

Assessment of Wound Surface Area Measurements Using Clinically Validated AI-based Technology and Manual Evaluation Methods and Impact on Debridement Codes Billing and Reimbursement Cost

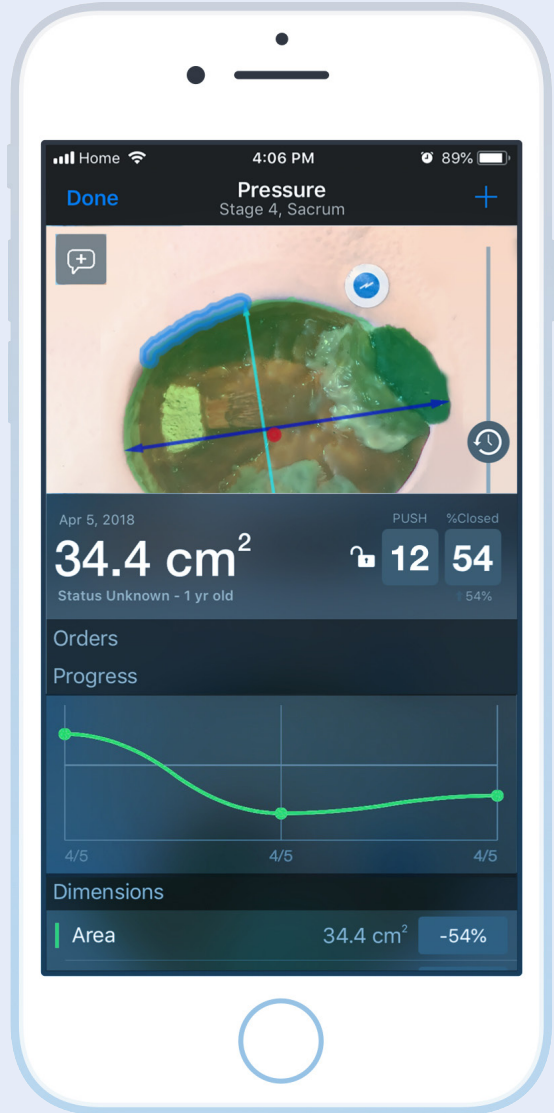
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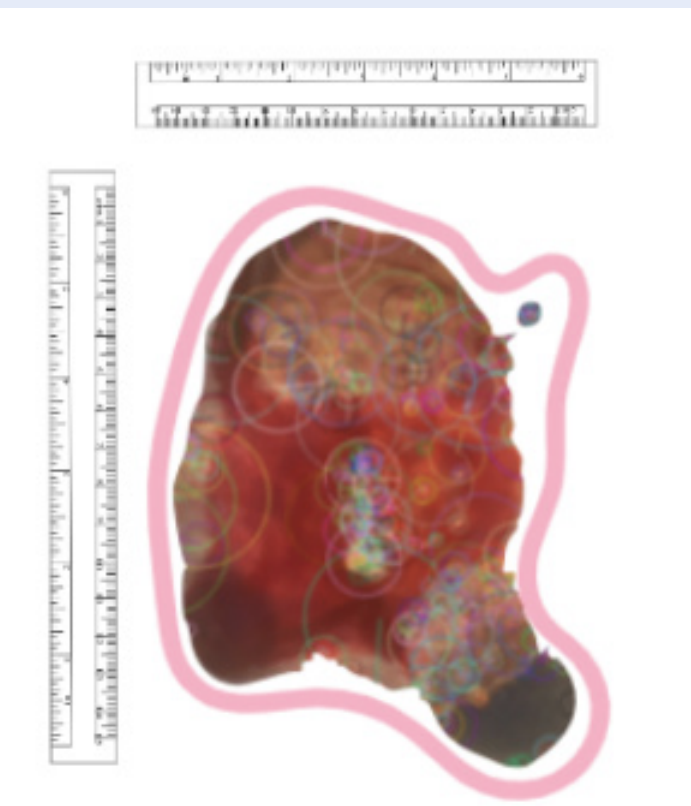
Introduction

- In clinical practice, a manual paper ruler (MPR) is the most commonly used method to determine wound area measurements.¹ Wound's surface area is usually calculated by multiplying the wound's width and length (W x L).¹
- W x L assumes all wounds fit a rectangular model, rendering an inconsistent and inaccurate wound area.¹
- Evidence considers digital wound assessment tools a quick, accurate way to measure wounds.^{1,2,3,4,5}



Digital Vs. Manual Wound Measurement

- Swift Skin and Wound is a non-invasive wound assessment solution that captures high-precision wound images and measurements. The solution integrates Artificial Intelligence (AI) technologies that automatically calculate surface area while accounting for the complex reality of their shape, size and location, regardless of the position or degree of lightning.⁶
- From 2012 to 2017, there was a 32% increase in submissions of debridement reimbursements for Medicare beneficiaries, which increased the expenditure for these procedures by 24%.⁷
- It is imperative to accurately measure wound areas to avoid overbilling and extra costs associated with the debridement procedures, especially with the increased utilization of debridement billing codes.



