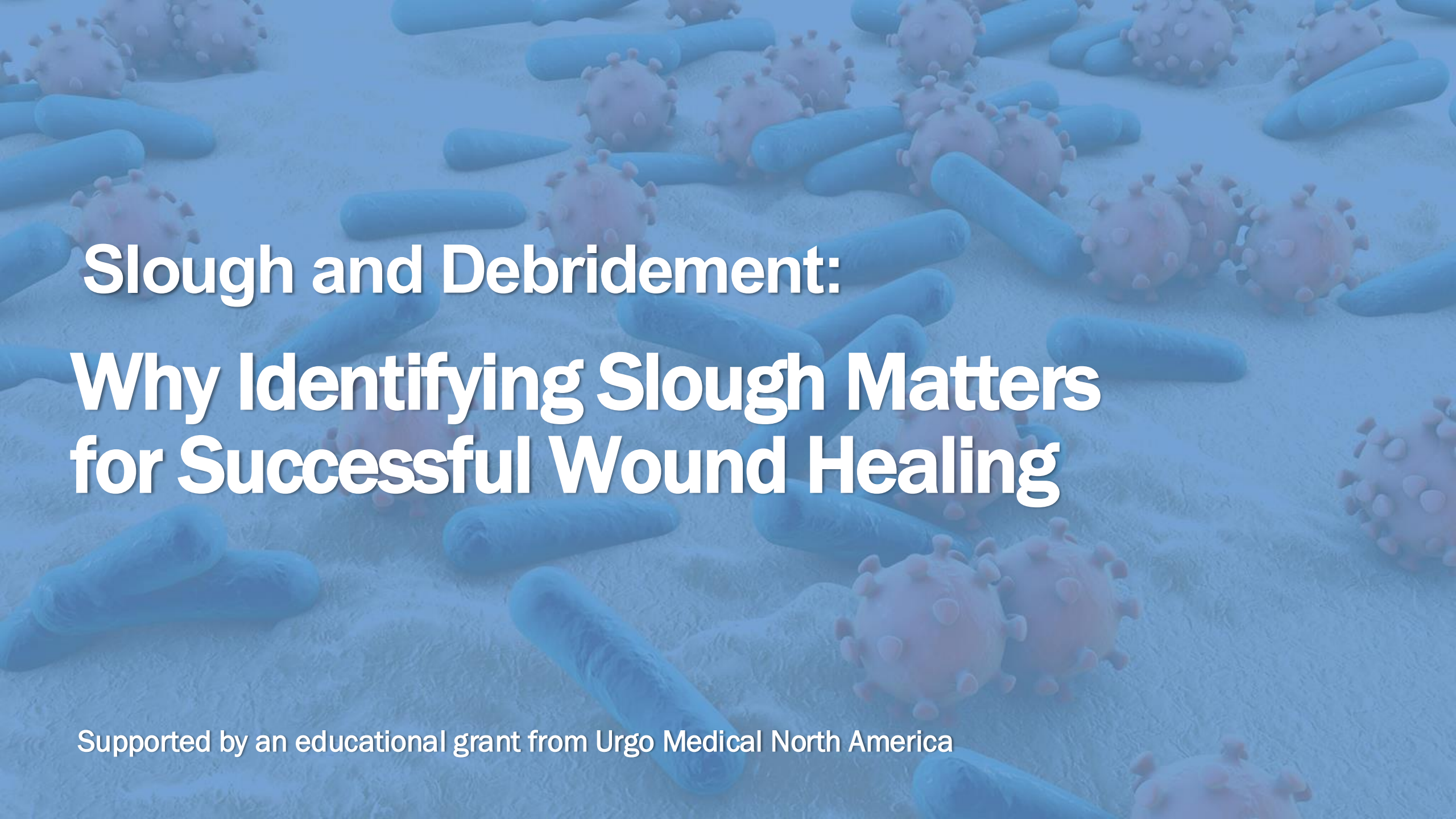

Slough and Debridement:

