



Active® Liquid Protein: a recipe for better wound care.

Malnutrition is a serious condition that commonly affects older adults and may go undiagnosed, especially for those who have chronic wounds.¹ Active® Liquid Protein helps malnourished patients with chronic wounds get back to being themselves. Furthermore, **high-protein concentrates are a cost-effective method to improve wound healing and health outcomes for patients and residents.**

Nutrition plays an integral role in wound healing

The prevalence of malnutrition exists in 30-60% of elderly individuals residing in long term care facilities.² **Protein is especially important for patients and residents with chronic wounds, who need at least 50% more protein than those who do not have wounds.**⁴

Protein and wound healing.

Protein is arguably the most important nutrient in wound healing. Chronic wounds require a high-protein diet to facilitate formulation of collagen, which leads to healing.⁴ Clinical studies suggest that patients with chronic wounds who receive

a high-protein diet experience faster wound healing.⁵⁻⁸ In one study, the rate of **wound healing was approximately twice as fast when a high-protein concentrate was utilized.**⁸

Arginine and wound healing.

Arginine is an important amino acid involved in various cellular processes, including wound healing and immune response. Arginine is involved in the formulation of new connective tissue and is required for normal lymphocyte function.⁹ A meta-analysis that aggregated the results of several wound healing studies found that **arginine supplementation is associated with lower risk of infection to surgical wounds,**⁹ ostensibly through its role in immune response.

Zinc and wound healing.

Zinc intake may facilitate wound healing, especially in patients or residents with diabetic wounds. Wound patients may be zinc deficient, and clinical studies suggest that zinc supplements restore normal wound healing functions.¹⁰ One randomized controlled trial found that diabetic **patients who received zinc supplements saw significantly greater reduction in foot ulcer size** compared to the placebo group.¹⁰

Vitamin C and wound healing.

Ascorbic acid, commonly known as vitamin C, is a potent extracellular antioxidant that may promote wound healing and immune response. Patients and residents with chronic wounds may be Vitamin C deficient.¹¹ Nutrition supplements containing **vitamin C have been clinically observed to drive chronic wounds out of the inflammatory phase and into a trajectory of healing.**¹²

Better health. Lower costs.

Protein-rich nutritional support may decrease length of stay and readmission rate, which could keep patients and residents out of the acute care unit. **High-protein concentrates may provide cost benefits to institutions through improved compliance, reduced length of stay, and reduced readmission rate.**¹³

Reduce length of stay.

In one wound healing study, length of stay increased by 2.37 days for each unit decrease in body mass index.⁵ In another study, **patients who received a high-protein nutritional support while recovering from surgery had an average length of stay 4.4 days shorter than the control group.**¹³ Similar benefits have not yet been examined in patients with chronic wounds; though, it is likely that adequate nutrition would have a similar effect by reducing healing time.

Reduce readmission rate.

Nutrition may have a direct effect on readmission rate. A meta-analysis included data from 3,000 older adults (mean age of 74 years) and found that **high-protein nutritional support reduced six-month readmission rate by approximately 30%.**¹⁴ The same study also noted significant long-term health benefits such as reduced number of complications, increased body weight, and improved grip strength.¹⁴ These benefits could be extended to a similar population with chronic wounds as well.

Improve compliance.

Active® liquid protein can be administered in **one ounce servings, which may improve patient compliance compared to traditional oral nutrition drinks.** In one study, patients who were given Active® Liquid Protein consumed a majority of their dose 99% of the time.¹⁵ Patients given the traditional nutrition drink only consumed a majority of their dose 70% of the time. Patients consumed none of the traditional drink 19% of the time.

A cost-effective solution.

Though the true cost of wound treatment varies significantly by patient and institution, **research suggests that oral nutrition supplements improve functional limitations and decrease morbidity and mortality without increasing costs.**^{16,17} Given the overall benefits of high-protein concentrates on wound healing, length of stay, readmission rate, and compliance, nutritional interventions may reduce costs in some cases.



