# Unlocking the Power of Fresh Produce in Chronic Wound Care

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### Introduction

Malnutrition affects 30%–50% of the general population and up to 85% in long-term care facilities, contributing to increased risks of infection, delayed healing, and prolonged hospital stays.<sup>1</sup> In underserved communities, limited access to nutritious foods exacerbates these issues, resulting in delayed wound healing outcomes. Chronic wounds, such as venous leg ulcers, diabetic foot ulcers, and pressure ulcers, often persist without proper nutritional support.

Nutrients such as vitamin A (promotes cell growth), vitamin C (supports collagen synthesis), and zinc (aids protein synthesis) are essential for wound repair.<sup>2</sup> However, many patients in underserved areas face barriers to accessing these nutrients.<sup>1</sup> This pilot study evaluated the impact of a fresh produce delivery program on chronic wound healing in underserved communities, aiming to address nutritional deficiencies and improve recovery.

### Methods

This 8-week feasibility pilot study recruited 6 patients (average age: 77 years) with chronic wounds unhealed for  $\geq 3$  months from underserved communities in Los Angeles, CA.

Inclusion criteria required patients to have venous stasis ulcers, surgical ulcers, or pressure ulcers and be receiving ongoing wound care.

Exclusion criteria included food allergies, anticoagulants, conditions impairing nutrient absorption (e.g., Crohn's disease), or specialized diets.

Patients were also assessed for their ability to participate consistently in the program and complete follow-up activities.

Participants received bi-weekly deliveries of fresh produce rich in vitamins A, C, E, K, and minerals (zinc, iron) and were counseled on incorporating these foods into their daily diet. Nutritional adherence was tracked via food diaries and surveys, while wound progression was measured weekly using digital imaging and manual methods.

Figure 1. 64 year old male with a non-healing venous stasis ulceration on the right anterior lower leg

Pre Week 1	
Width	0.78 cm
Length	10.19 cm
Depth	0.1 cm
Area	69.09 cm <sup>2</sup>
Volume	6.91 cm <sup>3</sup>



Figure 2. 62 year old female with a non-healing pressure ulcer on the sacrococcyx

Pre Week 1	
Length	4.7 cm
Width	3.2 cm
Depth	0.3 cm
Area	15.0 cm <sup>2</sup>
Volume	4.1 cm <sup>3</sup>

Cellular. Acellular. and Matrix-like Products utilized



### Figure 3. Fresh produce box from a local organic farm



### **Figure 4.** Quality of Life Improvements & Patient Satisfaction with Shipments



Week 3 - Healed		
Length	0 cm	
Width	0 cm	
Depth	0 cm	
Area	<mark>0 cm²</mark>	
Volume	0 cm³	



Week 6 - Healed		
Length	0 cm	
Width	0 cm	
Depth	0 cm	
Area	0 cm <sup>2</sup>	
Volume	0cm <sup>3</sup>	
Cellular, Acellular, and		
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# **Primary Outcomes:**

This study highlights the feasibility and benefits of integrating fresh produce delivery into chronic wound care. The observed improvements in healing rates and quality of life underscore the critical importance of addressing nutritional deficiencies in underserved communities, where access to nutrient-dense foods remains a significant challenge. By bridging this gap, the program demonstrates its potential to enhance both recovery and patient satisfaction. Future recommendations include incorporating culturally relevant food options to improve dietary adherence and satisfaction among diverse populations. To further optimize outcomes, we recommend: expanding program outreach, cohort size, including underserved areas, and tailoring delivery schedules (Fig.4). This better aligns with the patient's needs as patients initially received overabundance of produce to ensure variety. This approach represents a promising strategy to improve wound healing outcomes in vulnerable populations, while fostering healthier eating habits and addressing healthcare disparities.

\*Fresh produce sourced from Bloom Ranch (Bloom Ranch, Acton, CA) 1. Food Insecurity, Neighborhood Food Environment, and Health Disparities. The American Journal of Clinical Nutrition. 2023:117(6):1084-1093. 2. Cleveland Clinic. Foods to Help Healing [Internet]. Cleveland Clinic. Available from: https://health.clevelandclinic.org/foods-to-help-healing

# Results

• 3 patients achieved 100% wound closure (2 by week 3, 1 by week 6).

• Healing rate for 2 patients were 49.4% and 91.8% by week 8 respectively.

• Average healing rate: 88.2% over 8 weeks.

## **Secondary Outcomes:**

• Faster healing correlated with higher dietary adherence.

• Documented quality-of-life improvements included increased energy and enhanced mood.

# Discussion

### References