Why Identifying Slough Matters for Successful Wound Healing

Supported by an educational grant from Urgo Medical North America

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Faculty Disclosures

- **Susie Seaman, NP, MSN, CWCN, CWS**
  Consultant: Lynch Regenerative Medicine; Speakers Bureau: Urgo Medical NA
- **Lindsay Kalan, PhD**
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- **Kara Couch, MS, CRNP, CWCN-AP, FAAWC**
  Consultant: Reapplix; Solventum, Medical Surgical Business; Urgo Medical; Speakers Bureau: Integra LifeSciences

Disclosures

- The faculty have been informed of their responsibility to disclose to the audience if they will be discussing off-label or investigational use(s) of drugs, products, and/or devices (any use not approved by the U.S. Food and Drug Administration)
  - Applicable CME staff have no relationships to disclose relating to the subject matter of this activity
  - This activity has been independently reviewed for balance

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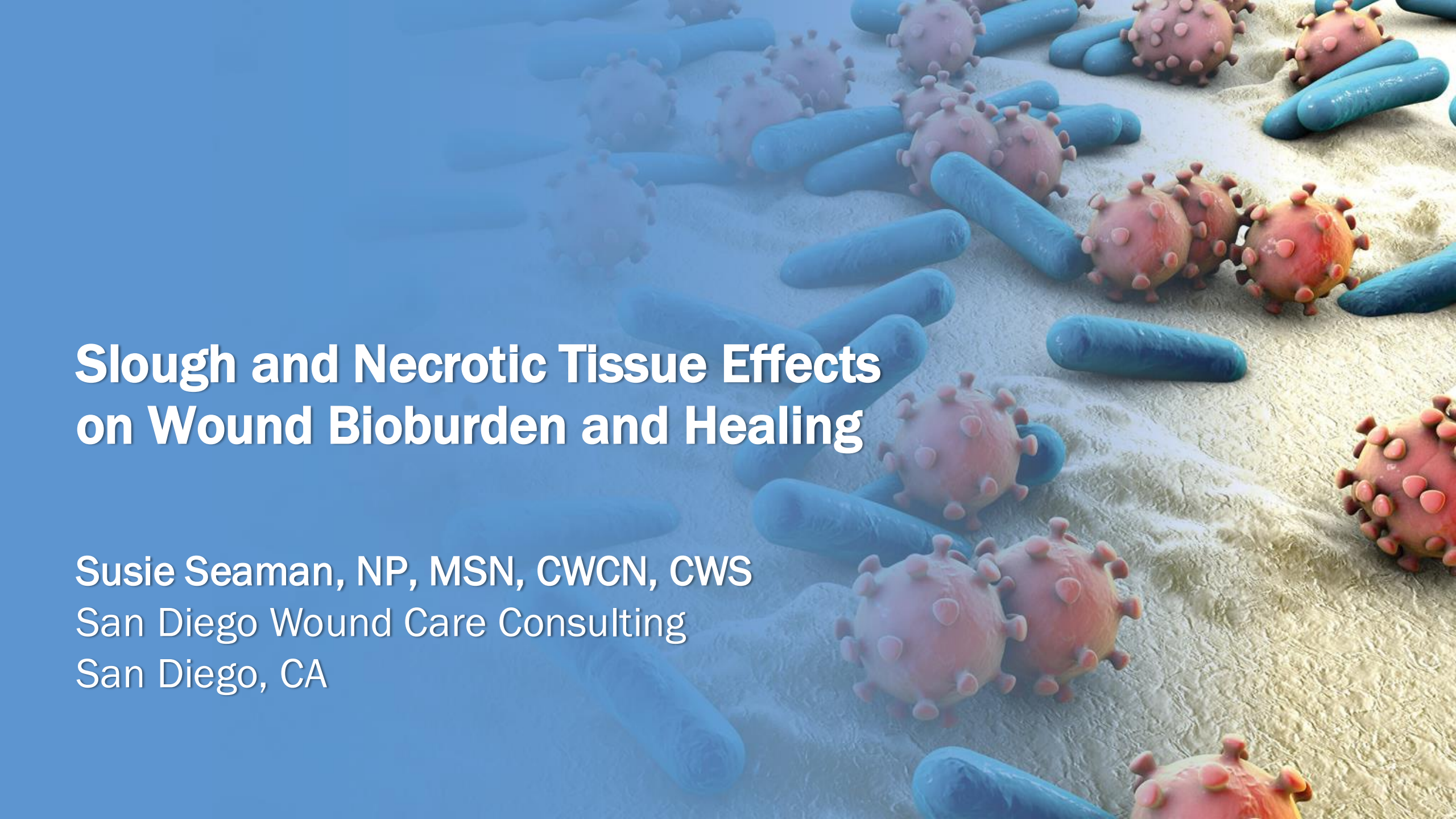
Learning Objectives

