



## OPTIMIZING NUTRITION CARE AT CHRISTIAN HOSPITAL WOUND CARE AND HYPERBARICS CENTER



Kirk W. Kerr, PhD | Senior Manager Health Economics | Abbott





## 1. INTRODUCTION

Chronic, slow-healing wounds, such as pressure injuries and diabetic foot ulcers, impact millions of people across the US.<sup>1</sup> Research has estimated that 6% of Medicare beneficiaries have a diabetic foot ulcer,<sup>2</sup> while pressure injuries impact as many as 3 million people annually. Such wounds lead to multiple adverse outcomes including higher risk of infections and reduced quality of life, as well as additional treatment costs. Treatment cost for pressure injuries alone is estimated at \$11 billion.<sup>3</sup>

Nutrition is an essential part of the wound healing process, providing proteins and nutrients that facilitate wound healing. Collagen protein is a key protein of the skin, controlling many cellular functions. Clinical research has shown that oral intake of hydrolyzed collagen adjusts the remodeling of damaged skin tissues during wound healing and enhances the body's wound healing process.<sup>4,5</sup> Amino acids, such as glutamine and arginine, support wound healing and cell proliferation. The combination of glutamine, arginine, and  $\beta$ -hydroxy- $\beta$ -methylbutyrate (HMB) has been shown to stabilize muscle cell membranes, reduce protein degradation, protect muscle from breaking

down under stress, and support cell proliferation and wound healing.<sup>6-10</sup> Clinical guidelines by the National Pressure Injury Advisory Panel (NPIAP) have recognized the importance of nutrients such as these in the healing process.<sup>11</sup>

Incorporating nutrition into wound care regimens presents unique challenges even though the benefits of nutrition in wound healing are well recognized. Wound care is often provided in outpatient clinics, while patients continue to live in their communities. This setting of care places greater burden on patients to remember to take a nutrition supplement and properly manage their diet, whereas in an inpatient setting these aspects can be more easily managed by the medical and nutrition staff. Additionally, wound care is a multifaceted healthcare challenge, often involving different types of therapy, and requiring multiple disciplines (medical, nursing, nutrition, etc) to coordinate their care. Because many physicians lack training in nutrition,<sup>12</sup> nutrition is often given little to no attention as part of a patient's wound care. This report details the efforts of the wound care team at Christian Hospital in St Louis, Missouri to reemphasize nutrition in wound care through better care coordination.

## 2. BACKGROUND ON CHRISTIAN HOSPITAL

Christian Hospital is a 220-bed tertiary care hospital serving the communities of northern St Louis County, Missouri. The Christian Hospital Wound Care and Hyperbarics Center treats approximately 100 patients during a week for chronic wounds such as diabetic foot ulcers. 70% of the clinic's patients are over the age of 65 and the majority are insured by Medicare or Managed Medicare/Medicaid. Physicians with specialties in infectious disease, primary care, general surgery, otorhinolaryngologic (ear, nose, and throat or ENT) surgery, and podiatry utilize the clinic to provide outpatient wound care.

### 3. KEY TAKEAWAYS

- Nutrition is a key component of a comprehensive wound healing approach.
- Shared patient experiences are a powerful tool for educating other patients.
- Coordination across teams, and even institutions, is vital to improving patient health.

## 4. NUTRITION PROGRAM IMPLEMENTATION

Kaylan Goldstein, RDN, the clinical nutrition manager at Christian Hospital, and Matthew Flick, MBA, the program director of the outpatient wound center, played key roles in the development of a nutrition program for wound care. Ms Goldstein's personal and professional experience led her to recognize the importance of nutrition in wound healing. She noted that supplementation with arginine, glutamine, and HMB led to "not only improved wound healing, but improved quality of life" for patients. She met with Mr Flick to develop a pilot program that would provide a 30-day supply of a nutrition supplement of arginine, glutamine, and HMB to 120 wound clinic patients. Upon completion of the pilot program, they would evaluate

the impact of the program on patients to determine whether to proceed with wider implementation.

Andria Bozzardi, RDN, volunteered to summarize the wound healing literature and develop a proposal that would provide supplementation to patients who would most benefit. Ms Bozzardi determined that patients with diabetic lower extremity wounds would most benefit from a nutrition supplement containing arginine, glutamine, and HMB.

