

Impact of Wound Hygiene incorporating an advanced antibiofilm gelling fibre dressing on hard-to-heal wounds treated with antibiotics

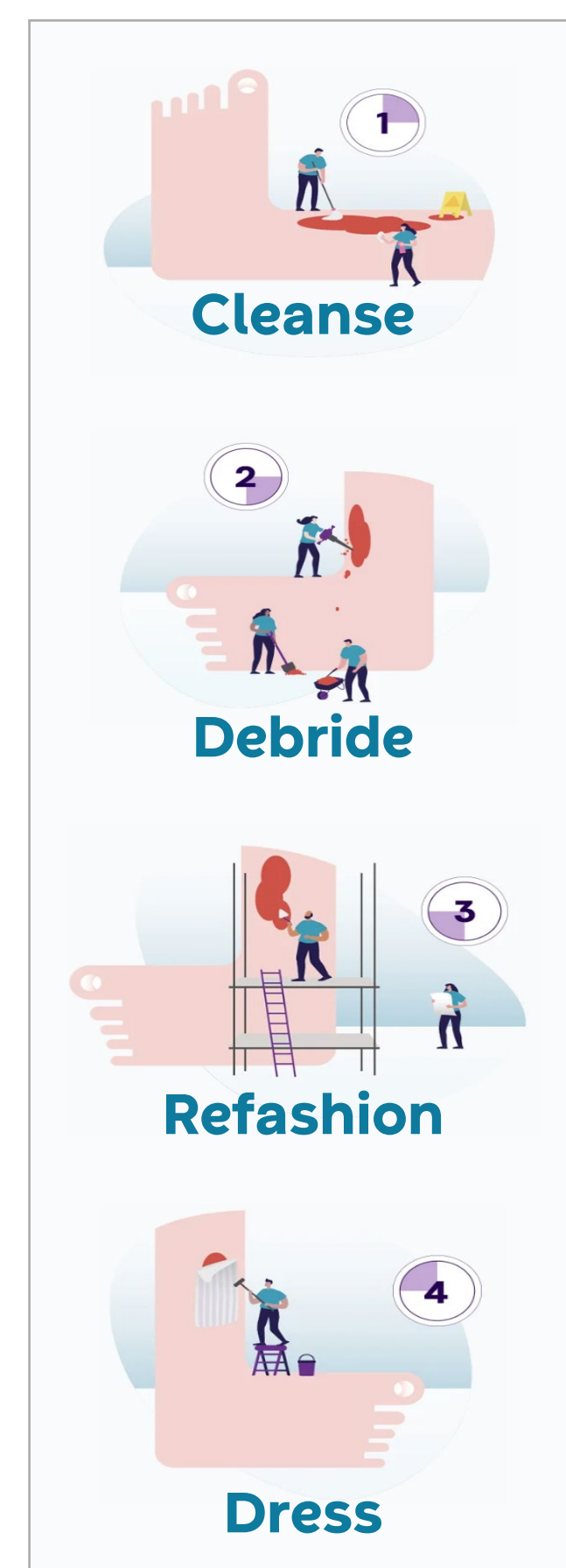
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Background

- Hard-to-heal wounds are a major challenge to healthcare systems globally¹:
 - Estimated prevalence of 2.21 per 1,000 population²
 - Associated with reduced patient health-related quality of life and substantial economic burden^{3,4}
- Bioburden has long been implicated in hard-to-heal wounds⁵:
 - At least 78% of hard-to-heal wounds estimated to have biofilm⁶
 - Biofilm protects microorganisms from antibiotics, antiseptics and the host immune response⁵
- Wound Hygiene is 4-step standardized approach to biofilm management and wound care (Figure 1)⁷⁻⁹:
 - 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



Objective

To evaluate the impact of Wound Hygiene (incorporating an advanced antibiofilm gelling fibre dressing*) on hard-to-heal wounds treated with antibiotics

Methods

- A subgroup analysis of patients treated with antibiotics 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 01 April 2021 and 31 December 2022, patients were managed with Wound Hygiene (incorporating a CMC dressing containing ionic silver, EDTA and BEC*) for approximately 4 weeks or as deemed clinically appropriate
- Primary endpoints were signs of local infection (clinical signs and symptoms¹⁰), change in wound volume from baseline to final assessment, and overall wound status
- Secondary endpoints were qualitative changes in suspected biofilm¹⁰ and exudate levels. Only patients who had received antibiotics before the Wound Hygiene evaluation were included

