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Review Article

Current best practices in wound care: an evidence-based and patient-centered approach

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ABSTRACT

Optimal wound care requires an integrated, evidence-based strategy that combines accurate clinical assessment, systematic wound bed preparation, appropriate dressing selection, infection control, and the selective use of advanced therapies. Contemporary guidelines emphasize the importance of identifying the underlying etiology of wounds, optimizing local and systemic conditions for healing, and tailoring interventions to individual patient needs. This narrative review summarizes current best practices in wound care, highlighting evidence-supported principles for assessment, cleansing, dressing selection, infection management, offloading, revascularization, and adjunctive therapies within a multidisciplinary and patient-centered framework.

Keywords: Wound care, Wound bed preparation, Infection control, Dressing selection, Advanced wound therapies, Multidisciplinary management

INTRODUCTION

Wounds represent a substantial clinical burden across medical and surgical disciplines, particularly among patients with diabetes, peripheral artery disease, advanced age, and multiple comorbidities. Chronic and complex wounds are associated with prolonged healing times, increased risk of infection, limb-threatening complications, and significant healthcare costs. Despite advances in wound care technology, poor outcomes often result from inadequate assessment, suboptimal wound bed preparation, or failure to address systemic contributors to impaired healing.

Current best practices in wound care are guided by high-quality evidence and international guidelines that advocate for a structured, individualized, and multidisciplinary approach.[1-7] This review synthesizes recent recommendations and evidence to provide a practical framework for contemporary wound management.

Figure 1: Chronic wound.

ASSESSMENT AND IDENTIFICATION OF UNDERLYING ETIOLOGY

Comprehensive wound assessment is the cornerstone of effective management. Identification of the underlying etiology-such as arterial or venous insufficiency, neuropathy, pressure injury, trauma, or mixed causes-is essential for directing appropriate therapy. Equally important is the evaluation of patient-specific factors, including comorbid conditions (e. g., diabetes mellitus, renal disease), nutritional status, smoking history, glycemic control, and adequacy of tissue perfusion. Failure to recognize these factors may result in delayed healing or recurrent wound breakdown. Etiology-driven management allows clinicians to prioritize interventions such as revascularization, offloading, or pressure redistribution, thereby improving the likelihood of successful wound closure.[1-3,8]

Figure 2: Ischemic ulcer.

WOUND BED PREPARATION

The concept of wound bed preparation addresses the principal local barriers to healing: nonviable tissue, excessive inflammation, infection, and moisture imbalance. Debridement remains a fundamental component of this process and may be performed using surgical, sharp, autolytic, enzymatic, or mechanical techniques, depending on wound characteristics and patient tolerance. Removal of necrotic tissue reduces bacterial burden, decreases inflammation, and facilitates granulation tissue formation. Chronic and complex wounds require frequent reassessment, with repeated debridement often necessary to maintain an optimal healing environment. Effective wound bed preparation is a dynamic process that must be continuously adapted as the wound evolves.[2,3,9-11]

CLEANSING AND IRRIGATION

Wound cleansing is widely accepted as a standard practice for traumatic and chronic wounds. Current evidence demonstrates that tap water is as effective as sterile saline for irrigation, with no clear benefit of routine antiseptic solutions in clean wounds. Moreover, indiscriminate use of antiseptics may impair viable tissue and delay healing. For acute soft-tissue wounds, continuous gravity-flow irrigation with agents such as polyhexanide is recommended. In contrast, complex or infected wounds may benefit from negative-pressure wound therapy (NPWT) combined with instillation of antimicrobial solutions, including polyhexanide, silver nitrate, acetic acid, or povidone-iodine, to enhance bioburden control and promote wound healing.[4,5,12]

