

Wound hygiene protocol and healing outcomes: successes of wound bed preparation and biofilm based wound management

Dr. Laura Swoboda DNP, APNP, FNP-BC, FNP-C, CWOCN-AP

Background: Addressing biofilm as part of a comprehensive patient and wound treatment plan of care proactively addresses many of the factors that result in hard-to-heal wounds. Biofilm occurs in more than 70% of hard-to-heal wounds, and is associated with delayed wound healing. Even after disrupting biofilm and adequately preparing the wound bed, biofilm can begin to reform within 24 hours. Protocols of care, such as Wound Hygiene, that regularly address variables that delay wound healing lead to positive healing outcomes. Wound Hygiene best practices include cleansing, debriding, refashioning wound edges, and dressing wounds while incorporating biofilm based wound management treatment strategies.

Purpose: To review healing outcomes utilizing a wound hygiene protocol as a standard of care.

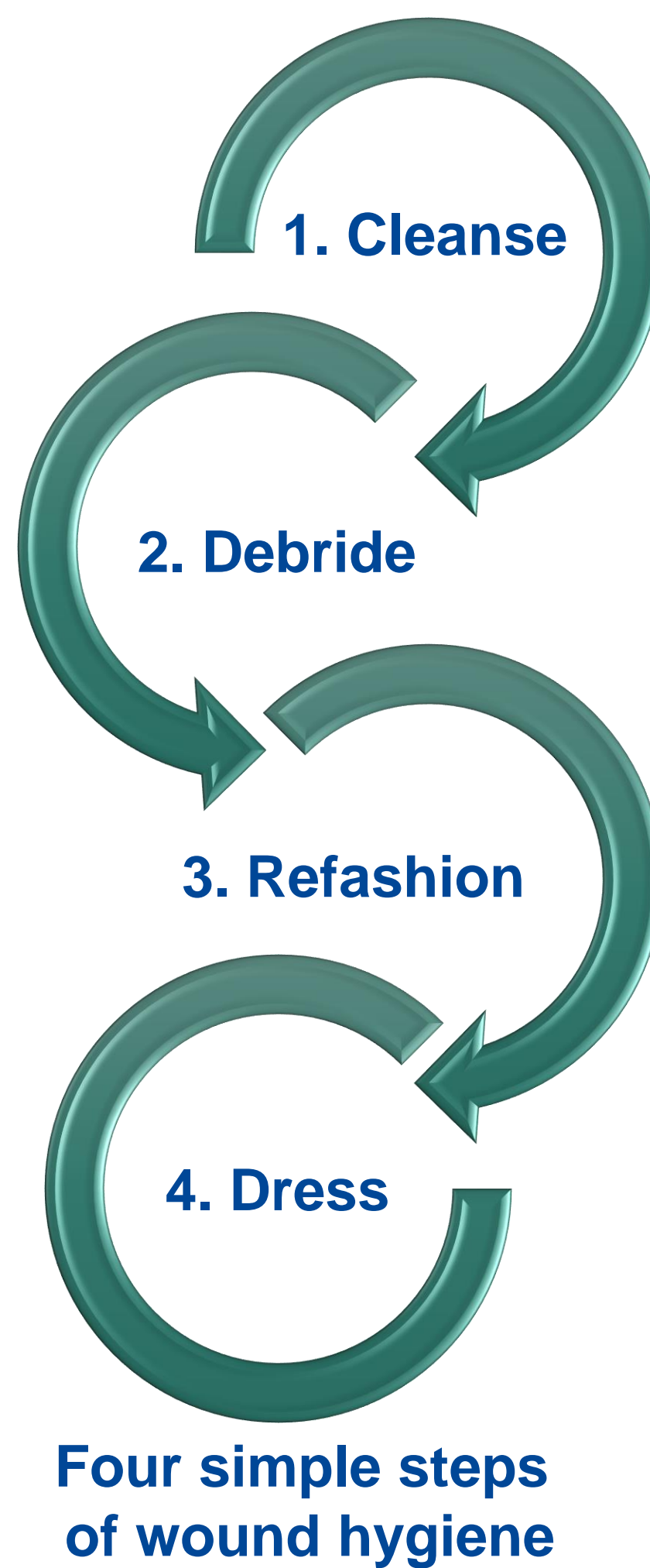
Methods: An evidence-based protocol consistent with Wound Hygiene was implemented in 2018 within an academic health system's hospital outpatient department based wound center in southeastern Wisconsin. Patients received medical advice and recommendations to address any additional disease specific etiologic mechanisms of delayed wound healing including offloading, compression, smoking cessation education, nutritional management, and diabetic counseling.

An audit of protocol implementation and wound healing rates over 1 month time frame in May 2022 was conducted. All wound types and patient presentations during the specified time period were reviewed including those with complicated comorbid disease states, complex and hard-to-heal wounds, or adherence concerns. Palliative wounds and patients that were lost to follow up were not included.

Data collection and analysis included: wound time to heal, wound type, age, gender, wound size at presentation, biofilm based wound management strategies employed, and whether the full Wound Hygiene strategy was implemented.

