

Nutritional Support for Wound Healing



[Nutritional support](#) for wound healing can greatly affect the three stages of the process: the inflammatory, proliferative, and remodeling phases. Poor nutrition can prolong every stage of the wound healing process and cause the development of [non-healing wounds](#). Significant wounds can increase the nutritional demands of the body, which means that a patient will need more nutrients than usual to allow for optimum wound healing.

Uses for Nutritional Support in Wound Healing

Protein energy malnutrition (PEM) is one factor that can cause a delay in wound healing. PEM complicates wound healing by increasing the catabolic state (breakdown of tissues) and decreasing the anabolic state (buildup of tissues). Therefore, the right nutrition can provide necessary macronutrients, such as carbohydrates and proteins. It can also decrease the catabolic state by increasing the body's energy stores and tissue buildup, thereby producing new proteins.

How Good Nutrition Helps You Heal

To heal a wound, the body needs to produce new proteins from amino acids. When nutrition is inadequate, the body tries to get these amino acids from the lean body mass (LBM), which is the sum of the body's protein and water content. Approximately 50 to 60 percent of the LBM is composed of the skeletal muscles. In the presence of significant wounds, such as non-healing wounds, this response can lead to severe muscle wasting. When the loss from the LBM reaches 20 percent, the body will try to conserve the LBM by limiting the amino acids used for wound healing. At this stage, the process of wound healing slows. Further loss of proteins can also cause the development of new wounds due to skin thinning brought about by the loss of collagen proteins.

Nutritional Assessment

During a nutritional assessment, a patient's body weight and the basal metabolic requirements are calculated. The objective of the assessment is to devise a nutritional plan aimed at:

- controlling the catabolic state
- increasing the energy intake to 50 percent more than the usual need
- increasing the dietary protein requirement by up to twice the recommended daily allowance
- increasing the anabolic state
- avoiding the replacement of lean body mass with fat

Carbohydrates should supply 55 to 60 percent of the total caloric intake to ensure adequate energy stores.

Carbohydrates are also important components of glycoproteins, which play roles in the wound healing process. Cell migration and proliferation are processes mediated by cell surface molecules composed of carbohydrates. Diabetics should have HbA1c under 6.9 for proper wound healing.

Proteins, which are made up of amino acids, should constitute 20 to 25 percent of the required caloric intake. Amino acids such as leucine, arginine and glutamine have been shown to possess anabolic activity. Protein production is a vital process in wound healing. This process is mediated by fibroblasts, which produce collagen, the skin's major structural protein.

Fats comprise 20 to 25 percent of the total dietary requirement. They also provide additional energy during wound healing and are the raw materials used for the production of new cell membranes.

Supplements Assisting Wound Healing

Multivitamin/mineral Take a daily multivitamin as the manufacturer recommends, and avoid “megadoses”. Try for around 100% USDA or 100% RDA.

HMB (hydroxyl-methylbutyrate) A supplement called “Envigor”, which is found in Ensure. HMB is most beneficial if taken with Arginine and glutamine.

Omega-3 Take supplements as recommended on packaging (concentration varies between manufacturers). Omega-3 is more important than Omega-6 in impaired wound healing. Try to supplement with pure Omega-3 fatty acids. Watch out for regular fish oil because it is high in Omega-6.

Vitamin A Most people can take as high as 25,000 IU/day (5x RDA), but I recommend supplementing with 5,000IU 3 times per day with food to start. If you use steroids (ex. Prednisone) ask your prescribing doctor about taking vitamin A because it can decrease the effectiveness of the steroids. Watch for early signs of Vitamin A toxicity including yellow skin discoloration.

Vitamin C (ascorbic acid) Standard treatment is 100 to 1000mg by mouth per day. Excessive doses may cause diarrhea.

Zinc Typical supplementation is 220mg per day for 7-10 days ONLY! Taking zinc supplement for 2 weeks or longer can decrease your immune response—think increased infections!

L-arginine The Mayo clinic recommends a dose of 36.2 grams of L-arginine HCl can be taken by mouth daily for five days. Alternately, you may instead use 10 grams of arginine aspartate (containing arginine) can be taken by mouth in three doses per day for two weeks. Take care if you take blood pressure pills or NSAID's (Advil, Ibuprofen, Naprosyn, Aleve, Motrin, etc.) because the combination may be dangerous—it will lower your blood pressure or thin your blood too much. Arginine may also interact with several medications.

Glutamine May take 1-3 grams daily on empty stomach or with “Envigor”. Do not use if you have liver disease and use caution if you have a history of mania or seizures.

B-complex (B 12, B 6, Folic acid) Use the recommended daily dose as these vary between manufacture. Caution taking folic acid if you have renal disease, and you should instead try a B-complex with L-methylfolate—such as in Metanx. Speak to your nephrologist first.

***All supplementation recommendations are for adults who are not pregnant. These are not appropriate for children. All recommendations should be cleared through your primary care doctor or disease treating doctor!**

***Supplements should not be started until after we have sent you for your nutritional status labs.**