DRESSING SELECTION

Appropriate dressing selection plays a pivotal role in maintaining an optimal wound environment. Modern wound care emphasizes the importance of moisture balance, as a moist environment supports epithelial migration, angiogenesis, and extracellular matrix formation, while excessive moisture may lead to maceration and periwound breakdown.[1,2,6] Hydrogels are preferred for dry or minimally exudative wounds, whereas alginates, hydrofibers, and super-absorbent dressings are indicated for wounds with moderate to heavy exudate.[1,6] Occlusive dressings-including films, hydrogels, hydrocolloids, and cellulose or collagen-based products-have consistently demonstrated superior healing outcomes compared with traditional dry dressings for most wound types.[4] Antimicrobial-impregnated dressings may be appropriate for critically colonized wounds or those at increased risk of infection; however, current evidence does not support the routine use of antibiotic dressings in clean wounds.[1,4,13]

INFECTION MANAGEMENT

Prompt recognition and management of wound infection are essential to prevent local progression and systemic complications. High-risk wounds, such as diabetic foot ulcers and wounds associated with critical limb-threatening ischemia, require vigilant monitoring. Management typically includes systemic antibiotic therapy, adequate source control through debridement, and surgical intervention when indicated. Bite wounds represent a distinct clinical scenario in which early antibiotic therapy is recommended due to the high risk of polymicrobial infection. Timely intervention is critical to preserving tissue viability and preventing severe complications.[2,4]

OFFLOADING AND REVASCULARIZATION

Mechanical factors play a crucial role in wound healing, particularly for wounds located on weight-bearing surfaces. In diabetic foot ulcers, effective offloading is essential and has been shown to significantly improve healing rates. Failure to adequately offload pressure may negate the benefits of optimal local wound care. For ischemic wounds, assessment of vascular status is

mandatory, and revascularization should be considered whenever feasible. Restoration of adequate perfusion is often a prerequisite for successful wound healing and limb salvage.[2,6,7,14,15]

ADJUNCTIVE AND ADVANCED THERAPIES

When wounds fail to demonstrate meaningful progress-commonly defined as less than a 50% reduction in wound size after four weeks of optimal standard care-adjunctive and advanced therapies should be considered. These include NPWT, topical growth factors, bioengineered skin substitutes, and hyperbaric oxygen therapy. Selection of these modalities should be guided by the strength of available evidence, wound characteristics, and patient-specific factors. Importantly, advanced therapies are most effective when implemented within a structured, multidisciplinary care model, rather than as isolated interventions.[2,7]

PATIENT-CENTERED AND MULTI-DISCIPLINARY CARE

Patient-centered considerations are integral to successful wound management. Dressing selection and treatment plans should account for patient comfort, frequency of dressing changes, cost, ease of application, and impact on daily activities. These factors directly influence adherence and overall quality of life.[1] Given the complexity of many chronic wounds, optimal care is best delivered by a multidisciplinary team that may include wound care specialists, vascular surgeons, infectious disease experts, podiatrists, nurses, and rehabilitation professionals. Collaborative care models have been shown to improve outcomes and reduce complications.[16-20]

Optimal wound management begins with a comprehensive initial assessment to determine wound etiology-vascular, neuropathic, pressure-related, or traumatic-while systematically evaluating patient-specific factors such as comorbidities, nutritional status, glycemic control, smoking habits, and vascular supply to guide etiology-driven care. Effective wound bed preparation focuses on eliminating local barriers to healing, including nonviable tissue, excessive inflammation, infection, and moisture imbalance, using appropriate debridement techniques with frequent reassessment, particularly in chronic wounds. Cleansing and irrigation are essential for traumatic and chronic wounds, with evidence supporting tap water as equivalent to sterile saline and favoring gravity-flow irrigation; advanced options such as NPWT with instillation may be considered for complex or infected wounds. Maintaining moisture balance is critical to promote epithelial migration and granulation while preventing maceration through tailored dressing selection, matching dressing type to wound characteristics-hydrogels for dry wounds, alginates or hydrofibers for exudative wounds, and occlusive dressings over dry alternatives. Antimicrobial dressings should be used selectively in critically colonized or high-risk wounds, as routine use in clean wounds lacks evidence. Prompt infection management, including systemic antibiotics, debridement, or surgical intervention when indicated, is vital, with early antibiotics recommended for bite wounds. Offloading is essential for weight-bearing wounds, particularly diabetic foot ulcers, while revascularization should be pursued in ischemic wounds to restore perfusion and enable healing. When standard care fails to achieve adequate progress, adjunctive therapies such as NPWT, growth factors, bioengineered tissues, or hyperbaric oxygen may be considered. Finally, outcomes are optimized through patient-centered care that accounts for comfort, cost, and practicality, delivered within a multidisciplinary framework involving wound specialists, vascular surgeons, infectious disease experts, and allied health professionals.[21-25]

Table 1: Evidence-based principles for contemporary wound care management.

