



# Parenteral Nutrition for Chronic Wound Healing: A Case Study

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## BACKGROUND:

Pressure ulcers and chronic wounds impact the patient's quality of life, contribute to rapid mortality, and pose a significant cost to health-care organizations. Approximately 60,000 patients die each year from pressure ulcers. Some key risk factors in the development of pressure ulcers and impaired wound healing are nutritional deprivation and insufficient dietary intake (Mahmoodpoor et al., 2018).

### Complex Patient Profile

A 60-year-old male presented with a stage IV sacral pressure ulcer following a prolonged hospitalization.

### Multiple Medical Conditions

History of osteomyelitis, atypical hemolytic uremic syndrome (HUS), cerebrovascular accident (CVA), quadriplegia, and nonverbal status.

### Care Challenges and Needs

Complex conditions require multidisciplinary wound management and tailored interventions for healing.

## TREATMENT STRATEGIES UTILIZED:

### Advanced Wound Care Techniques

Techniques included negative pressure wound therapy and customized dressings.

### Pressure Offloading Methods

Pressure-offloading was achieved through the use of air fluidized beds and specialized wheelchair cushions to help redistribute pressure and prevent further tissue damage.

### Challenges in Healing

Persistent infection, immobility, and communication barriers.

### Need for Comprehensive Care

Ongoing evaluation and alternative treatments emphasize patient-centered approaches for chronic wounds.

## NUTRITION ASSESSMENT:

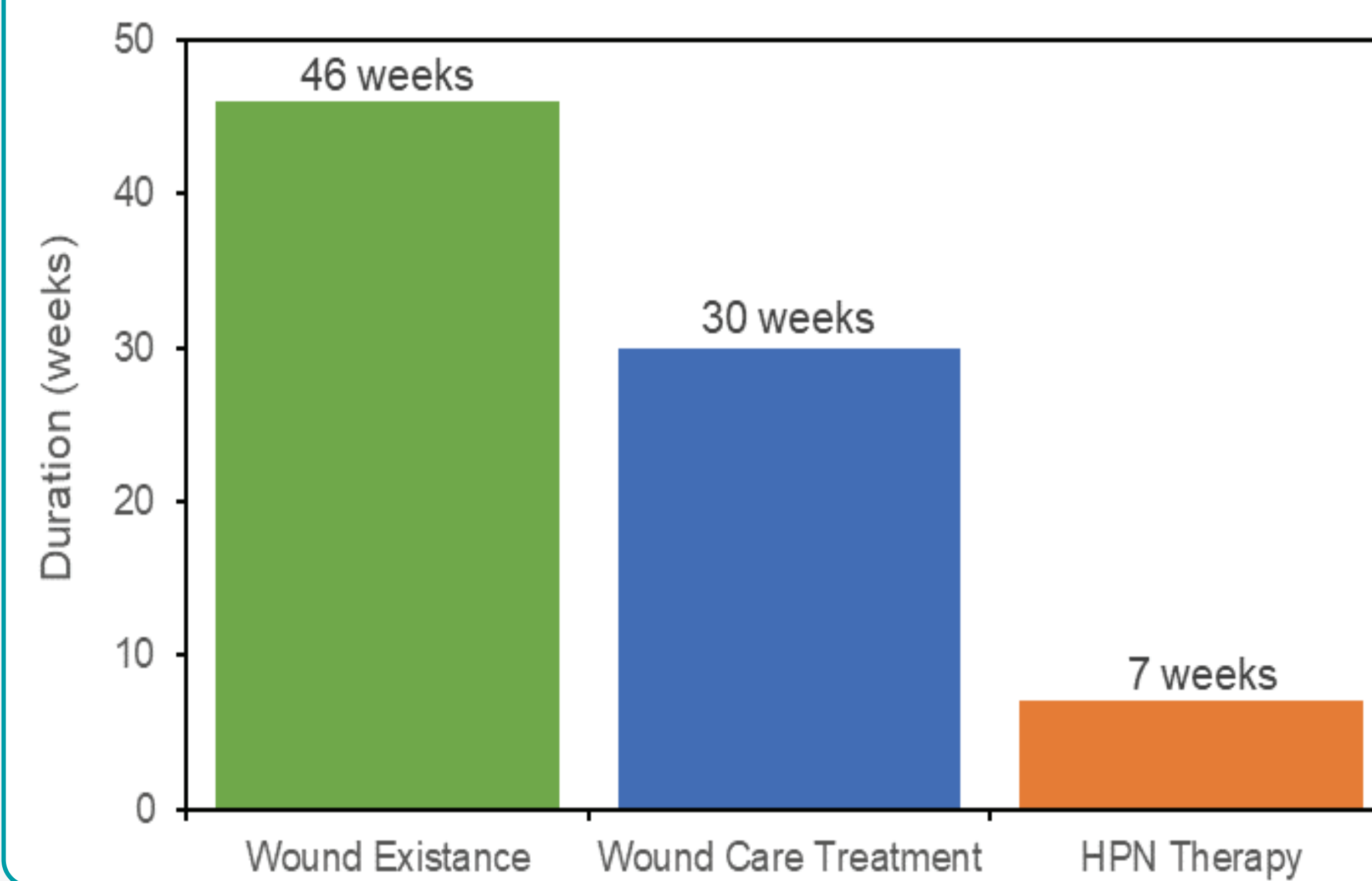
In January 2025 the patient was transitioned from oral nutrition with supplements to enteral feeding via feeding tube. The patient was monitored over a course of 5 weeks following transitioning to enteral feedings.