With Ms Bozzardi's research, the team developed a treatment protocol to reemphasize nutrition in wound healing. Patients were eligible to participate in the program if they had a diabetic lower extremity wound. Eligible patients would be identified by case managers, diabetes educators, or wound care nurses in either the inpatient or outpatient setting. Patients were given a 30-day supply of the nutrition supplement upon enrollment in the program and a calendar to track their supplement use. Program patients continued to receive the standard of care at the wound clinic during weekly visits. Upon intake, a nurse would take the patient's vitals and assess the wound. The patient's physician would evaluate and debride the wound as needed, as well as make any needed adjustments to the patient's care plan. Nurses or other clinic staff would apply dressings and other prescribed/recommended treatments, such as ointments, bioengineered skin products, and hyperbaric oxygen therapy.

## 5. KEYS FOR SUCCESS

A key factor in the success of any project is achieving buy-in from all participants. Ms Goldstein noted that "It takes a village - coordination and collaboration are key in healthcare." The wound care pilot team achieved coordination and collaboration through meetings and webinars to educate stakeholders. Dietitians met with case managers, social workers, wound care nurses, and diabetes educators to educate them on the pilot program, the importance of nutrition in wound healing, and the criteria for patient participation. Ms Goldstein noted that "not everyone always understands the connection between nutrition and wound healing...the concept of healing from inside out is often missing." Stakeholders were provided samples of the nutrition supplement to taste so they could address patient concerns. Pilot program participants were educated on the importance and proper use of nutrition supplementation by nurses and dietitians.

Two key challenges in implementing the pilot program were finding patients willing to participate and coordinating care with care providers external to the Christian Hospital system. The Christian Hospital team found that some patients were concerned about their ability to complete the 30-day supplement regimen, creating a barrier to pilot program participation. However, pilot program participants sharing their experiences with fellow patients of their own accord was very helpful in overcoming this barrier and improving pilot program participation. The team provided samples to patients to allay their concerns about supplement taste and helped them develop an at-home schedule or routine. They also discussed different ways the supplement could be consumed. Home health nurses helped administer the supplement during home visits.

The team found that 20-25% of the patients resided in skilled nursing facilities, which required the team to coordinate supplement provision with the nursing facility. The Program Director, Mr Flick, noted that facilities were willing to help their patients participate in the pilot, but their involvement required an additional coordinating step in providing supplements to patients.

The team tracks several key metrics to measure the program's progress and impact. Patient wounds are measured at the commencement and completion of treatment, along with other indicators related to healing such as albumin levels and ankle brachial index. Time to wound healing and total cost of care are the key measures of program success. Although the program is still enrolling patients to reach its goal of 120 participants, early results are positive. The team noted that one patient had suffered with a wound for almost a year, with multiple vascular and surgical interventions and inpatient stays. After entering the pilot program, the patient's wound healed in 60 days.



## 6. FUTURE PLANS

As of this writing, the pilot study had enrolled approximately 60 patients and will continue to enroll until reaching its goal of 120 patients. Upon completion, the team will perform a comprehensive review and analysis of the program to evaluate its impact on patient's clinical, health, and economic outcomes. In the meantime, Christian Hospital has implemented changes to make nutrition supplementation more available to wound patients. Education on nutrition supplementation is now included in the discharge instructions for wound patients. The nutrition supplement is also available in the hospital retail pharmacy and its "meds to beds" program. Although the final analysis is yet to come, the pilot program has led to lasting changes in wound care at Christian Hospital that the team plans to continue. As noted by Leah Goldacker, the wound clinic's nurse manager, "Nutrition is a huge part of the puzzle that you need to impact wound healing."

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## METHODOLOGY

In April 2020, Kirk Kerr conducted in-person interviews with Christian Hospital registered dietitians, nurses, and wound clinic program director about the health system's nutrition pilot program and outcomes seen thus far.

### Abbott thanks the following individuals for their participation:

- Matthew Flick, MBA, Wound Clinic Program Director
- Kaylan Goldstein, RDN, Clinical Nutrition Manager
- Andria Bozzardi, RDN, Clinical Dietitian
- Leah Goldacker, RN, Wound Clinic Nurse Manager

### Christian Hospital Wound Care and Hyperbarics Center

The Christian Hospital Wound Care and Hyperbarics Center takes a comprehensive approach to the treatment of chronic, nonhealing wounds — one that's focused on healing. Through our partnership with Healogics, Christian Hospital Wound Care and Hyperbarics Center has the expertise and advanced tools to completely heal wounds that have resisted other conventional treatments. To provide our patients with comprehensive care, the Christian Hospital Wound Care and Hyperbarics Center uses an interdisciplinary approach, including infectious disease management, laboratory evaluation, vascular intervention, nutritional assessment, pain management, diabetic education, radiology testing, and surgical debridement. Partnering with Healogics allows us to utilize evidence-based medicine in treating our patients.

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