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Aim

Delayed healing in lower extremity wounds is often the result of underrecognized risk factors and insufficient early intervention. The Wound Balance framework emphasizes the importance of early biomarker modulation, exudate management, and patient-centered care, while the BIOMESSM screening tool, developed by Dr. Trent Brookshier, provides a structured approach to assess healing barriers across six key domains. This case series applies both frameworks to challenging wound presentations to demonstrate the clinical value of early, targeted intervention—including the use of superabsorbent polymer (SAP) dressings.

Case Description

Three cases of complex lower extremity wounds were re-evaluated through the lens of BIOMESSM and Wound Balance. Risk stratification using the BIOMESSM tool was retrospectively applied to identify early signs of delayed healing. Blood Flow, Infection/Bioburden, Offloading/Overloading, Metabolic/Morbidities, Exudate/Edema, and Social/Economic barriers were assessed. Interventions focused on restoring physiologic balance by addressing excessive exudate, reducing local bioburden, and aligning dressing selection with wound characteristics. All patients were transitioned to SAP dressings a following initial debridement and wound bed preparation.

CASE STUDIES

1. Venous Stasis Ulceration

BIOMES Score: 3

The patient presented with moderate to heavy exudate and BIOMESSM barriers including, metabolic comorbidities (M), exudate/edema (E) and elderly lived alone (S). SAP dressing (Zetuvit[®] Plus) use allowed for a reduction in dressing change frequency from multiple daily changes to once per day, with improved odor control and wound bed quality.



2. Complication from Graft Versus Host Disease

BIOMES Score: 4

Atypical exudative ulceration in an immunocompromised patient, with BIOMESSM barriers including infection (I), systemic disease (M), heavy exudate (E) and social limitations (S). Early SAP dressing (Zetuvit[®] Plus) integration minimized caregiver burden and supported a healing trajectory.



3. Scleroderma (Exudate Management)

BIOMES Score: 3

Bioburden (B), extensive exudate with fragile peri-wound tissue (E) and social/economic constraints (S). Applying the Wound Balance framework, exudate modulation and dressing tolerance were prioritized. The SAP dressing (Zetuvit[®] Plus) provided both fluid handling and comfort under compression. Patient was getting once daily dressing changes after incorporating Zetuvit[®] Plus. Previously was getting 2-4 times dressing change daily.



Discussion/Conclusion

The integration of the BIOMESSM framework and Wound Balance provides a practical and impactful strategy to identify high-risk wounds early and intervene before chronicity is established. This case series reinforces the importance of exudate control using SAP dressings as part of a targeted approach to restoring healing balance, improving patient quality of life, and reducing system burden.

Across all cases, early identification of BIOMESSM factors prompted timely escalation to specialized care and optimized dressing strategies that aligned with the Wound Balance paradigm. All patients experienced improved wound progression and reduced dressing burden.

Acknowledgements

Special thanks to Dr. Trent Brookshier and Chrystalbelle Rogers for BIOMESSM Tool support. BIOMESSM was created by Trent Brookshier, DPM, and is a service mark of HARTMANN USA, Inc, © 2024 HARTMANN USA, Inc. **Trademark Item** *Zetuvit[®] Plus, and Wound Balance Logo Paul Hartmann AG, Heidenheim, Germany

Citations

1. Wounds International. (2022). Consensus document: Implementing the Wound Balance concept into routine practice worldwide (XLIT-2989 Rev. 1). World Union of Wound Healing Societies.
2. Brookshier, T., Swoboda, L., & Rogers, C. (2025). The BIOMESSM tool: An approach to recognizing wound severity for early intervention and referral to a specialist. Cureus, 17(8), e89352. <https://doi.org/10.7759/cureus.89352>

BIOMESSM Tool

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Helps. Cares. Protects.

Don't Delay, Refer Today!

BIOMESSM

The BIOMESSM Tool helps to identify barriers to wound healing, wounds at risk for complications, and when to refer to a wound specialist.

Barriers to Wound Healing

- B Blood Flow
- I Infection/Bioburden
- O Offloading/Overloading
- M Metabolic/Morbidities
- E Exudate/Edema
- S Social/Economic

Total BIOMESSM Score:

How to use the BIOMESSM Tool

1. Assess each component of BIOMES.
2. Check each component present.
3. Add up the number of barriers present.
4. Follow recommendations based on BIOMES Risk score.

Risk Assessment Guidance

0 BIOMES Low Risk Continue to assess	1 BIOMES Moderate Risk Consider referral to wound specialist	≥2 BIOMES High Risk Do not delay, refer to wound specialist now
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2 weeks without improvement: refer to wound specialist

Follow Wound Balance recommendations for early intervention

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Figure 1. BIOMESSM TOOL

Scan here for the latest version of the BIOMESSM Tool