Results

- A total of 229 patients had received antibiotics before Wound Hygiene (median treatment duration 33 days)
- Signs of clinical infection¹⁰ were present in 73.8% of wounds at baseline and reduced to 3.5% at final assessment (Figure 2); a 95.3% reduction. This change was significant (p<0.001 in McNemar's test)
- Of 186 patients with baseline and final wound volume assessments, 78 (42%) had complete wound closure (Figure 3)
- Mean wound volume reduced from 96.7 cm³ at baseline to 19.7 cm³ (80.7% reduction) at final assessment (p<0.001 in Wilcoxon signed-rank test)
- At the final assessment, most wounds had improved (74.2%) or healed (24.0%), and only a small proportion were deteriorating (25.8% → 0.9%) or static (37.1% → 0.9%) (Figure 4)
- Biofilm suspicion¹⁰ was 81.2% at baseline and 17.0% at final assessment (Figure 5); a 79% reduction (p<0.001 in McNemar's test)
- Exudate levels shifted from predominantly moderate (41.5%) to predominantly low (40.6%) (Figure 6; p<0.001 in McNemar's test)

Figure 2. Local infection¹⁰

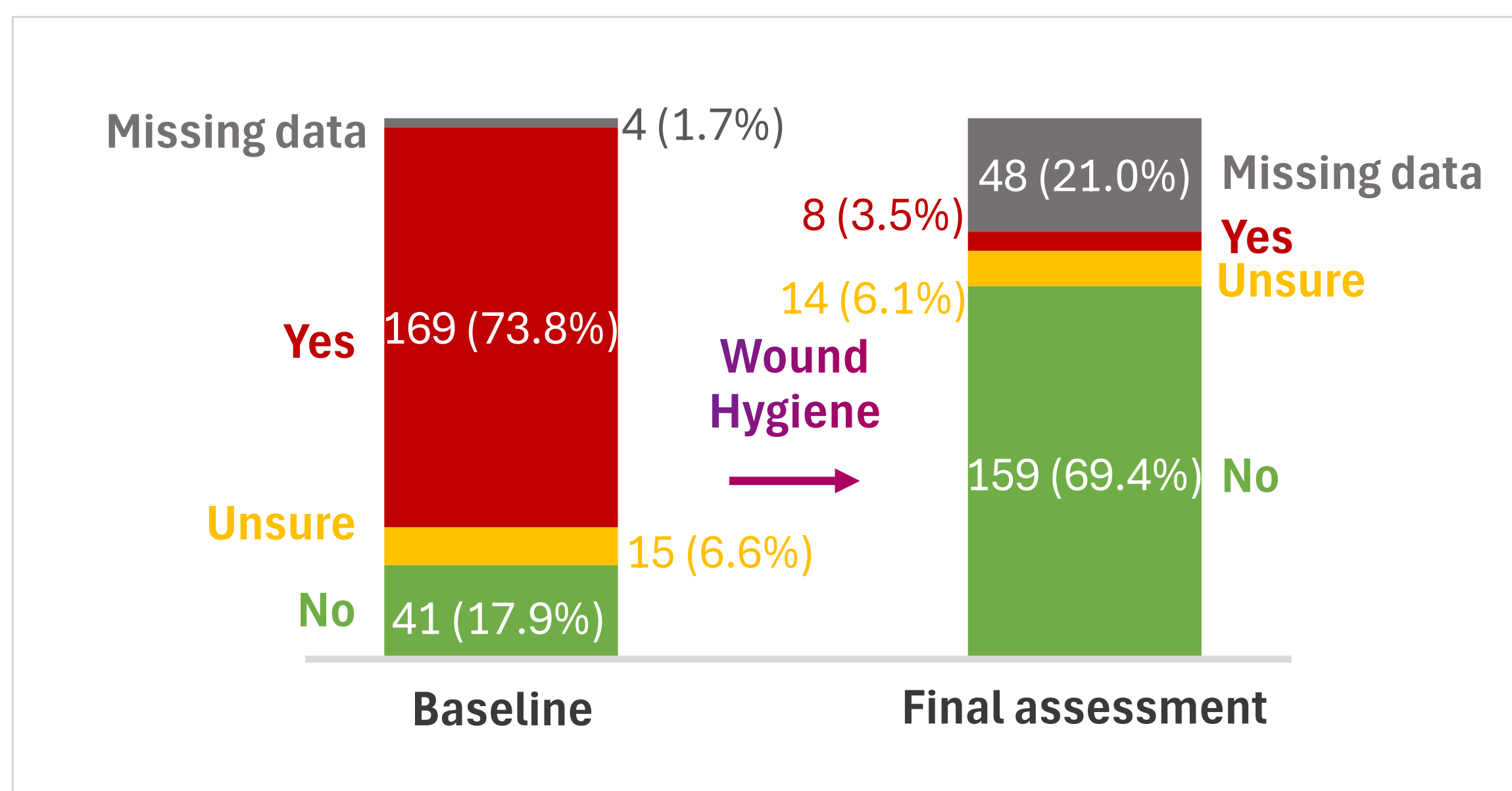


Figure 3. Percentage reduction in wound volume

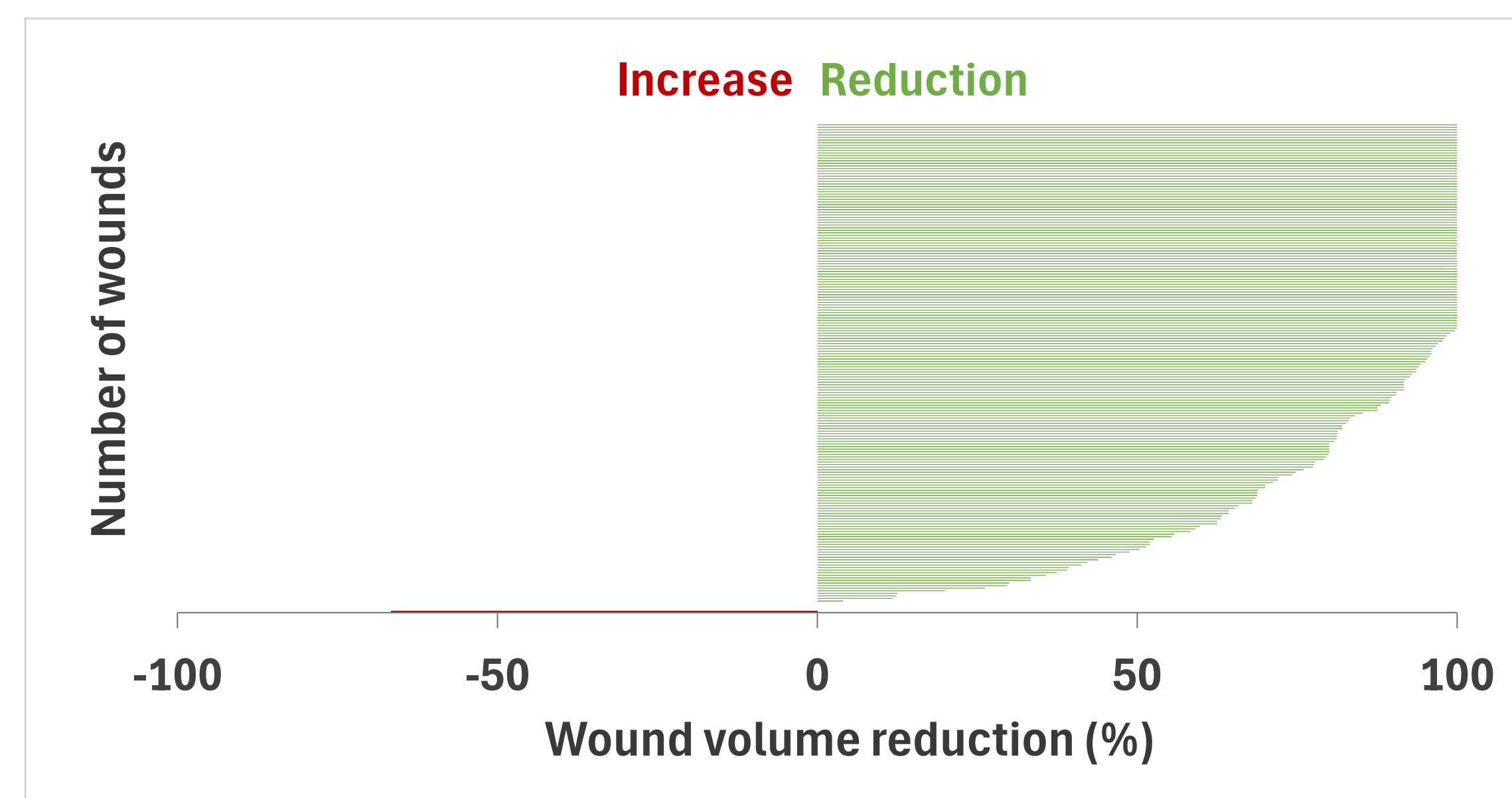


Figure 5. Suspected biofilm¹⁰

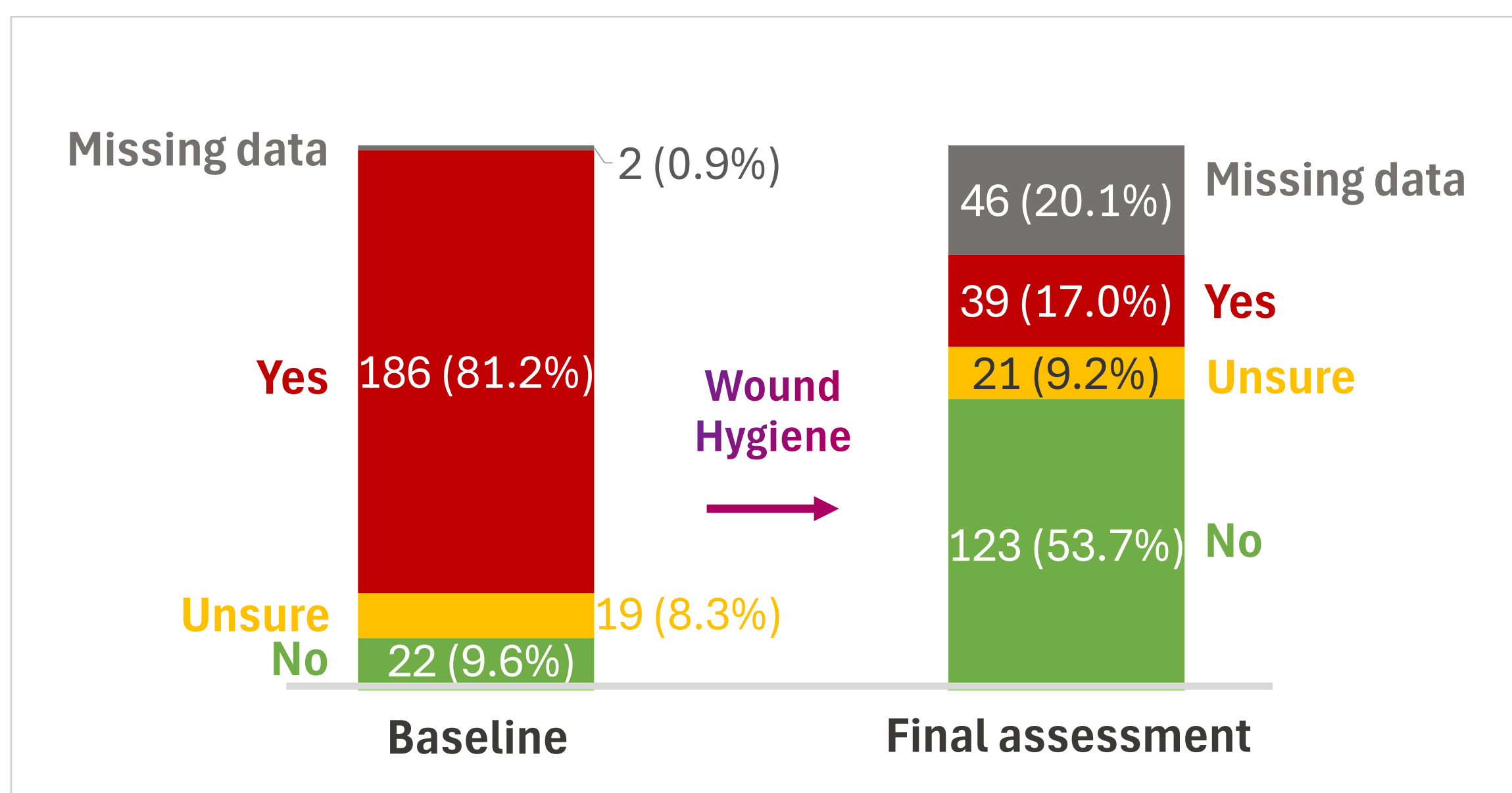


Figure 6. Wound exudate

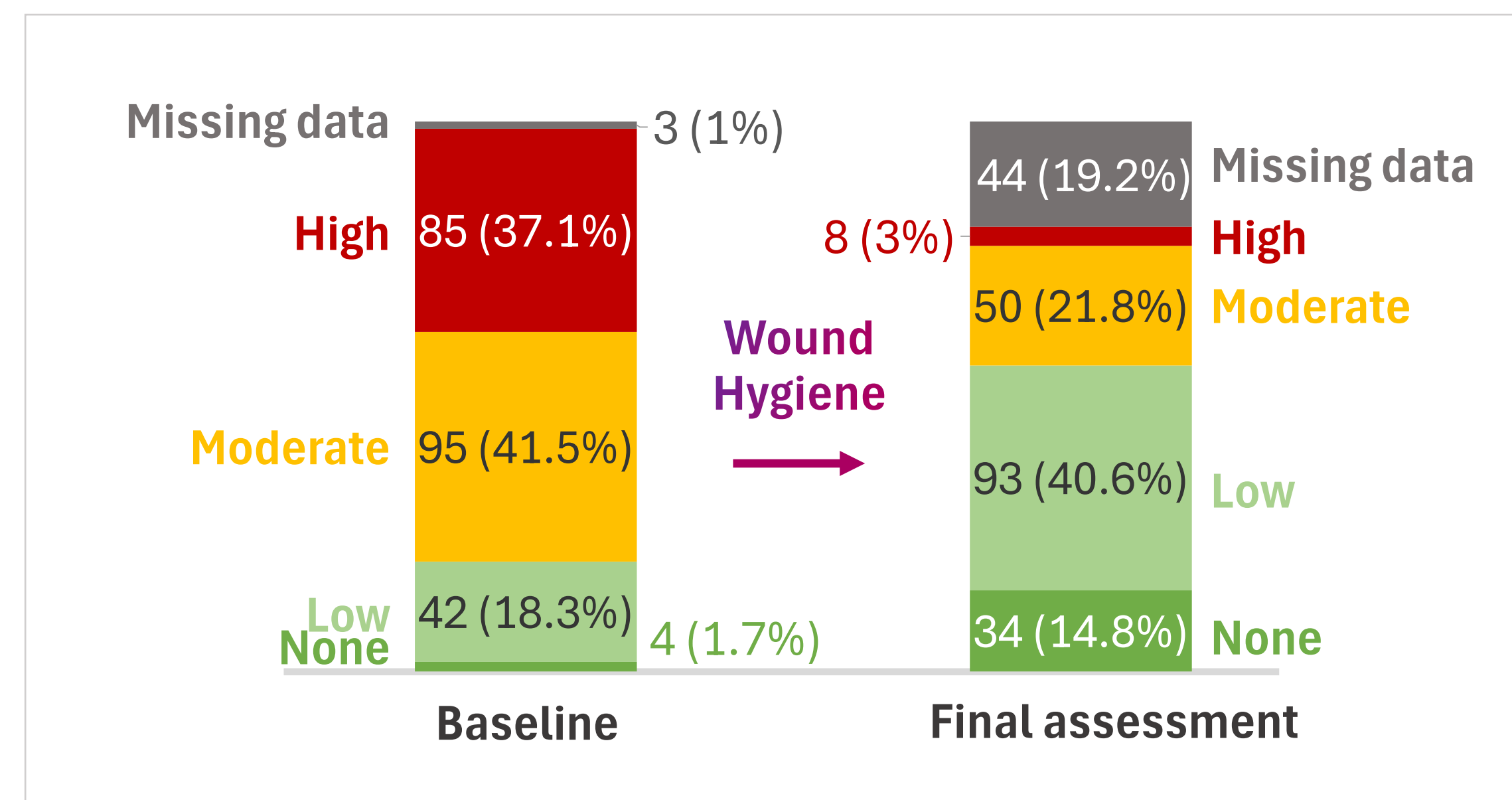
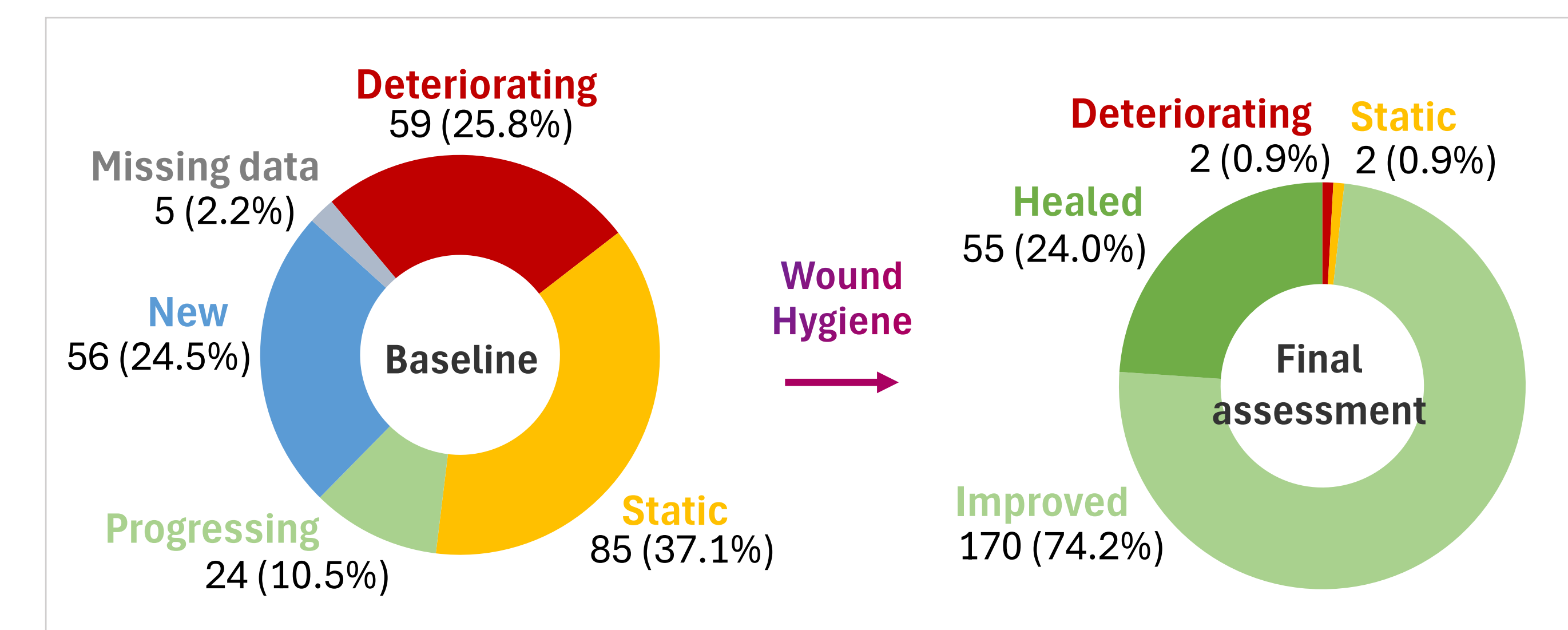


