

# Case Study: High Protein Immunonutrition Supplement Supports Limb Salvage

M. Miranowski, MS RDN<sup>a</sup>, D. Dulaney, BSN RN CWS<sup>b</sup>, E. Gkotsoulis, DPM<sup>c</sup>, D. Thompson, RN WCC<sup>b</sup> and C. Fife, MD<sup>d</sup>



<sup>a</sup>Nestlé Health Science, Bridgewater NJ; <sup>b</sup>CHI St. Luke's Health, The Woodlands TX; <sup>c</sup>Greater Houston Foot and Ankle Specialists, The Woodlands TX; <sup>d</sup>Baylor College of Medicine, Houston TX

## BACKGROUND and AIM

A 5-10 day perioperative protocol of very high protein immunonutrition (HPIM) containing supplemental L-arginine, n-3 fatty acids and dietary nucleotides has been repeatedly demonstrated to help reduce infection and length of stay after major elective surgery.<sup>1,2</sup>

Further, guidelines advise use of specialized nutrition to provide increased amounts of calories, protein, L-arginine, zinc and other antioxidants to malnourished or at-risk adults with full thickness pressure injury.<sup>3</sup>

Since evidence is scarce for the application of HPIM in chronic wounds, we evaluated a 30-day course of HPIM in an adult with malnutrition, bilateral severe ischemic foot injury, and non healing left foot wounds requiring limb salvage surgery.

**Aim:** Observe feasibility of extended use HPIM contributing to chronic wound management and limb salvage.

## CASE DESCRIPTION

- A 34-year-old previously healthy African American female had a 21-day stay in intensive care for sepsis with hypotension and disseminated intravascular coagulopathy (DIC) causing bilateral foot ischemia.
- Three months later patient presented to the wound center with a 15-pound weight loss, a right transmetatarsal amputation (TMA) with a non-healing area (1 cm), and 2 ischemic ulcerations of the left plantar and lateral foot with exposed bone (70 cm, 8 cm). (Figure 1)
- Skin perfusion pressure (23 mm Hg) demonstrated perfusion of the lateral foot was insufficient for healing and surgery was scheduled.
- A Mini-Nutritional Assessment (MNA<sup>®</sup>) score of 7 indicated malnutrition.

## NUTRITION INTERVENTION

- Wound physician and staff educated the patient on the importance of increasing protein and L-arginine intake with HPIM.
- A taste test was used to gain patient commitment to consume 2 cartons/day for 30 days (400 calories, 36 grams of protein and 8.4 g L-arginine daily).
- Patient was provided with a 1-month supply of oral HPIM (IMPACT Advanced Recovery<sup>®</sup>) samples, an intake record keeper, flavoring tips and a list of high protein foods to support dietary counseling.

## RESULTS

- Sustained compliance with HPIM was confirmed at follow-up visits.
- Within two weeks of starting HPIM, the TMA site closed, and granulation tissue was noted on left foot wounds despite tissue hypoxia. (Figure 2)
- Approximately 1 week after completing HPIM, patient underwent an extensive foot resection of infected bone and ischemic tissue which was closed primarily and healed without difficulty. (Figures 3 & 4)
- Patient was ambulating 12 weeks later. (Figure 5)



Figure 1. Initial visit



Figure 2. After two weeks of HPIM



Figure 3. s/p surgery 4 weeks



Figure 5. Mobility restored



Figure 4. s/p surgery 4 months

## CONCLUSION

A highly motivated patient and wound team committed to intervention with HPIM resulted in successful limb salvage surgery; despite pre-existing malnutrition and non-healing chronic wounds. In-clinic taste test, record keeping and removing barriers such as cost facilitated compliance and ultimately success of HPIM protocol.

