# BIOMES A New Tool for Early Recognition of Chronic and Non-Healing Wounds

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## PROBLEM

Most recent reports show an increase in individuals who have been treated for at least one chronic wound in the United States. An estimated 16.3% of Medicare beneficiaries have a chronic or hard-to-heal wound (Carter). The need for early recognition and early advanced treatment is imperative to improving wound healing outcomes, improving patient quality of life, and decreasing the burden on the healthcare system.

## BACKGROUND

As discussed in a recent publication, the two key take-aways from the Wound Balance Concept transition the focus of managing wounds to healing wounds as early as possible and recognizing red-flags of chronicity for early intervention rather than waiting for up to 12 weeks to deem a wound 'chronic'. It becomes increasingly important to recognize early signs of risk for a wound to become stalled or non-healing. Early recognition will identify the need for more advanced treatments and/or more frequent visits.

## METHOD/INTERVENTION

The BIOMES acronym serves as a pivotal tool in determining wound risk, classifying wounds based on Blood flow, Infection control, Overloading, Overloading, Metabolic/Co-morbidities, Exudate/Moisture/Bioburden, and Social/Economic Barriers. Each element influences the patient's healing trajectory and recognizing them early becomes paramount. Low, moderate, and high-risk wounds are discerned based on the presence of BIOMES factors, guiding practitioners in deciding if advanced therapies should be implemented and when to refer to a wound specialist.

**B** Blood Flow

**I** Infection Control

**O** Off-loading

**M** Metabolic/Co-morbidities

**E** Exudate/Moisture/Bioburden

**S** Social /Economic Barriers

**Low risk:** ..... **No BIOMES**
**Moderate risk:** ..... **1 BIOMES**
**High risk:** ..... **2 or more BIOMES**

### SCORE RECOMMENDATIONS

**No BIOMES:**
- Follow best practices for wound healing

**1 BIOMES:**
- Address risk factors
- Consider referral to specialist

**2 or more BIOMES:**
- Refer to a wound specialist
- Protect the wound and the patient
- Collaborate to address risk factors and ensure ongoing wound healing progress

Scan here for the latest version of BIOMES

### CASE #1 High Risk 2+ BIOMES: B+M

Right Foot
2.5 x 1.4 x 0.6cm

Left Foot
5 x 4.5 x0.5cm

70 Year old Male, PMH: DM2
Chronic wound: 8 months
Previous treatments- regular debridements with dry dressings at SNF
Not improving with standard wound care at facility
Barriers to healing: Blood-flow / Metabolic

Right Foot Left Foot
Fully healed 6 weeks after implementing BIOMES, addressing Blood-flow & Metabolic

Re-assessed using BIOMES
Vascular referral to improve blood-flow
PCP worked to improve Diabetes control
Debrided wound weekly
Applied skin substitute (donated human allograft tissue)
Followed by Zetuvit® Plus Silicone Border, gauze, and compression dressing
Wound completely healed from original size of 2.5 x 1.4 x 0.6cm

### CASE #2 High Risk 2+ BIOMES: I+S

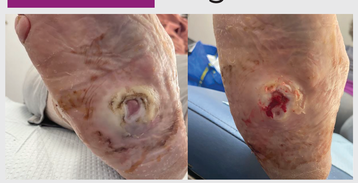
Left Ankle
4.0 x 2.0 x 0.4cm

70 year old Female with wound dehiscence following surgery from total ankle replacement
Barriers to healing: Infection / Social; patient traveling to Mexico for three weeks and not having access to care

Left Ankle
Fully healed 5 weeks after implementing BIOMES, addressing Infection & Social

Re-assessed using BIOMES
Wound debridement weekly
Culture taken and started on appropriate oral antibiotics.
Applied: fenestrated wound matrix
Supplied Zetuvit® Plus Silicone Border to be changed twice per week
Wound completely healed from original size of 4 x 3 x 0.2cm

### CASE #3 High Risk 2+ BIOMES: O+E+S



Left Plantar Foot
3 x 2 x 1cm to bone

71 year old Female, 2+ year chronic wound
Non-diabetic with Charcot-neuro-arthropathy (a chronic, devastating, and destructive disease of the bone structure; it is characterized by painful or painless bone and joint destruction in limbs that have lost sensory innervation); Patient also had difficulty with insurance and making it into the office for wound checks
Barriers to healing: Off-loading, Exudate & Social

Left Ankle
Fully healed 6 weeks after implementing BIOMES, addressing Off-Loading, Exudate & Social

Re-assessed using BIOMES
Surgical intervention
Utilized intraoperative skin relaxation device
Applied skin substitute (donated human allograft tissue) to new tracking dorsal wound
Dispensed a Zetuvit® Plus Silicone Border, gauze, and compression dressing

## OUTCOME

BIOMES has been successfully integrated into practice and the approach aligns seamlessly with the six pillars and principles of wound care. These encompass understanding the disease process, wound bed preparation, nutritional status, mental/social factors, adjunctive processes/procedures, and prevention. Adherence to these principles ensures comprehensive care, addressing hemostasis, wound classification, risk assessment, infection control, debridement, moisture control, analgesia, and wound closure.

## DISCUSSION/CONCLUSION

The BIOMES approach offers a paradigm shift, emphasizing the early identification of wound risk factors and a tailored, collaborative intervention strategy. This method not only enhances the understanding of wound healing but also aligns with established principles and pillars of wound care, ultimately improving outcomes in limb salvage and diabetic wound management.

## Citations

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## Trademark Item

*Zetuvit® Plus Silicone Border, Paul Hartmann AG, Heidenheim Germany