**Despite the patient receiving 112% of protein and 151% of caloric requirements, wound healing remained minimal, and albumin levels stayed at the low end of normal.**

Laboratory assessments showed no measurable improvement during this period. These findings suggested that despite adequate macronutrient intake, the patient's nutritional status was not translating into improved wound healing outcomes.

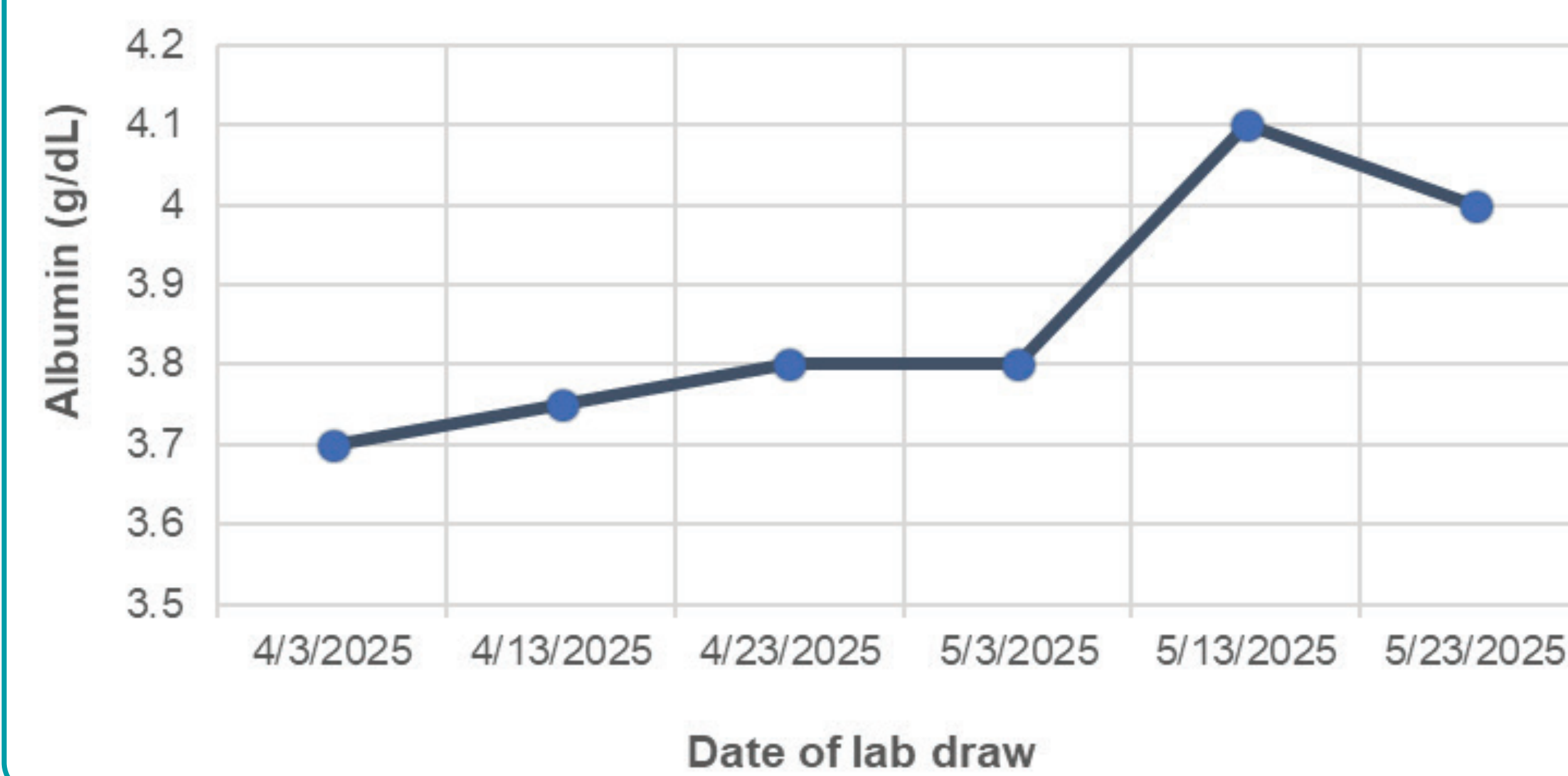
As a result, a **Home Parenteral Nutrition (HPN)** recommendation was submitted to the patient's wound care provider, initiating a more targeted and intensive nutritional strategy.