Figure 4. Wound status



Discussion

- Among patients with hard-to-heal wounds receiving antibiotics, Wound Hygiene resulted in statistically significant reductions in local infection¹⁰ (95%) and wound volume (81%), and healing or improvement in most wounds. These were accompanied by statistically significant positive changes in exudate levels and suspected biofilm¹⁰
- Wound Hygiene addresses a key local barrier to healing (i.e., biofilm) and can help minimize variation in biofilm-based wound care across different clinical settings
- Further research is warranted to help guide best practice for antibiotic stewardship in conjunction with the use of Wound Hygiene and antibiofilm dressings

Conclusion

Our findings suggest Wound Hygiene (incorporating an advanced antibiofilm gelling fibre dressing*) is an effective complement to existing antibiotic therapy

References & Footnotes

1. Rice JB et al. *Diabetes Care* 2014;37(3):651–658. 2. Martinengo L et al. *Ann Epidemiol* 2019;29:8–15. 3. Olsson M et al. *Wound Repair Regen* 2019;27(1):114–125. 4. Chan B et al. *J Wound Care* 2017;26(Suppl 4):S4–S14. 5. James GA et al. *Wound Repair Regen* 2008;16(1):37–44. 6. Malone M et al. *J Wound Care* 2017;26(1):20–25. 7. Murphy C et al. *J Wound Care* 2020;29(Sup3b):S1–S26. 8. Murphy C et al. *J Wound Care* 2019;28(12):818–822. 9. Murphy C et al. *J Wound Care* 2021;30(7):582–590. 10. Haesler et al. *J Wound Care* 2019;28(Sup3b)s4–s12.

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

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