

# Impact of Wound Hygiene Incorporating an Advanced Antimicrobial Gelling Fiber Dressing On Hard-to-Heal Diabetic Foot Ulcers

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## Introduction

- Hard-to-heal wounds are a major challenge to healthcare systems globally<sup>1</sup>
  - Estimated prevalence of 2.21 per 1,000 population<sup>2</sup>
  - Associated with reduced patient health-related quality of life and substantial economic burden<sup>3,4</sup>
- Biofilm is strongly implicated in hard-to-heal wounds<sup>5</sup>
  - At least 78% of hard-to-heal wounds are estimated to harbor biofilm<sup>6</sup>
  - Biofilm protects microorganisms from antibiotics, antiseptics, and the host immune response<sup>5</sup>
- Wound Hygiene (WH) is 4-step standardized and repetitive approach to biofilm management and wound care (Fig 1)<sup>7-9</sup>
  - Developed by an international panel of wound care specialists
  - Allows biofilm-based wound care to administered early, safely, and consistently in any clinical setting

**Figure 1. Wound Hygiene protocol**



## STUDY OBJECTIVE

To evaluate the impact of Wound Hygiene (incorporating an advanced antimicrobial dressing\*) on hard-to-heal diabetic foot ulcers

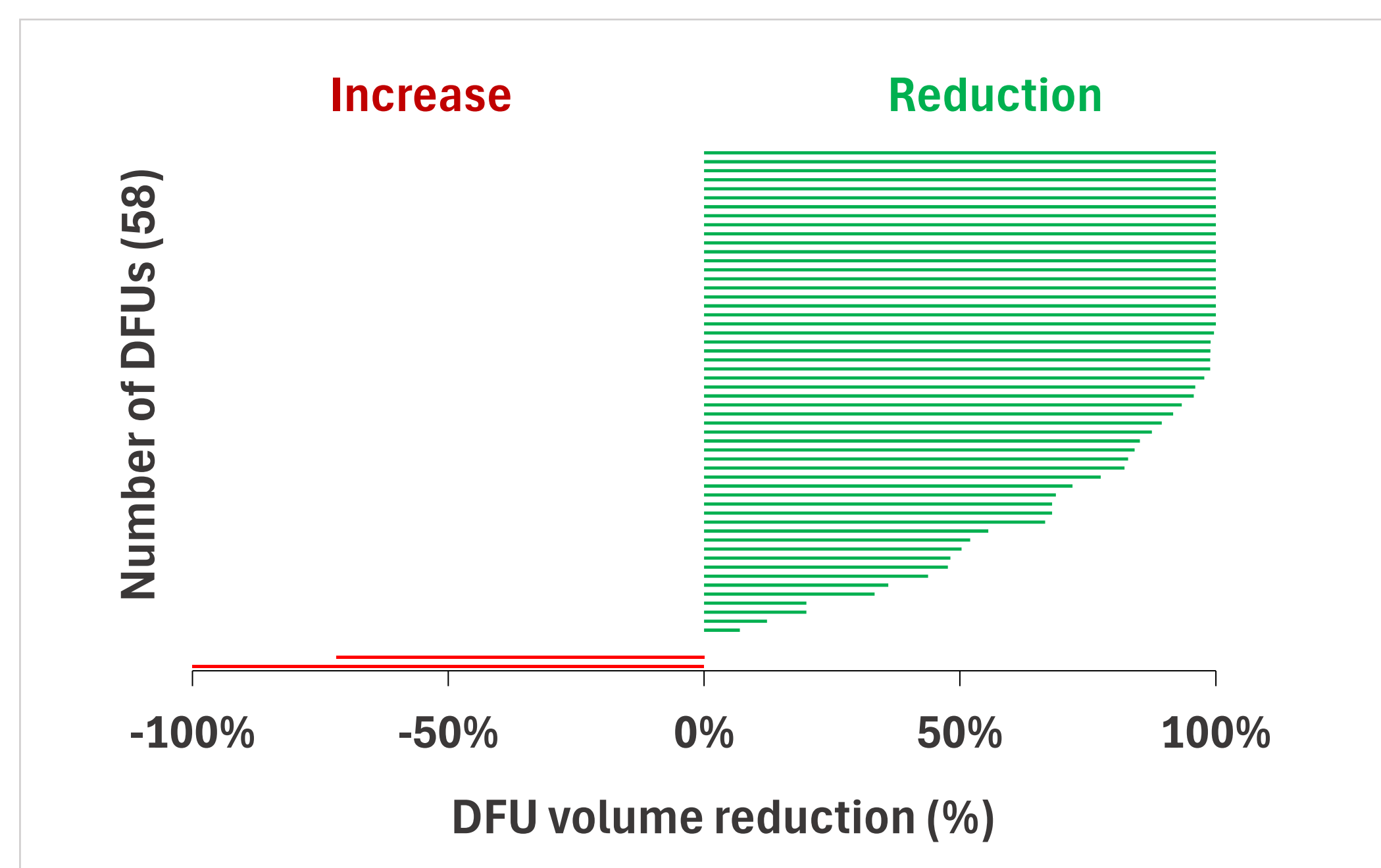
## Methods

- A subgroup analysis of patients with diabetic foot ulcers (DFUs) in a prospective, real-world analysis of hard-to-heal wounds managed with Wound Hygiene
- Patients were enrolled from different wound care settings across Spain, Italy, the United Kingdom, Poland, the Netherlands, and Portugal
- Between April 01, 2021 and 31 December 31, 2022, patients were managed with Wound Hygiene (incorporating an advanced antimicrobial CMC dressing containing ionic silver, EDTA and BEC\*) for approximately 4 weeks or as deemed clinically appropriate
- The primary endpoint was change in DFU volume from baseline to final assessment
- Secondary endpoints were qualitative changes in exudate levels, suspected biofilm<sup>10</sup>, signs of local infection<sup>10</sup>, and overall wound status