Treatment and Therapy Durations

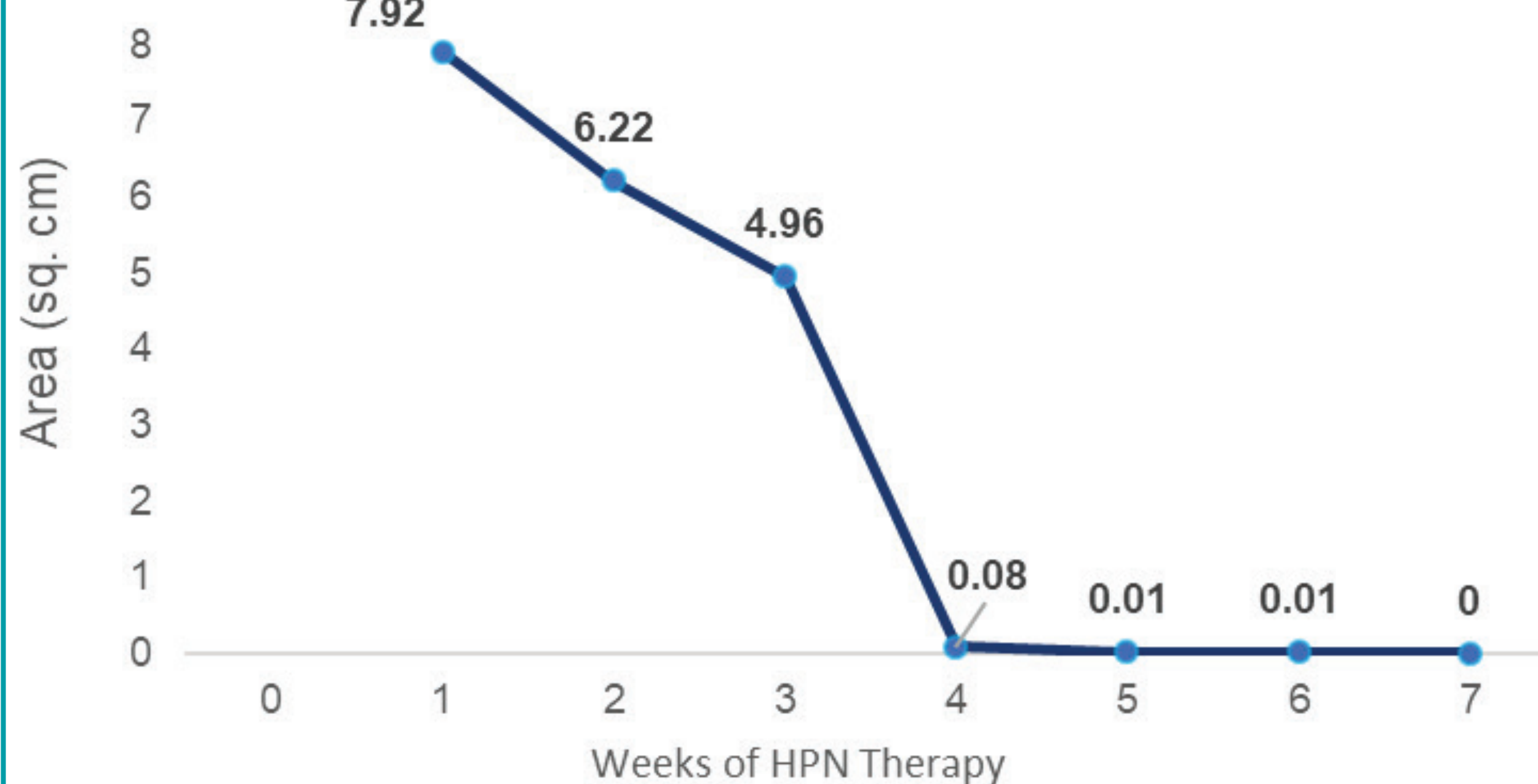


Albumin Levels

(3.5-5g/dL)



Wound Area (sq. cm)



## HPN IMPLEMENTATION AND MONITORING:

Home Parenteral Nutrition (HPN) was initiated in April 2025 to support wound healing. The patient received HPN via a central venous catheter, infused overnight for 12 hours daily. Laboratory values were closely monitored to guide individualized adjustments to the parenteral nutrition formula. The patient's care was coordinated through a multidisciplinary team, including:

- **Weekly monitoring** by home healthcare professionals including pharmacists and nurses
- **Monthly nutritional assessments** conducted by a Registered Dietitian

This structured approach ensured optimal nutrient delivery and clinical oversight throughout the course of therapy.

## OUTCOMES:

By May 2025, the patient completed their final visit to the wound care clinic. At that time, the wound was fully healed. The patient was formally discharged from the center and HPN was discontinued.

## CLINICAL INSIGHTS:

The patient's nutritional status is a critical factor in the wound healing process. Evidence suggests that increased protein intake can significantly improve healing outcomes in individuals with chronic wounds. When nutritional needs are not adequately addressed, there is an associated increase in both morbidity and mortality (Mahmoodpoor et al., 2018).

In this case study, HPN provided targeted nutritional support, enabling wound healing where oral and enteral nutrition had failed. HPN allows for a fully customizable nutrient formulation, tailored to the patient's specific needs by a Registered Dietitian and Pharmacist. This approach ensures the delivery of essential nutrients required to support and accelerate the healing process. This case underscores the importance of individualized nutrition strategies in managing chronic, non-healing wounds – particularly when conventional nutrition strategies, including oral and enteral feeding fail to produce measurable clinical improvement.

## REFERENCES:

Mahmoodpoor, A., Shadvar, K., Sanaie, S., Saghaleini, S., Dehghan, K., & Ostadi, Z. (2018). Pressure Ulcer and Nutrition. *Indian Journal of Critical Care Medicine*, 22(4), 283–289. [https://doi.org/10.4103/ijccm.ijccm\\_277\\_17](https://doi.org/10.4103/ijccm.ijccm_277_17)