



# Prevalence of Malnutrition in Diabetic Foot Ulceration Patients Using the Academy of Nutrition and Dietetics and American Society of Parenteral and Enteral Nutrition Recommended Diagnostic Characteristics



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## Statement of Purpose

Adult malnutrition is common but often unrecognized with its incidence and prevalence difficult to determine. Recognizing the need to standardize the approach to the diagnosis of malnutrition, the Academy of Nutrition and Dietetics and American Society of Parenteral and Enteral Nutrition (ASPEN) identified characteristics recommended for the diagnosis of adult malnutrition. This study aims to identify the prevalence of malnutrition in patients with diabetic foot ulcerations using these diagnostic criteria.

## Methodology

All patients who present to Edward Hines, Jr. VA hospital for management of their diabetic foot ulcer and who consent to enrollment are selected. Patients under the age of 18 and those previously treated for malnutrition are excluded.

## Literature Review

Diabetic foot ulcerations are a common problem for which medical assistance is sought with the lifetime risk of developing one at 15%.<sup>1</sup> The presence of a wound can impact a patient's nutritional status due to nutrient losses via wound exudate and the metabolic cost of repairing tissue damage.<sup>2</sup> Resulting malnutrition has been related to decreased wound tensile strength and increased infection rates.<sup>4</sup>

## Literature Review (cont)

Adult malnutrition is a common but frequently unrecognized problem whose incidence and prevalence are difficult to determine.<sup>5</sup> There is currently no single, universally accepted approach to the diagnosis and documentation of adult malnutrition. Current estimates of the prevalence of adult malnutrition range from 15%–60% depending on the patient population and criteria used to identify its occurrence.<sup>3</sup> Recognizing the need to standardize the approach to the diagnosis of malnutrition, the Academy of Nutrition and Dietetics and American Society of Parenteral and Enteral Nutrition identified characteristics recommended for the diagnosis of adult malnutrition.<sup>6</sup>

## Procedures

Participants are examined by a registered dietitian and using the ASPEN recommended diagnostic criteria, patients are evaluated for malnutrition. 2 or more of the following 6 characteristics is recommended for the diagnosis of malnutrition: insufficient energy intake, weight loss, loss of muscle mass, loss of subcutaneous fat, localized or generalized fluid accumulation, diminished functional status as measured by handgrip strength.<sup>6</sup>



Figure 1: testing handgrip strength

## Results

Target enrollment is 50 patients. 10 patients have been enrolled and evaluated thus far with 1 patient receiving diagnosis of malnutrition. At this time, the prevalence of malnutrition in this patient population is calculated to be 10% (95% CI [0.0179, 0.4042]).

## Analysis and Discussion

Malnutrition is a well-documented predictor of adverse wound healing and surgical outcomes in diabetic patients.<sup>2</sup> Research to date has focused on other clinical criteria and lab values to identify malnutrition in this patient population.

## Analysis and Discussion (cont)

Laboratory tests, such as albumin and pre-albumin, do not specifically indicate malnutrition and do not typically respond to feeding interventions. Thus, the relevance of laboratory tests, as indicators of malnutrition, is limited.<sup>6</sup>

The most significant limitation of this study is the small sample size; however, this study remains in progress and more patients continue to be enrolled. Preliminary results show a lower prevalence of malnutrition in this patient population (10%) vs the general adult patient population (which is estimated to be anywhere from 15%–60%).<sup>5</sup> Further enrollment to adequately power the study will provide more reliable results.

## References

1. Boulton AJ, Kirsner RS, Vileikyte L: Clinical practice. Neuropathic diabetic foot ulcers. *N Engl J Med* 351:48–55, 2004.
2. Corcoran MA, Moore ZEH. Systemic nutritional interventions for treating foot ulcers in people with diabetes (Protocol). Cochrane Database of Systematic Reviews 2014, Issue 11. Art. No.: CD011378. DOI: 10.1002/14651858.CD011378.
3. Litchford M. Nutritional issues in the patient with diabetes and foot ulcers. In: Bowker JH, Pfeifer MA eds. *Levin and O'Neal's The Diabetic Foot*, 7th ed. Philadelphia: Mosby Elsevier, 2008: 199–217.
4. Stechmiller, JK. *Nutr Clin Pract*. 2010 Feb;25(1):61-8. Understanding the role of nutrition and wound healing.
5. Jensen GL, Bistrian B, Roubenoff R, Heimbarger DC. Malnutrition syndromes: a conundrum vs continuum. *JPEN J Parenter Enteral Nutr*. 2009;33:710-716.
6. Consensus Statement: Academy of Nutrition and Dietetics and American Society for Parenteral and Enteral Nutrition: Characteristics Recommended for the Identification and Documentation of Adult Malnutrition (Undernutrition)