Results: Patients (n=39) received wound hygiene as a standard of care during the period under review. Wound types analyzed included venous leg ulcers (n=7; 18%), diabetic foot ulcers (n=11; 28%), pressure injuries (n=7; 18%), arterial ulcers (n=3; 8%), and atypical ulcers (n=11; 28%).

Average age was 69.46 years (SD 15.84). Average wound size at presentation was 20.41 Sqcm (SD 49.18). Gender recorded indicated 43% of patients were male (n=17), and 57% were female (n=22). Diabetes type 1 or 2 was present in 43% of patients (n=17). Eight patients did not heal during the assessment period. Average time to heal was 102 days (14.5 weeks). The most common biofilm based wound management strategy was debridement (n=33; 92%) followed by non-contact low frequency ultrasound (n=18; 46%) next generation silver dressings (Aquacel Ag Advantage, Convatec, UK) (n=13; 33%) and cadexomer iodine (n=4; 10%). The full wound hygiene protocol was routinely implemented in 89% of patients.



Average time to heal 102 days (14.5 weeks)

Factors associated with non-healing:
 -pressure injury or arterial ulcer wound type
 -non-compliance to recommended plan of care

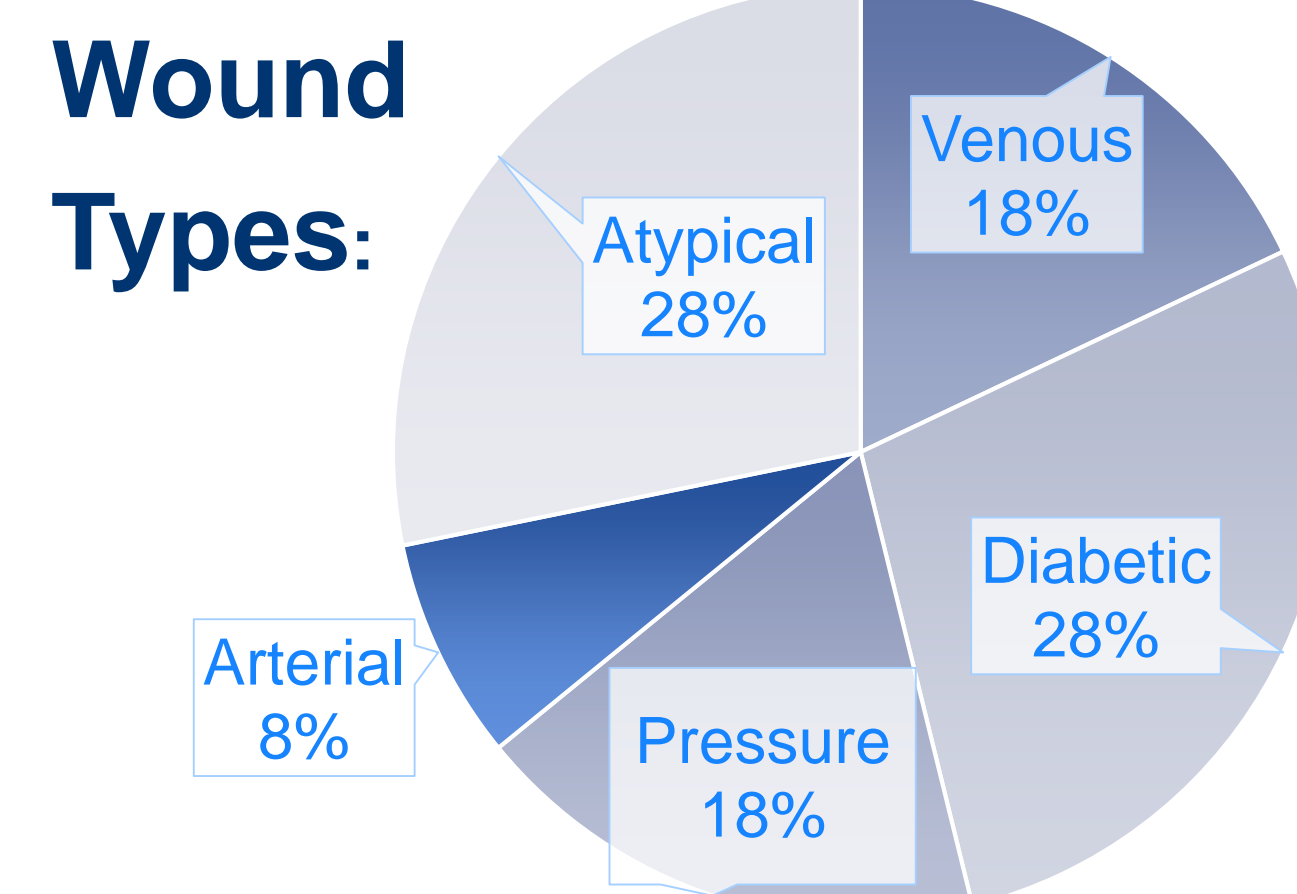
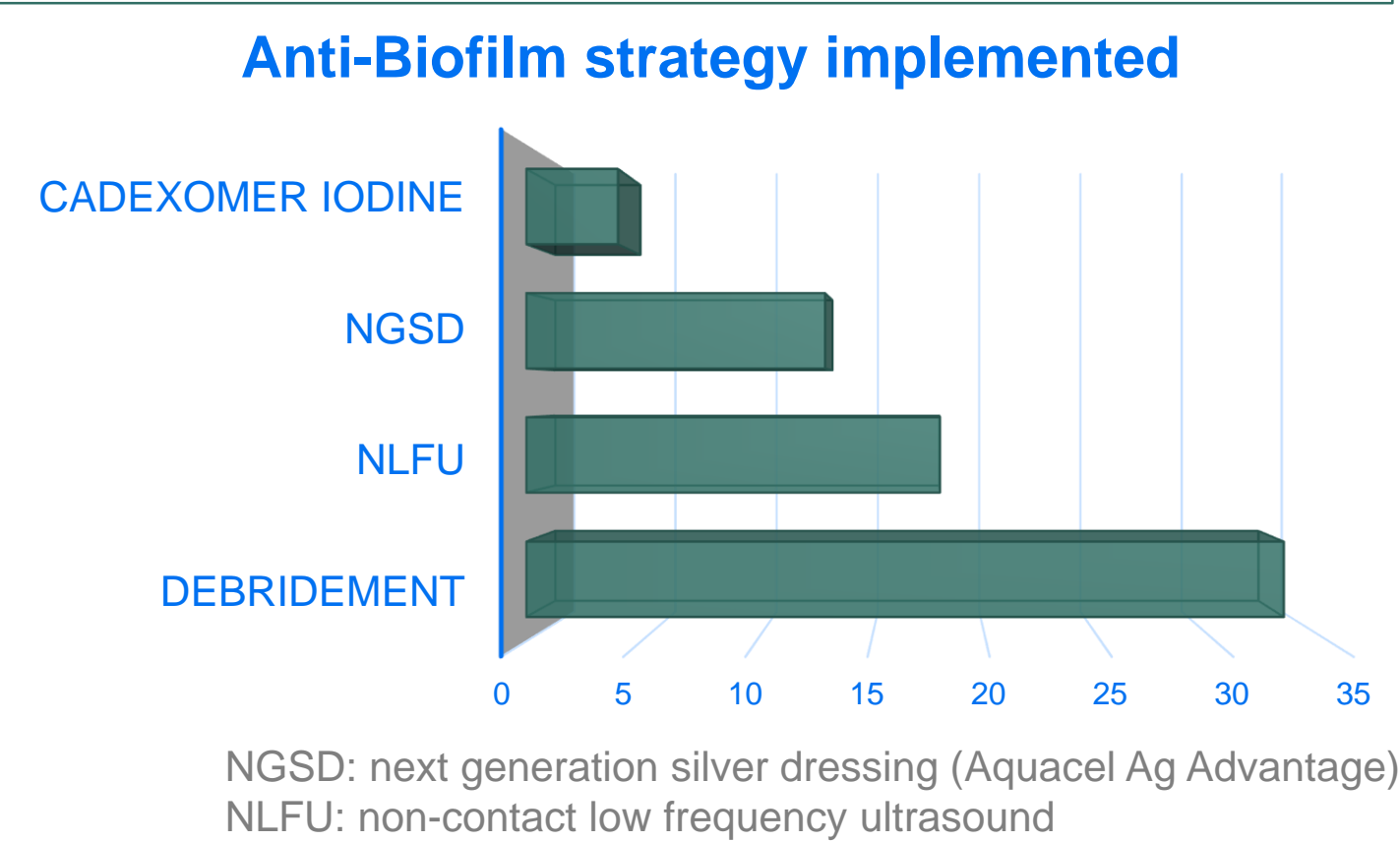


- ✓ Healthy granulation
- ✓ Intact peri-wound
- ✓ Attached edges



Wound hygiene implemented in a variety of wound types and complex patient presentations:

- A. Dehisced elective abdominoplasty incision at presentation to the wound center following seroma evacuation
- B. Abdominoplasty after regular implementation of the wound hygiene protocol.
- C. Diabetic foot ulcer over exaggerated bony prominences of Charcot arthropathy at presentation to the wound clinic, following debridement.
- D. Diabetic ulcer epithelialized after regular implementation of wound hygiene protocol



Conclusion/Discussion: Real world data (RWD) represents healing outcomes on patient presentations, comorbidities, and wound types that commonly present to wound centers. These patients are typically excluded from clinical trials. The average time to heal observed was near the 12 week goal despite the inclusion of diverse wound types, patient presentations, comorbidities, and noncompliance. RWD on the implementation of Wound Hygiene supports implementing this proactive protocol of care to expedite wound healing in all patient types and situations especially those with complex comorbid disease status, hard-to-heal wounds, and plan of care adherence concerns.

References

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