Objective

This quality improvement study was conducted to investigate the following:

- The discrepancy in wound area measurements using MRP and digital wound care assessment methods in a real-world environment.
- The effect of different wound characteristics on area measurements using both methods.
- The proportion of debridement codes submitted for reimbursement and the claimed costs by assessment method.

Methodology

Setting and Methods of Wound Assessment

- As part of the routine wound assessment at Abrazo West Campus Wound Care Clinic in Arizona, US, all wounds referred to the clinic in May 2022 were assessed using a MPR method. Wound's manual width, length and calculated surface area (W x L) were recorded.

- Assessments were repeated during the same wound evaluation session using the Swift Medical application that automatically calculates surface area using the boundaries of the wound edges.

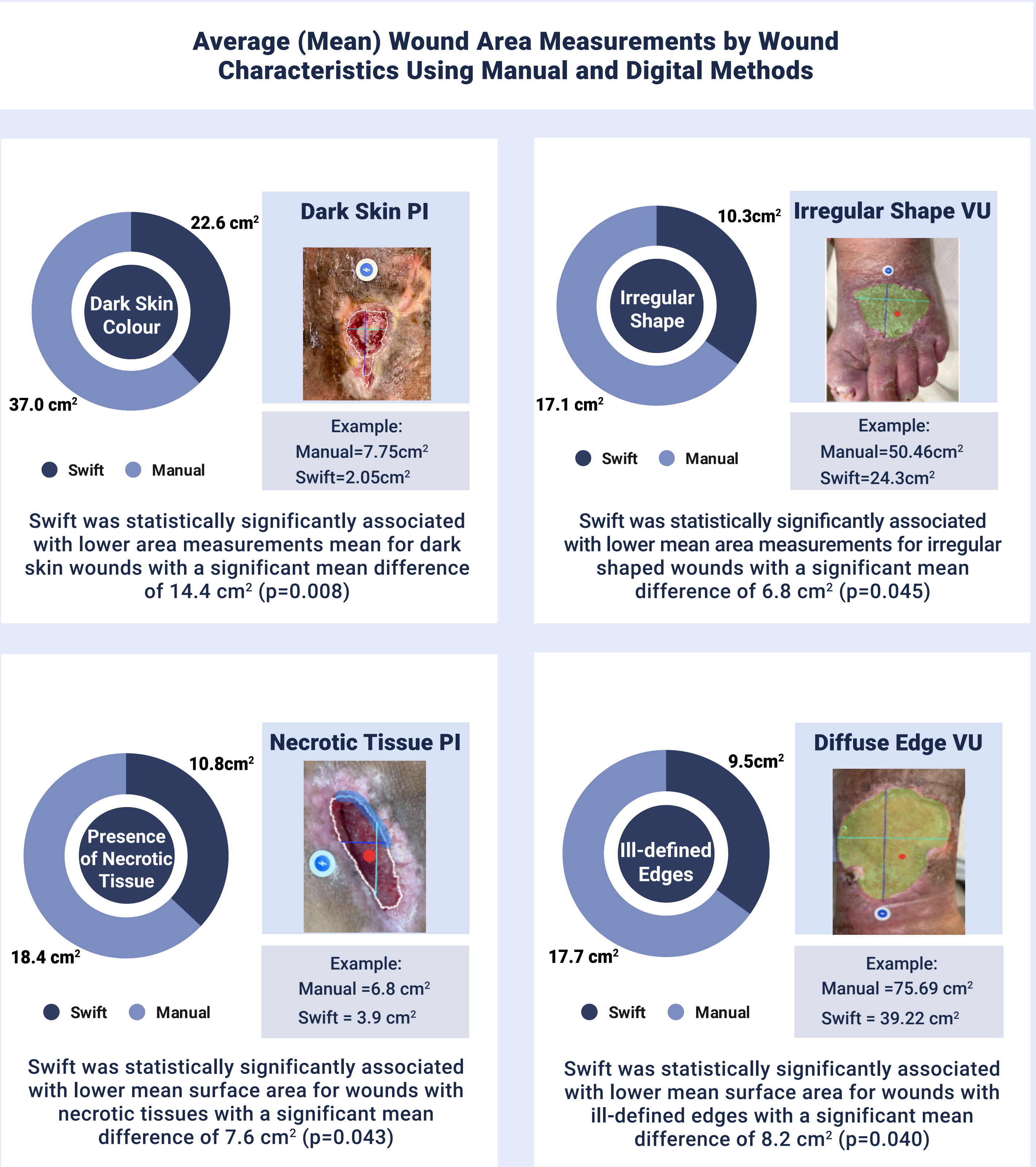
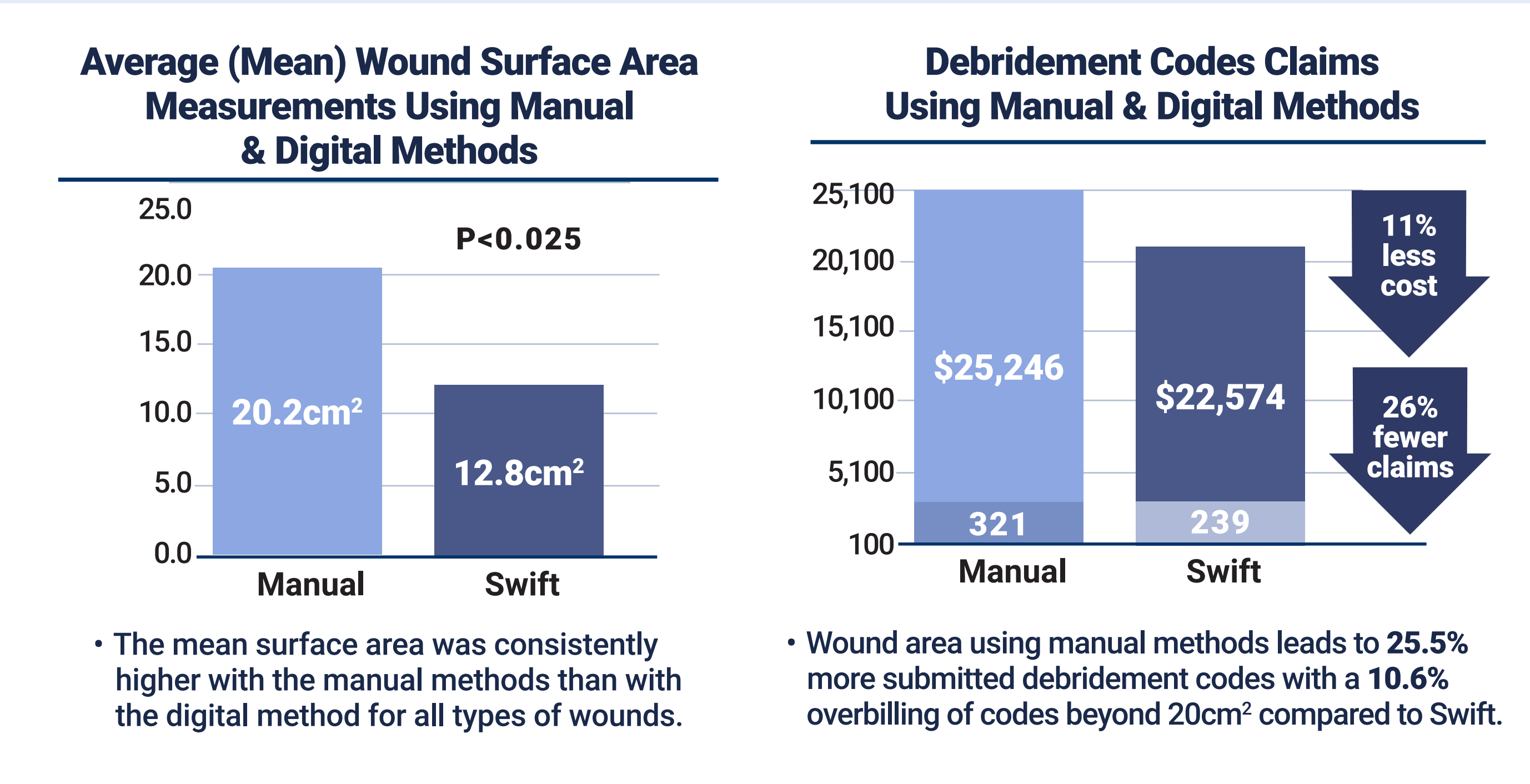
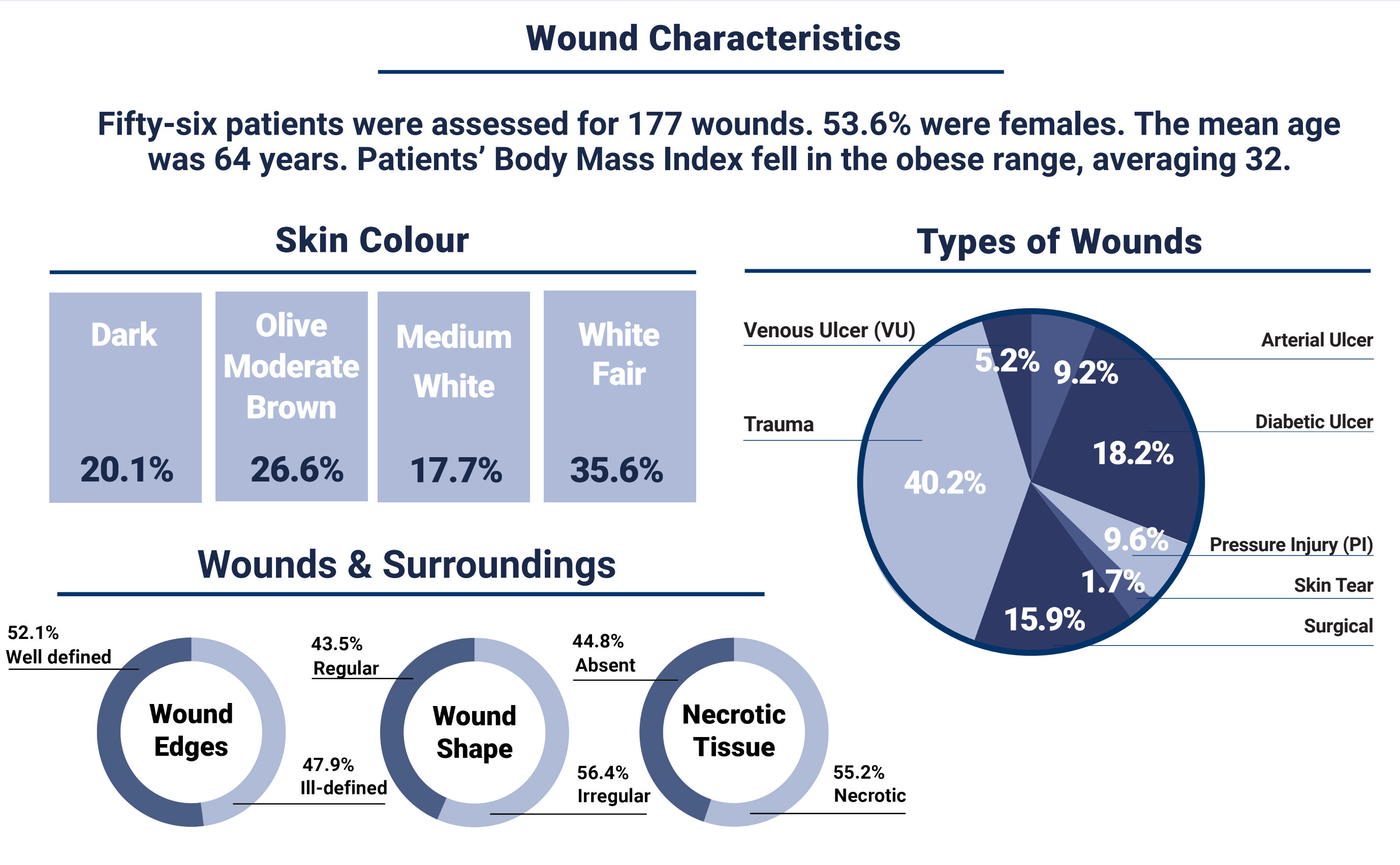
Wound Characteristics

- Skin color tone, wound edges, wound shape, type of surrounding tissues and the presence/absence of necrotic tissue were recorded.

Debridement Codes

- The number of submitted surgical and selective debridement codes and reimbursement costs linked to each claimed CPT code (97597, 97598, 11042 and 11045), if any, were calculated based on each 20 cm² surface area calculated for both manual and digital methods.

Results



Discussion

- Our study found that MPR method overestimated the wound size by 36.6% compared to digital planimetry measurement. This supports the need to move away from monitoring wound surface area using length and width multiplication (L x W) measurement.
- Patient wounds with dark skin tones, irregular-defined edges, irregular shapes, unhealthy surroundings and necrotic tissues were significantly overestimated by manual measurements.
- More accurate wound measurement and tracking through digital planimetry may help monitor treatment progress and identify wounds at risk of healing earlier, preventing clinical complications.
- Using manual methods for claims would result in 10.6% overbilling. If we estimate current wound care debridement costs at approximately \$49M,⁷ then reducing billing by 10.6%, as seen in this study, could save Medicare \$4.9M.

Using digital planimetry in wound assessment is critical to ensure wound measurement accuracy, which promotes better monitoring of healing progress and risk management.

References

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