Domain	Key principles	Clinical application / considerations
Initial assessment	Identify wound etiology (vascular, neuropathic, pressure, traumatic); assess patient-specific factors	Evaluate comorbidities, nutritional status, glycemic control, smoking status, and vascular supply to guide etiology-driven management
Wound bed preparation	Remove local barriers to healing: nonviable tissue, inflammation, infection, moisture imbalance	Perform appropriate debridement (surgical, sharp, autolytic, enzymatic, mechanical); reassess frequently in chronic wounds
Cleansing and irrigation	Cleanse traumatic and chronic wounds; avoid unnecessary antiseptics in clean wounds	Tap water equivalent to sterile saline; gravity-flow irrigation with polyhexanide for acute wounds; consider NPWT with instillation for complex or infected wounds
Moisture balance	Maintain a moist wound environment while preventing maceration	Optimize epithelial migration and granulation tissue formation through appropriate dressing selection
Dressing selection	Match dressing type to wound characteristics	Hydrogels for dry wounds; alginates/hydrofibers for exudative wounds; occlusive dressings preferred over dry dressings
Antimicrobial dressings	Use selectively in critically colonized or high-risk wounds	No evidence supporting routine antibiotic dressings in clean wounds

Continued.

Domain	Key principles	Clinical application / considerations
Infection management	Early recognition and prompt treatment of wound infection	Systemic antibiotics, debridement, and surgical intervention as needed; early antibiotics for bite wounds
Offloading	Reduce mechanical stress on weight-bearing wounds	Essential for diabetic foot ulcers to improve healing rates
Revascularization	Restore adequate tissue perfusion in ischemic wounds	Consider vascular assessment and revascularization to enable wound healing and limb salvage
Adjunctive therapies	Escalate care when standard therapy fails	Consider NPWT, growth factors, bioengineered tissue, or hyperbaric oxygen if <50% wound size reduction after 4 weeks
Patient-centered care	Incorporate patient preferences and practical considerations	Account for comfort, cost, dressing-change frequency, and ease of application to improve adherence
Multidisciplinary care	Deliver care through an interprofessional team	Collaboration among wound care specialists, vascular surgeons, infectious disease experts, and allied health professionals improves outcomes

CONCLUSION

Current best practices in wound care emphasize a comprehensive, evidence-based approach that integrates etiologic assessment, meticulous wound bed preparation, appropriate cleansing and dressing selection, timely infection management, and selective use of advanced therapies. Addressing systemic factors, incorporating patient-centered considerations, and delivering care within a multidisciplinary framework are essential to optimizing healing outcomes and reducing the burden of chronic and complex wounds.

