressure Injury Alliance (EPUAP/NPIAP/PPPIA) 2019 International Guidelines on the Prevention and Treatment of Pressure Ulcers/Injuries have a chapter on nutrition that is a useful guide for clinicians of all disciplines.

The following 10 tips are designed to help clinicians recognise when nutritional status could be impacting wound healing and provide vital information on nutrient needs to help treat pressure injuries. Note that the recommendations listed below are general and may not meet the needs of all individuals.

**1 Do not use serum albumin and prealbumin to diagnose malnutrition.** Malnutrition has long been linked to pressure injury development (Munoz, 2020) so identifying it is a critical part of nutrition care for patients with pressure injuries. The use of serum proteins like albumin and prealbumin as indicators of malnutrition went out of favour over a decade ago. Despite being used as a marker of synthetic ability of the liver, albumin production is suppressed by inflammatory factors, such as TNF and Interleukin-1 and, therefore, commonly low in many patients with inflammatory diseases.

Today malnutrition (also called undernutrition) is categorised as starvation-related, chronic-disease related, or acute disease or injury-related. It can be diagnosed using six criteria as outlined by the American Society of Parental and Enteral Nutrition (ASPEN) and Academy of Nutrition and Dietetics (White et al, 2012). The ASPEN/Academy criteria for diagnosing malnutrition are:

- Insufficient energy intake
- Weight loss
- Loss of subcutaneous fat
- Localised or generalised fluid accumulation that may sometimes mask weight loss
- Diminished functional status as measured by hand grip strength.

More recently, the Global Leadership Initiative on Malnutrition (Cederholm et al, 2018) developed a similar set of criteria that consists of three phenotype characteristics (weight loss, low BMI and decreased muscle mass) and two aetiological characteristics (decreased food intake or assimilation and disease burden/inflammation). Both the ASPEN/Academy Guidelines and GLIM outline criteria for the severity of malnutrition (mild, moderate or severe).

Given the current level of interest in establishing clear criteria for diagnosing malnutrition, its definition and diagnostic criteria will continue to evolve. Unfortunately, serum albumin and prealbumin continue to be incorrectly used as an 'instant' marker of malnutrition (Evans et al, 2021).

### **2 Incorporate malnutrition screening into wound care protocols at each wound care clinic, hospital or post-acute care setting.**

Nutrition screening tools play a role identifying malnutrition or those at risk for it. Screening tools are simple, usually only a few questions, can be completed by any staff member and provide a score that rates the nutritional status of an individual. There are several validated tools available, including the Malnutrition Screening Tool® (MST), which is recommended by the Academy of Nutrition and Dietetics for screening patients in all settings (Skipper et al, 2019), the Mini-Nutrition Assessment® (MNA), and the Subjective Global Assessment® (SGA). All three screening tools can be located online and downloaded with a quick internet search. In the absence of a comprehensive nutrition assessment, both the MNA and SGA scores can be considered

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a basis for diagnosing malnutrition (Malone and Mogensen, 2021).

**3 Weigh patients routinely.** If you aren't weighing your patients routinely, are missing critical information. Unintended weight loss in any patient, even one that is overweight or obese, is one major indicator of malnutrition (White, 2012). Both insidious weight loss (loss of a few pounds monthly over time) and more significant weight loss (5% in 1 month, 7.5% in 6 months, 10% in 6 months) are indicators that food intake is not adequate, there are underlying factors affecting food assimilation, or there may be issues with food insecurity in a household. Weight gain can be related to fluid retention or over-consumption of calories and should not be overlooked. Actual weight measured in a healthcare setting is preferred to weight reported by an individual. Weight can be affected by clothing, casts and medical equipment, so establishing weighing protocols is a good practice. Weight loss over time, especially in the presence of a pressure injury, should be addressed with additional food and/or oral nutritional supplements (ONS).

**4 Encourage patients to consume enough calories.** Energy (calories) is required to support collagen and nitrogen synthesis, promoting anabolism by sparing protein from being used as an energy source (Munoz et al, 2020). Adequate calorie intake can also help prevent unintended weight loss. An individual's calorie needs vary depending on their body weight, age and medical condition. The EPUAP/NPIAP/PPPIA 2019 International Guidelines on the Prevention and Treatment of Pressure Ulcers/Injuries recommends 30–35 kcal/kg daily for those with malnutrition with a pressure injury or at risk for pressure injury. For a 175-pound (80 kg) person, that translates to 2,400–2,800 calories daily. When possible, those calories should come from a variety of healthful foods rather than foods high in fat, salt, or sugar that are not nutrient-dense.