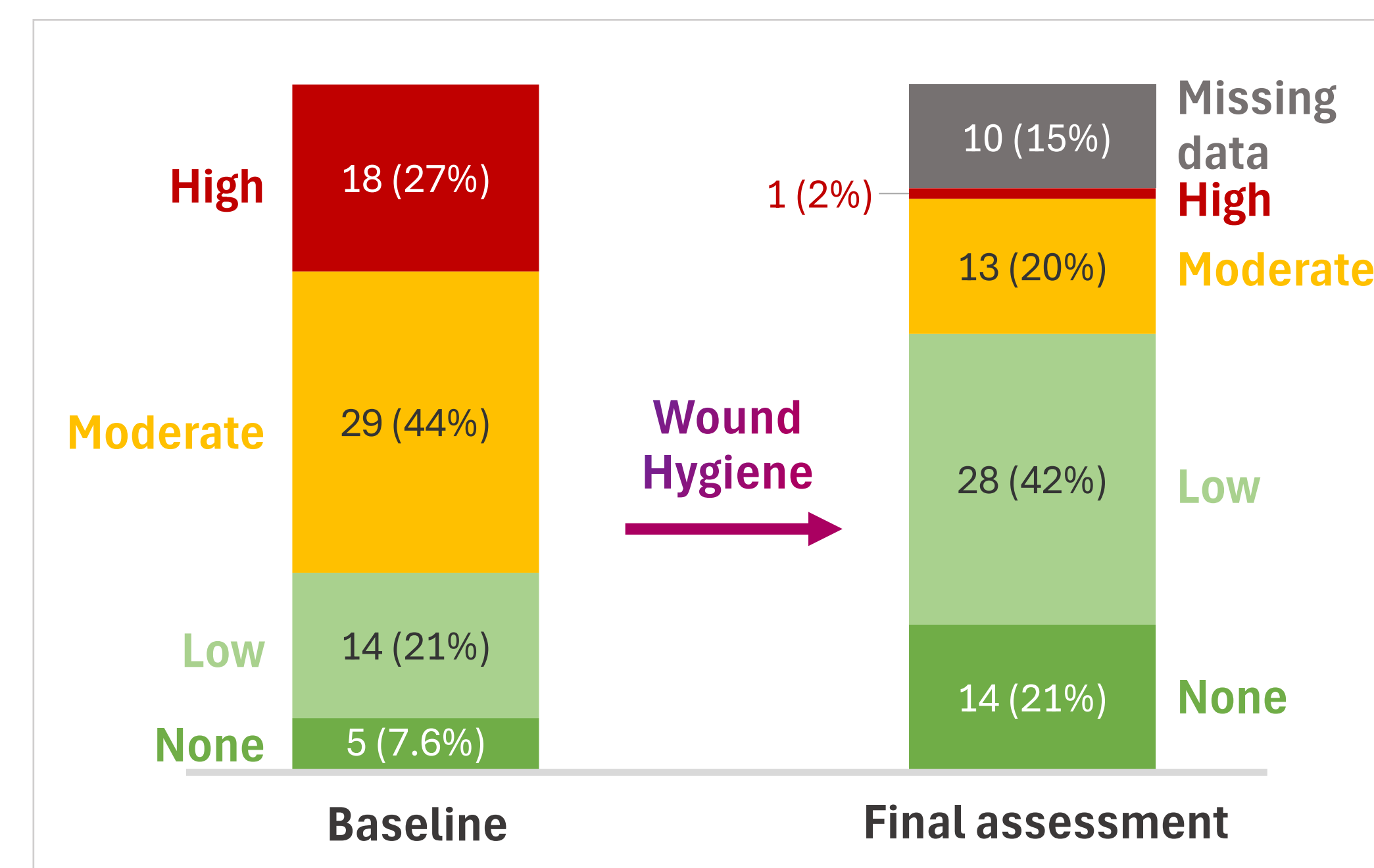
## Results

- A total of 66 DFUs were included in this analysis (median Wound Hygiene treatment duration 35 days)
- Of 58 DFUs with baseline and final wound volume assessments, 20 (34%) had a 100% reduction in wound volume, and 86% had at least one-third volume reduction (Fig 2)
- Mean DFU volume reduced from 37.9 cm<sup>3</sup> at baseline to 3.3 cm<sup>3</sup> (91% reduction) at final assessment ( $p < 0.001$ )
- Exudate levels shifted from predominantly moderate (44%) or high (27%) at baseline to predominantly low (42%) or none (21%) at the final assessment (Fig 3); change was significant ( $p < 0.0003$ ) in McNemar's test
- Suspected biofilm<sup>10</sup> was 83% at baseline and 24% at final assessment (Fig 4) ( $p < 0.001$ )
- Signs of local infection<sup>10</sup> were present in 47% of DFUs at baseline, which had reduced to 3.0% at final assessment (Fig 5) ( $p < 0.001$ )
- At the final assessment, most DFUs had improved (70%) or healed (18%), and only a small proportion were deteriorating (18% → 4.5%) or static (47% → 6.1%) (Fig 6)