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REFERENCES

1. Haxho F, Lytvyn Y, Shelley AJ, Alex O, Mark M, Afsaneh A, et al. Wound Care-Part I: A Practical Approach to Local Wound Care and Dressing Selection. J Am Acad Dermatol. 2025; S0190-9622(25)02374-6.
2. Gornik HL, Aronow HD, Goodney PP, Philip PG, Shipra A, Luke PB, et al. 2024 ACC/AHA Guideline for the Management of Lower Extremity Peripheral Artery Disease. J Am Coll Cardiol. 2024;83(24):2497-604.
3. Alam W. Wound Bed Preparation and Treatment Modalities. Clin Geriatr Med. 2024;40(3):375-84.
4. Hewett Brumberg EK, Douma MJ, Alibertis K, Nathan PC, Michael PG, Harper-Kirksey K, et al. 2024 American Heart Association and American Red Cross Guidelines for First Aid. Circulation. 2024;150(24):e519-79.
5. Saeg F, Schoenbrunner AR, Janis JE. Evidence-Based Wound Irrigation: Separating Fact From Fiction. Plast Reconstr Surg. 2021;148(4):601e-14e.
6. Armstrong DG, Tan TW, Boulton AJM, Bus SA. Diabetic Foot Ulcers: A Review. JAMA. 2023;330(1):62-75.
7. Standards of Care in Diabetes-2025: Retinopathy, Neuropathy, and Foot Care. Diabetes Care. 2025;48(1):S252-65.
8. van Rijswijk L, Gray M. Evidence, research, and clinical practice: a patient-centered framework for progress in wound care. J Wound Ostomy Continence Nursing. 2012;39(1):35-44.
9. Gethin G, Probst S, Stryja J, Christiansen N, Price P. Evidence for person-centred care in chronic wound care: a systematic review and recommendations for practice. J Wound Care. 2020;29(9b):S1-22.
10. Engle RL, Mohr DC, Holmes SK, Seibert MN, Afable M, Leyson J, et al. Evidence-based practice and patient-centered care: doing both well. Health Care Manag Rev 2021;46(3):174-84.
11. Kim WM. From evidence-based medicine to patient-centered care. Korean J Anesthesiol. 2023;76(4):265-6.
12. Gould LJ, Liu J, Wan R, Carter MJ, Dotson M, Driver VR. Evidence supporting wound care end points relevant to clinical practice and patients' lives. Part 3: The Patient Survey. Wound Repair Regeneration. 2021;29(1):60-9.
13. Maguire J. Evaluation of Patient-Centered Integrated Wound Team in Nursing Homes (Doctoral dissertation, Walden University). 2023.
14. Wahyuningtyas ES. Your patients need your patience: A closer look at wound care. J Holistic Nursing Sci. 2025;12(2):165-71.
15. Cudney EA, Reynolds Kueny C, Murray SL. Analyzing patient satisfaction in a rural wound care center. The TQM J. 2024;36(4):1074-91.
16. Mahmoudi M, Gould LJ. Opportunities and challenges of the management of chronic wounds: a multidisciplinary viewpoint. Chronic Wound Care Management Res. 2020;7:27-36.
17. Jaul E. Multidisciplinary and comprehensive approaches to optimal management of chronic pressure ulcers in the elderly. Chronic Wound Care Management Res. 2024;1:3-9.
18. Eriksson E, Liu PY, Schultz GS, Martins-Green MM, Tanaka R, Weir D, et al. Chronic wounds: Treatment

consensus. Wound Repair Regeneration. 2022;30(2):156-71.
19. Bryant R, Nix D. Acute and chronic wounds: current management concepts. Elsevier Health Sciences. 2015.
20. Stern A, Mitsakakis N, Paulden M, Alibhai S, Wong J, Tomlinson G, et al. Pressure ulcer multidisciplinary teams via telemedicine: a pragmatic cluster randomized stepped wedge trial in long term care. BMC Health Services Res. 2014;14(1):83.
21. Bowler PG, Duerden BI, Armstrong DG. Wound microbiology and associated approaches to wound management. Clin Microbiol Rev. 2001;14(2):244-69.
22. Keast DH, Bowering CK, Evans AW, Mackean GL, Burrows C, D'souza L. Contents: MEASURE: A proposed assessment framework for developing best practice recommendations for wound assessment. Wound Repair Regeneration. 2004;12:s1-17.
23. Schultz GS, Sibbald RG, Falanga V, Ayello EA, Dowsett C, Harding K, et al. Wound bed preparation: a systematic approach to wound management. Wound Repair Regeneration. 2003;11:S1-28.
24. Olutoye OO, Eriksson E, Menchaca AD, Kirsner RS, Tanaka R, Schultz G, et al. Management of acute wounds-expert panel consensus statement. Adv Wound Care. 2024;13(11):553-83.
25. Hsia HC, Eriksson E, Gurtner GC, Veves A, Hamdy O, Margolis DJ, et al. Management of diabetic wounds: expert panel consensus statement. Adv Wound Care. 2025;NA.

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