**5 Encourage patients to consume enough protein.** Protein is vital for the growth and maintenance of cells. Its many roles in the body include preservation of immune function and collagen and connective repair and synthesis. (Munoz et al, 2020). Research supports the premise that increased protein intake is linked with improved pressure injury healing (Munoz et al, 2020). The EPUAP/NPIAP/PPPIA 2019 guidelines recommend 1.25–1.5 g/kg body weight/day for those with pressure injuries, more than most

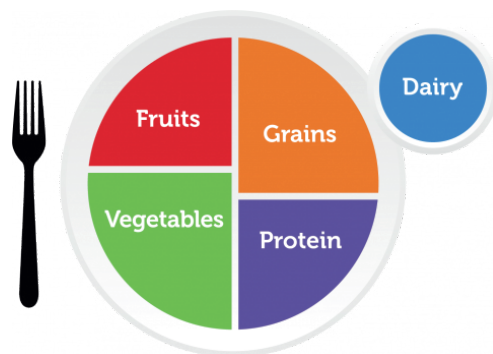
healthy people require. Using those guidelines, a 175-pound person would need 100–120 grams/day. Preferred sources of protein include lean meat and low-fat dairy foods, eggs, dried beans and peas, lentils, soy foods, nuts and seeds, including nut butters.

**6 Consider an individual's hydration status.** Fluids transport nutrients to the cells and help remove waste products. Fluid needs are usually increased in the presence of fever, vomiting and diarrhea, increased perspiration, or the presence of draining wounds. There are many ways to estimate fluid needs, but a quick and easy method is 1 mL/kcal consumed daily, (or 2,400–2,800 mL for a 175-pound person) if there are no comorbidities that require fluid restriction. Calorie-free beverages like water and unsweetened tea and coffee are preferred over sugary, empty-calorie beverages like soda and fruit punches. Fruit juice (in moderation, one serving daily) can provide vitamins, and low-fat dairy beverages or soy milk (up to three servings daily) provide protein, calcium, vitamin D and other nutrients.

**7 Maximise vitamin and mineral intake.** All micronutrients are important to good health and to support wound healing. Evidence to support supplements of specific nutrients to support wound healing (vitamin C and zinc, for example) is sparse. For that reason, the EPUAP/NPIAP/PPPIA 2019 guidelines did not address the issue of vitamin and mineral supplements. If food and/or nutrient intake appears to be lacking, a multivitamin supplement might be warranted (Posthauer et al, 2020). The best way to obtain adequate vitamins and minerals is to consume a varied diet that contains foods from all food groups.

**8 Choose food first.** Food contains not only calories, protein, fluid, vitamins, minerals and dietary fibre, but also a wide variety of potentially anti-inflammatory substances that could be beneficial for wound healing. Foods from all five food groups (protein foods, dairy, vegetables, fruits, and grains) is recommended daily for good health. An excellent nutrition guide that makes healthy eating easy to understand is MyPlate ([www.myplate.gov](http://www.myplate.gov)) [Figure 1]. Recommended foods, serving sizes, and number of servings per day for healthy people (some additions to increase calories or protein may be needed to support wound healing) are outlined at [www.myplate.gov](http://www.myplate.gov) (US Department of Agriculture, 2020). Easy-to-understand handouts can be downloaded and printed from the website for patient education. Individuals that are vegetarian, vegan, or avoid lactose or gluten, and have pressure

Figure 1. MyPlate can be downloaded from <https://www.myplate.gov/resources/graphics/myplate-graphics>. Source: US Department of Agriculture (2020).



injuries require individualised nutrition care to assure their nutritional needs are being met.

**9 Use fortified foods or oral nutritional supplements (ONS) if necessary.** If food intake is poor, food fortified with protein and calories, or ONS might be needed to help meet nutritional needs to support wound healing. Fortified foods can be prepared at home or in commercial kitchens by adding protein powder and/or high-calorie additions to some food (adding powdered milk and extra butter to oatmeal, for example). A wide variety of ONS are readily available in pharmacies and supermarkets and from commercial food service suppliers. If ONS are recommended, patients should be consulted regarding their preferred form (liquid, pudding, or bar) and flavour so the supplements will be consumed. And evidence is mounting that high calorie, high protein supplements that contain arginine, zinc, and antioxidants nutritional supplements (in addition to the usual diet) can play a role in pressure injury healing for those with a stage 2 pressure injury or greater (EPUAP/NPIAP/PPIA, 2019). ONS that provide this combination of nutrients in liquid form are available in the commercial market.

**10 Meet patients where they are, not where you think they should be.** Each individual's eating habits are a complex combination of their preferences, cultural norms, upbringing, socioeconomic status, and lifestyle. Patients that are not successful making dietary changes may have valid reasons for their struggles and may have trouble meeting your expectations for their food intake. Some patients are resistant to or overwhelmed by changing their diet. If you can take a little time to learn about a patient's eating habits, you can recommend incremental changes

that may be easier for them to adopt.

## Conclusion

Diagnosing malnutrition, common in patients with wounds, is not as simple as drawing blood. Nutrition screening and assessment is a valuable tool to help clinicians in all medical settings correctly identify malnutrition and should be utilised in all health care settings that treat patients with wounds. Patients with pressure injuries need to consume enough calories, protein, fluid and vitamins and minerals to help promote wound healing. Healthcare professionals can use MyPlate as a basic food guidance system to teach patients about good nutrition. If food intake is inadequate, oral nutritional supplements, fortified foods and/or a multivitamin may be needed. WINT

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