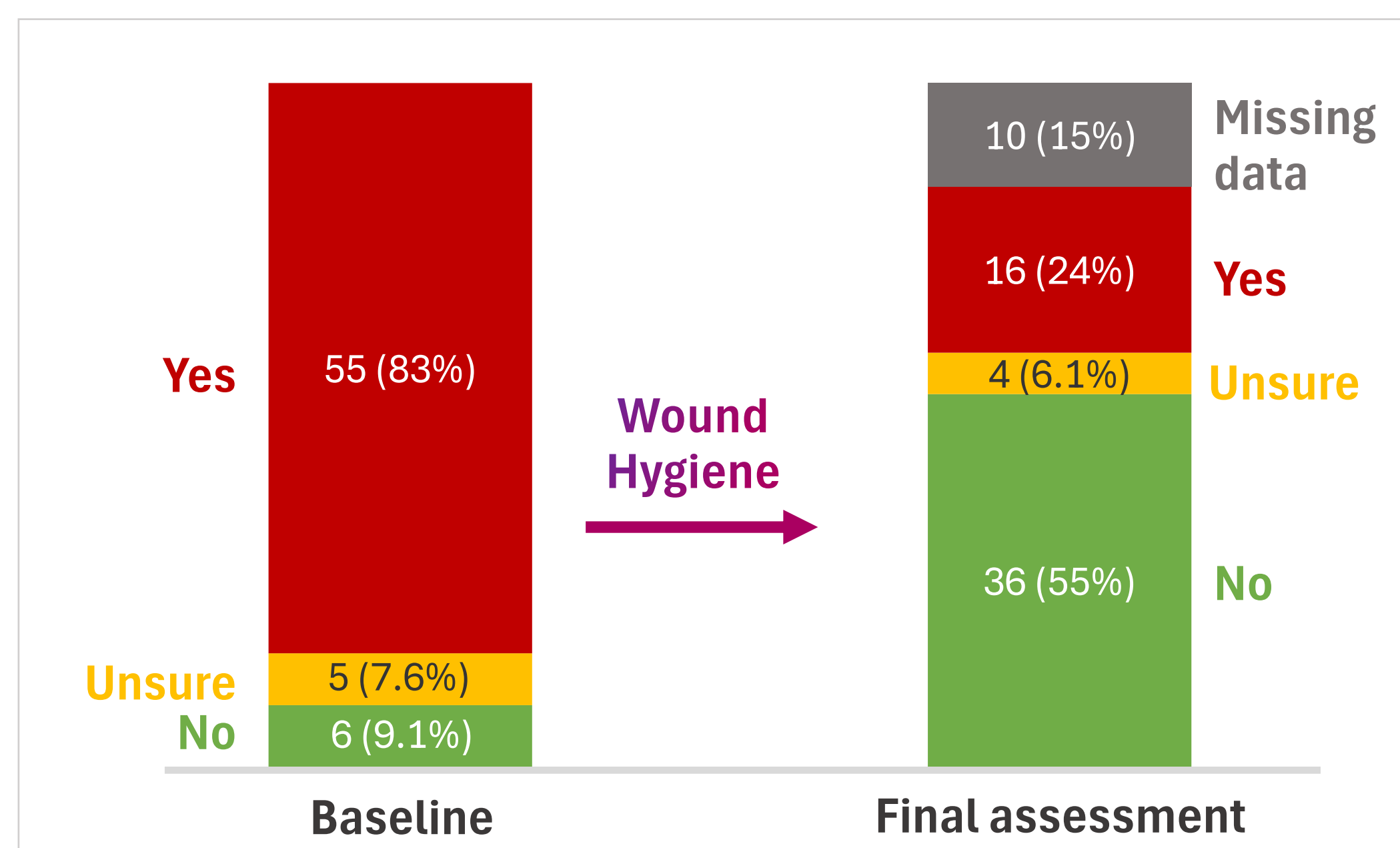
**Fig 2. Percentage change in DFU volume**



