



# The Effect of Tobacco Use on Skin Perfusion Pressure and Wound Healing: A Single-Center Evaluation of Lower Extremity Wound Patients

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## Introduction

Tobacco use can impede or prolong healing. Wound care centers must evaluate for this factor as patient compliance is often a confounder in the healing cascade, despite informing patients of their risk. As we define/improve sophisticated algorithms optimizing point-of-care noninvasive vascular testing to augment patient care, we can initiate treatment plans earlier and enhance patient healing. We determined to examine the relationship between tobacco use, healing rates, and test measurement results from the SensiLase® System (Vasamed, Eden Prairie, MN), an automated modality that assesses lower extremity vessel and distal arterial health, to ascertain if associations could be identified.

## Methods

Our single site, Institutional Review Committee approved investigation was a prospective nonrandomized evaluation of 100 patients presenting with lower extremity wounds. The primary study, evaluating paired technologies for time-motion/predictive capabilities, demonstrated greater time efficiencies and higher healing prediction rates with Skin Perfusion Pressure technology compared to other modalities. Our current sub-analysis reveals that over 40% of our study population admitted to either current or remote history of tobacco use. This subset was further assessed for correlation with diabetes and/or chronic renal insufficiency, mean test measurement outcomes, and wound healing rates.

Figure 1: Demographics

Variable	(n=100)	Range	SD
Age (mean)	69.3	20-96	16.6
BMI (mean)	28.04	13.4-48.8	6.7
*Underweight (Below 18.5)	6	-	-
*Normal (18.5-24.9)	27	-	-
*Overweight (25.0-29.9)	30	-	-
*Obese (30.0 & above)	37	-	-
Female	54	-	-
Diabetes Mellitus	48	-	-
Kidney Disease	10	-	-

\*Per CDC Guidelines for Interpretation

## Results

Demographics for the primary study population are presented in Figure 1. Tobacco use distribution is identified in Figure 2. Overall healing rates by tobacco use status are illustrated in Figure 3. Current tobacco use defined as less than or equal to 30-days compared to remote history defined as greater than 30-days was approximately 25% and 75% respectively. Our subset cohort was additionally notable for a higher than normal co-morbid disease rate (diabetes and/or kidney disease) of greater than 50%. No substantial differences were observed in healing rates between current and remote tobacco use despite the documented vasoconstrictive properties of tobacco. Overall tobacco use patients demonstrated surprisingly "normal" mean skin perfusion pressure measurements and high healing rates (Figure 4).

Figure 2

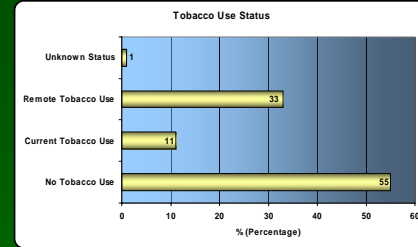


Figure 3

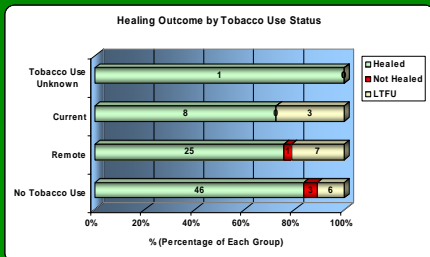


Figure 4

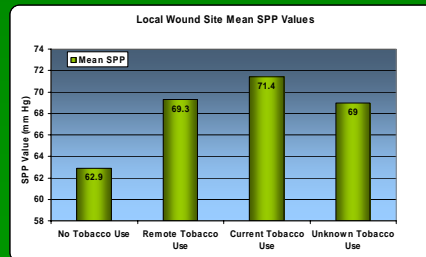
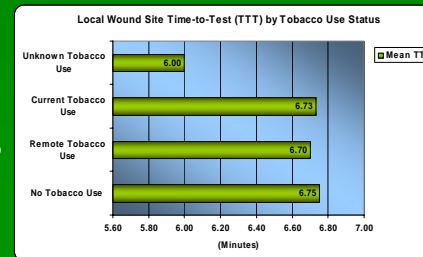


Figure 5



## Conclusion

Our analysis demonstrates that Skin Perfusion Pressure is a time efficient (Figure 5) and highly useful tool that can effectively help guide successful treatment in patients presenting with lower extremity wound regardless of their tobacco use status.

The SensiLase® System



Clinical Outcome: Diabetic Foot Ulcer

