

8. Nutrition and hydration

Good nutrition facilitates the wound healing process but malnutrition will delay, inhibit and complicate wound healing. Many nutrients have a role to play in wound healing, working in isolation or in combination with others.

Whilst a large percentage of patients admitted to hospital are already malnourished, it must also be recognised that many have a good nutritional status which deteriorates once admitted due to the consequence of their illness.

In a malnourished patient the phases of healing are the same. However, wound healing takes a large amount of metabolic energy due to an increased number of inflammatory cells, and the fibroblastic formation of collagen and matrix remodelling. **In the patient with protein energy malnutrition the healing process can take 5 – 10 times longer.**

Nutrition is a crucial aspect of a holistic approach to the healing of wounds (Brown & Phillips 2010).

Nutritional status should always be assessed in patients with wounds; if patients have a decreased nutritional status then this can be addressed.

NICE Clinical Guideline 32 - Nutritional Support in Adults offers best practice advice on the care of adults who are malnourished or at risk of malnutrition and how to identify them. The malnutrition universal screening tool (MUST) is recommended.

It is therefore important to encourage patients to have a wide and varied food intake to provide a balanced diet to maintain body cell mass and promote wound healing.

Carbohydrates provide the energy for the inflammatory response to occur

Protein deficiency results in impairment of the proliferative and remodelling stage of wound healing. Impaired collagen synthesis, reduced wound strength and increase in infection due to a compromised immune system has been reported. (Collins 2001)

Fats have a key role in the structure and function of cell membranes and are directly involved in cholesterol metabolism, the formation of inflammatory mediators, and clotting components. Following injury there is an increased requirement for polyunsaturated fatty acids, during the inflammatory phase of healing.

Vitamins: Many vitamins are involved in wound healing, the main one being vitamin C. This is vital for collagen synthesis, as it is an essential co-factor in the hydroxylation of proline.

Deficiency of vitamin A and Vitamin B complex will also have adverse effects on wound healing.

Zinc, Copper and Iron are the main minerals in wound healing. Zinc deficiency inhibits wound repair by reducing the rate of epithelialisation and cellular proliferation. It is also an essential co-factor in many enzyme systems, as is copper, which plays an important role in collagen and elastin synthesis. Iron

deficiency needs to be avoided, as an inadequate blood flow to the wound site will inhibit the healing process.

Other supplements of vitamins and minerals, however, should be avoided as this can be detrimental to the patient, affecting absorption and metabolic interactions and, ultimately, impair nutritional status.

Hydration. In addition to nutrition, fluid balance is important. Dehydration can result in diminished healing ability since water is a major component of healthy cells. A large wound may exude significant volumes of fluid that can result in electrolyte imbalance as well as dehydration. A heavily exudating wound may also delay healing by macerating surrounding skin.