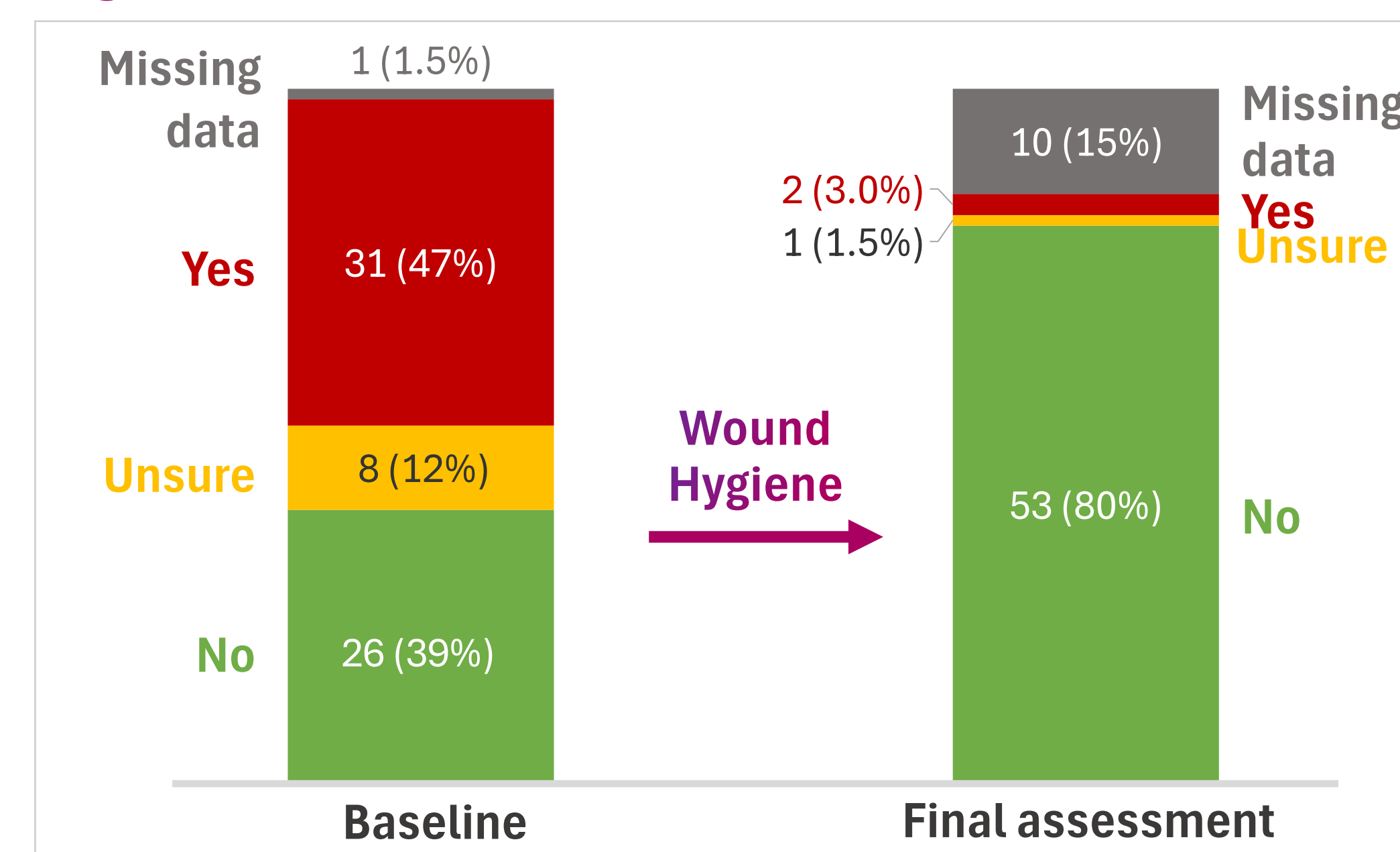
**Fig 3. Wound exudate**



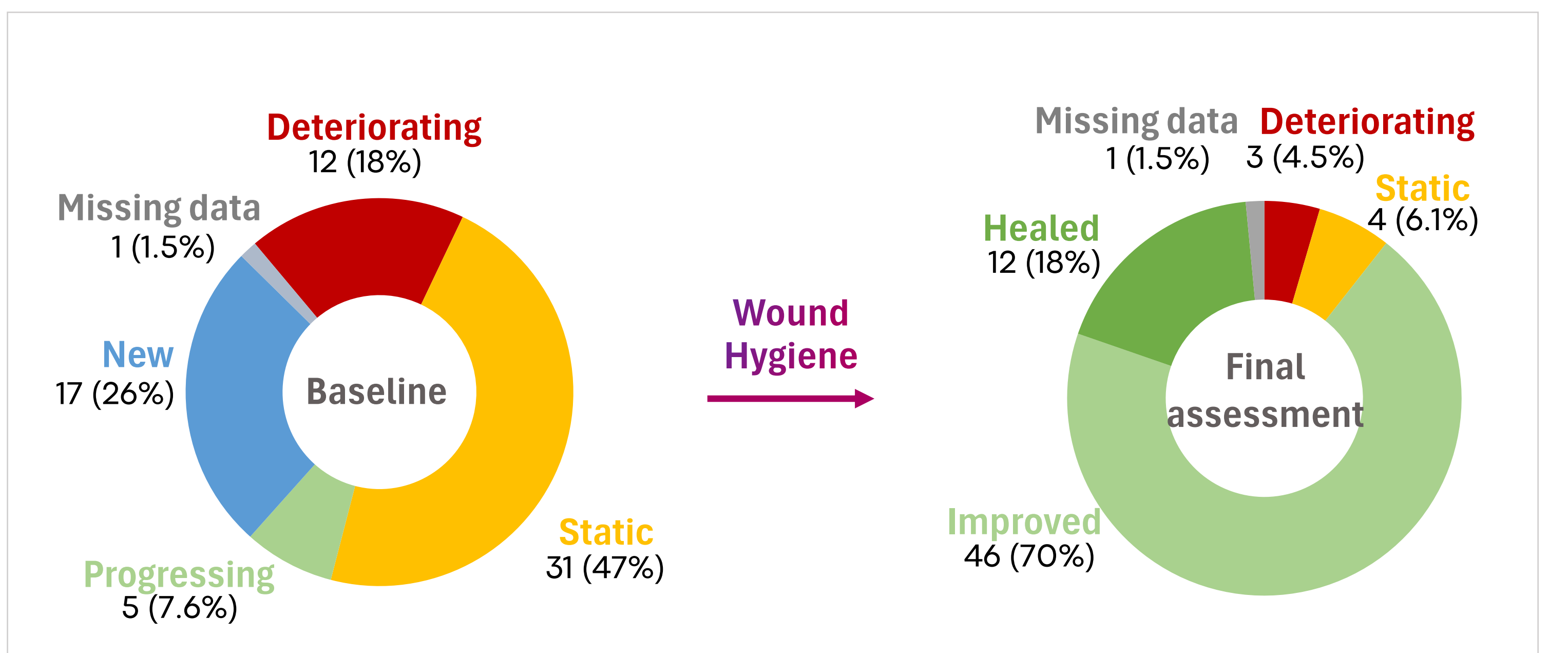
**Fig 4. Suspected biofilm<sup>10</sup>**



**Fig 5. Local infection<sup>10</sup>**



**Fig 6. Wound status**



## Discussion

- Management with Wound Hygiene resulted in healing or improvement in nearly all hard-to-heal DFUs, and a statistically significant decrease in wound volume, exudate level, suspected biofilm<sup>10</sup>, and local infection<sup>10</sup>
- Incorporation of an advanced antimicrobial dressing\* into Wound Hygiene protocols may further facilitate wound healing by helping to reduce overall bioburden
- Wound Hygiene addresses the local barriers to healing (i.e., biofilm), and can help minimize variation in biofilm-based wound care across different clinical settings

## CONCLUSION

Our findings suggest that the Wound Hygiene protocol incorporating an advanced antimicrobial dressing at step 4 is an effective treatment strategy for hard-to-heal diabetic foot ulcers

## References & Footnotes

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\*Aquacel® Ag+ Extra™ (Aquacel Ag Advantage in the United States).

**Abbreviations:** CMC: carboxymethylcellulose; BEC: benzethonium chloride; HCP: healthcare professional; EDTA: ethylenediaminetetraacetic acid.