

### WOUND HEALING AND THE IMPORTANCE OF NUTRITION

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Nutrition plays an essential role in wound healing and must be included as a necessary consideration when treating a chronic wound. Good nutrition facilitates healing but malnutrition delays and inhibits the process. Therefore, optimising nutrition is an integral part of best practice care in wound management.

There are many factors which may affect some people's ability to maintain adequate nutritional intake. Confusion, difficulty in swallowing, food preferences, lack of dexterity (eg arthritis), isolation, reduced appetite, poor eyesight, anxiety and pain may all be factors that need to be considered when assessing a person's intake.

Wound healing is a complicated process; the body has to replace damaged tissue with new tissue. The metabolism changes and this is called a catabolic phase, where there is an increased metabolic rate, loss of body fluid and increased cell turnover. This catabolic phase may be extended if the wound is severe or if there is already malnutrition present in the body. The body may go into a protein energy malnutrition state. This leads to impaired absorption of both protein and energy, causing weight loss, fat loss and muscle wasting.

This requires an increased need for energy and nutrients like protein and calories. Infected wounds increase nutrient demand further as they cause even more tissue damage. Protein is also lost through wound exudate (ooze). Without adequate nutrition, healing may be delayed. Studies have shown that improved nutrition enables the body to heal wounds quicker.

Protein is required as part of the inflammation process, in the immune response and in the development of granulation tissue. Even short periods of low protein intake can result in delayed wound healing. Protein is also an essential nutrient for the repair and maintenance of tissue, and low protein levels will cause a decrease in collagen, slowing wound healing. There is much evidence to show that adequate protein levels provide an optimal healing environment for wounds. Sources of protein are: red and white meats, fish,

eggs, liver, dairy products, seeds, nuts and grains.

L-arginine is an amino acid that aids wound healing by enhancing protein synthesis. This amino acid becomes essential during severe stress. Enhancing the diet with arginine has shown to enhance the way protein metabolises, reducing muscle loss and helping to increase wound healing. Arginine has also been shown to enhance the immune system and improve other pathways involved in wound healing.

Carbohydrates and fats will provide the body with fuel for wound healing. If there is insufficient carbohydrate, the body breaks down protein to provide glucose for cellular activity.

Good sources of carbohydrates are wholegrain cereals, breads, potatoes and rice. Good sources of fats are meat and full-fat dairy products.

Vitamin C plays an important role in forming new blood vessels, and studies have shown that adequate levels help strengthen healing wounds. It is also an anti-oxidant and helps the immune system. Vitamin A stimulates collagen synthesis and there is evidence to show that low vitamin A levels can result in delayed wound healing. Vitamin A is found in milk, cheese, eggs, fish, dark green vegetables and red fruits.

Zinc is a mineral and it plays a role in protein, collagen, tissue growth and healing. There is an increased demand for zinc during cell proliferation. It is also involved in the immune response.

Dietary sources for zinc include red meat, fish, shellfish, poultry and eggs.

Iron is responsible for carrying adequate oxygenation to the site of the wound, therefore low iron levels will impair healing. If you are taking both zinc and iron supplements, they should be taken with meals – but at different times as they compete for absorption in the body.

Drinking enough is also an important factor in wound healing as dehydrated skin is less elastic, more fragile and prone to breaking down. Dehydration can reduce the efficiency of the

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circulation, which in turn impairs the supply of oxygen and nutrients to the wound.

So all these factors highlight the importance of an adequate intake of a variety of foods as part of a healthy diet.

#### Tips for high protein eating for wound healing :

- Eat more often if you have reduced appetite – aim for 6 smaller meals rather than 3 meals a day
- Keep a good stock of your favourite ready-to-eat meals and snacks (such as tinned soups / yoghurts / nuts and cheeses) for times when you don't feel well enough to prepare food
- Drink fluids that provide energy, like milk and pure fruit juice instead of just tea and coffee

It is important that your treating health professional provides an appropriate nutritional plan whether you are at home, in hospital or in residential care.

This plan must be in accordance with your individual needs. In some cases, nutritional supplementation with l-arginine, protein, calories or antioxidants may be needed.

There are however contra-indications with some supplements. The drug warfarin does not interact well with supplements that contain higher levels of Vitamin K as they both have the same effect on the blood and therefore may thin the blood too much. For example, the supplement 'Arginaid Powder' contains no vitamin K, but 'Arginaid Extra' does. 'Arginaid' can be used in diabetic patients, as the tetra pack is a low GI product, however, there may be better control of blood glucose levels in patients who use the powder as opposed to the Tetra Pack.

This is one of the many reasons why it is important to have a professional assessment prior to any dietary supplementation. Regular and ongoing assessment of nutritional support may be required as the benefits may take some time to show in those who are malnourished or have chronic wounds.

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#### References

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