Medline Industries, Inc. Three Lakes Drive, Northfield, IL 60093
Medline United States
1-800-MEDLINE (633-5463)
medline.com | info@medline.com

Medline Canada

1-800-396-6996 | medline.ca | canada@medline.com

Medline México

01-800-831-0898 | medlinemexico.com | mexico@medline.com

Follow us    

REFERENCES: 1. Stechmiller JK. Understanding the Role of Nutrition and Wound Healing. *Nutr Clin Pract.* 2010;25:61-68. 2. Title: Enteral Nutrition and Hydration in Long Term Care Author: Peggi Guenter, PhD, RN, CNSN 3. Langemo D, Anderson J Hanson D *et al.* Nutritional Considerations in Wound Care. *Advances in Skin and Wound Care.* 2006;19(6):297-300. 4. Dörner B, Posthauer ME. The Role of Nutrition in Pressure Ulcer Prevention and Treatment: National Pressure Ulcer Advisory Panel White Paper. 2009. 5. Collins CE, Kershaw J. Effect of nutritional supplements on wound healing in home-nursed elderly: A randomized trial. *Nutrition.* 2005;21:147-155. 6. Iizaka S, Kaitani T, Nakagami *et al.* Clinical validity of the estimated energy requirement and the average protein requirement for nutrition status change and wound healing in older patients with pressure ulcers: a multicenter prospective cohort study. *Geriatr Gerontol Int.* 2015;15:1201-1209. 7. Ohura Tm Nakajo T. Evaluation of effects of nutrition intervention on healing of pressure ulcers and nutritional states (randomized controlled trial). *Wound Rep Reg.* 2011;19:330-336. 8. Lee SK, Posthauer ME, Dörner B *et al.* Pressure Ulcer Healing with a Concentrated, Fortified, Collagen Protein Hydrolysate Supplement: A Randomized Controlled Trial. *Adv Skin Wound Care.* 2006;19:92-96. 9. Drover JW, Dhaliwal R, Weitzel L *et al.* Perioperative use of arginine-supplemented diets: a systematic review of the evidence. *J Am Coll Surg.* 2011;212(3):385-399. 10. Momen-Haravi M, Barahimi E, Razzaghi R *et al.* The effects of zinc supplementation on wound healing and metabolic status in patients with diabetic foot ulcer: A randomized, double-blind, placebo-controlled trial. *Wound Rep Reg.* 2017;25:512-520. 11. Long CL, Maull KI, Krishnam RS *et al.* Ascorbic acid dynamics in the seriously ill and injured. *Journal of Surgical Research.* 2003;109:144-148. 12. Salgado RM, Cruz-Castaneda O, Elizondo-Vasquez F *et al.* Maltodextrin/ascorbic acid stimulates wound closure by increasing collagen turnover and TGF- β 1 expression in vitro and changing the stage of inflammation from chronic to acute in vivo. *Journal of Tissue Viability.* 2017;26:131-137. 13. Yeung SE, Hilewich L. Protein intakes are associated with reduced length of stay: a comparison between Enhanced Recovery After Surgery (ERAS) and conventional care after elective colorectal surgery. *Am J Clin Nutr.* 2017;106:44-51. 14. Cawood AL, Elia M. Systematic review and meta-analysis of the effects of high protein oral nutritional supplements. *Ageing Research Reviews.* 2012;11:278-296. 15. Data on file: Whitepaper: Optimizing Dietary Protein Supplementation Utilizing Active® Liquid Protein Formulation, a low volume, high protein content nutrition supplement. 16. Neelemaat F, Bosmans JE, Thijs A *et al.* Oral nutritional support in malnourished elderly decreases functional limitations with no extra costs. *Clinical Nutrition.* 2012;31:183-190. 17. Zhong Y, Cohen JT, Goates S *et al.* The Cost-Effectiveness of Oral Nutrition Supplementation for Malnourished Older Hospital Patients. *Appl Health Econ Health Policy.* 2017;15:75-83.