

The Role of Nutrition in Wound Healing

Nutrition plays an essential role in wound healing and wound care practices and needs to be considered a fundamental part of wound management. Poor nutrition before or during the healing process may delay healing and impair wound strength, making a wound more prone to breakdown.ⁱ Malnutrition has an adverse affect on recovery, impacting both the psychological and biochemical systems, and has been associated with impaired immune response, impaired muscle and respiratory response, delayed wound healing and an overall increase in complicationsⁱⁱ

Chronic wounds are a large social, economic and healthcare burden in Australia and around the worldⁱⁱⁱ, a chronic wound being one that takes more than 4-6 weeks to heal.^{vi} Reviews have shown that 17-35% of individuals have pressure ulcers on admission to aged care facilities,^{iv} and it has been estimated that a stage 4 pressure ulcer can cost in excess of \$60,000 per individual to manage.^{iv} In human costs, pressure ulcers are associated with pain, discomfort, decreased mobility, loss of independence and increased mortality rates^v

Examples of wounds that may become chronic

> Pressure ulcers	> Venous leg ulcers
> Post-operative wounds	> Extended burns
> Wounds in people with diabetes	> Stomas
> Ulcers on legs and feet	> Amputation wounds

Wound healing is a complex process of replacing injured tissue with new tissue produced by the body, which demands an increased consumption of energy, protein, carbohydrate, fat, vitamin and mineral metabolism. If the body is not provided with adequate nutrient supplies, then the body can enter a protein energy malnutrition state.^{vi} Protein-energy malnutrition (PEM) is the most serious type of malnutrition where there is an impaired absorption of both protein and energy.

Malnutrition

Malnutrition is a treatable disorder. Treatment aims to maintain body mass, limit weight loss, provide adequate essential nutrients and correct nutritional deficiencies. One of the most important factors for proper wound healing is the ability to channel adequate energy to the wound, collagen synthesis being the most-energy consuming aspect of wound healing. Caloric needs for healing increase according to the increasing size and complexity of the wound. Protein is also essential for the maintenance and repair of body tissue. An inadequate protein intake, often in conjunction with excessive losses of protein via heavily exudating wounds will lead to a deficiency which can impair the healing process.^{vii} In a survey conducted by VIVIR Healthcare this year, when respondents (residential aged care facilities) were asked what measures are put into place for residents with wounds/pressure ulcers, only 50% indicated that a high energy/high protein diet would be implemented. This single statistic demonstrates that there may be a lack of knowledge about the importance of diet in wound healing. Conversely, 88% of the facilities stated that they would commence residents with wounds onto oral nutritional supplements.

Role of Nutrients in Wound Healing

There has been extensive research into the roles of specific single nutrients in the healing process in the hope that providing supplementation of these components will enhance healing. These nutrients include amino acids, vitamins and trace elements.

Antioxidants – vitamin C and A play a major role in would healing. Vitamin C is known to be a crucial cofactor for proper collagen cross-linking and strengthening the healing wound. Vitamin A promotes re-epithelialisation and granulation of a wound, low levels of which can result in delayed wound healing and susceptibility to infection.^{vii} Arginine is an amino acid that has several properties which enhance a number of the wound healing pathways. When given as a supplement in experimental conditions, it has been shown to improve collagen deposition and strength.^{viii} The trace element zinc also plays a key role in protein and collagen synthesis and in tissue growth. Zinc deficiency has been associated with delayed wound healing, reduced skin cell production and reduced wound strength.^{vi}

Nutrition Intervention

Nutrition assessment is essential to determine deficiencies of macronutrients and micronutrients involved in the wound healing process. Holistic wound care must include both nutritional support and supplementation where necessary, according to an individual's needs. Screening and assessment of nutritional status can be performed using one of a number of validated tools (e.g. Malnutrition Screening Tool, Mini Nutritional Assessment).^{vi} When an individual is found to be malnourished or at risk of malnutrition, it is crucial for the multidisciplinary healthcare team to intervene with nutritional support and make the appropriate allied health referrals. Increasing protein and energy intake may be achieved with a normal diet, but if this is not possible or intake is impaired, additional supplements may be required. Specialised wound healing supplement drinks may be prescribed by a dietitian. These are useful for people who are unable to get the necessary nutrients for wound healing through diet alone.

Examples of high protein and/or high energy foods and drinks

- **Quality meat/chicken/fish/egg**
- **Butter, cheese, cream, full cream milk, custard, yoghurt, ice cream**
- **Breads/wholegrain cereals**
- **Milkshakes, smoothies**
- **Adding extra cream, oil, margarine in cooking**
- **Commercial nutritional supplements**

Nutritional intervention should be reviewed as part of the individual's overall care plan, and success can be measured by outcomes such as increased weight, improved functional ability, enhanced quality of life, reduced incidence of new wounds and healing of chronic wounds.^{vi} Referral of residents who have wounds or pressure ulcers to a dietitian can help ensure that the correct interventions are put into place to optimise healing. Nutritional intervention in wound and pressure area management is

truly “healing from the inside out” and can ultimately make all the difference to overall health outcomes.

VIVIR are allied health specialists in aged care and can provide you with more information regarding nutrition and wound healing and how your employees can make a significant difference in the management of individuals with wounds or pressure areas. Please contact VIVIR, your Allied Health Solution for more information on (03) 98297600 or email us at info@vivir.com.au.

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