- Describe the composition of slough and necrotic tissue, and explain their role in microbial burden and impaired wound healing
- Evaluate the role of wound surface microacidification in optimizing wound bed preparation and promoting a healable wound environment
- Compare traditional and emerging debridement technologies, including engineered fiber dressings and hypochlorous acid-based solutions and gels, with respect to their mechanisms of action, advantages, limitations, and clinical applications
- Explore evidence-based strategies for achieving a healable wound bed, including the roles of debridement, microacidification, and combination therapies in optimizing wound healing outcomes

Q&A

Submit your questions
via the question box
at any time



Slough and Necrotic Tissue Effects on Wound Bioburden and Healing

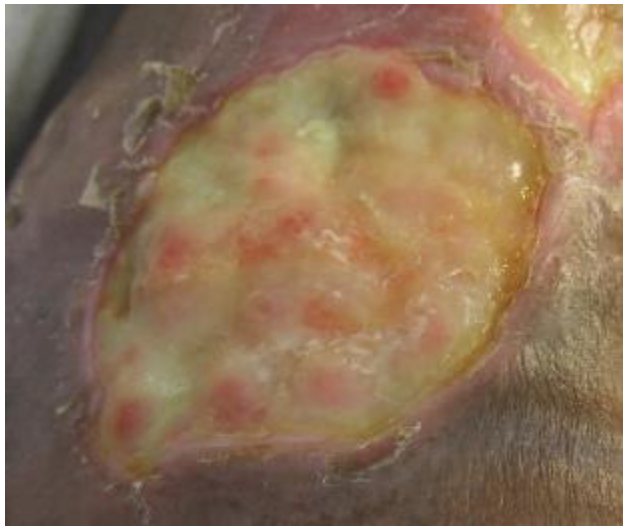
Susie Seaman, NP, MSN, CWCN, CWS
San Diego Wound Care Consulting
San Diego, CA

Is There a Difference Between Slough and Necrotic Tissue?

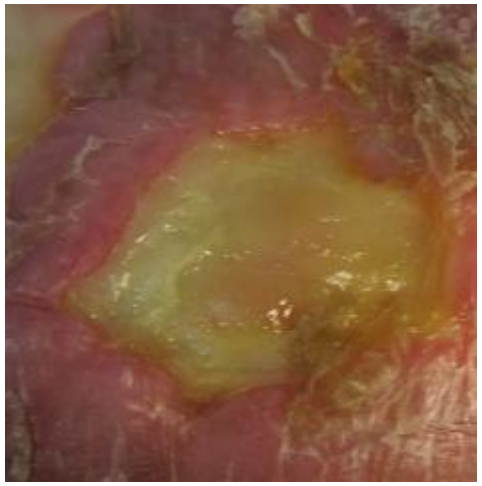
- Slough: Nonviable tissue of varying color that may be loosely or firmly attached, slimy, stringy, or fibrinous
  - May contain dead cells, exudate, proteins, and multiple species of microbes
- Necrotic tissue: Dead/devitalized tissue that is dark in color and comprised of dehydrated, dead tissue
  - May become moistened due to inflammatory exudate or topical treatments
- Slough and necrotic tissue can occur on a continuum in the same wound
  - Slough may vary from 100% loosely attached to 100% firmly attached or a mixture of both
  - Wound may have 100% dry necrotic tissue or may be present with slough

International Wound Infection Institute (IWII). *Wound Infection in Clinical Practice: Principles of Best Practice*. 2022. Accessed July, 2026. Available at: https://woundinfection-institute.com/resources/wound-infection-in-clinical-practice-principles-of-best-practice. Mayer DO, et al. *J Wound Care.* 2024;33(Suppl 6b):S1-S32.

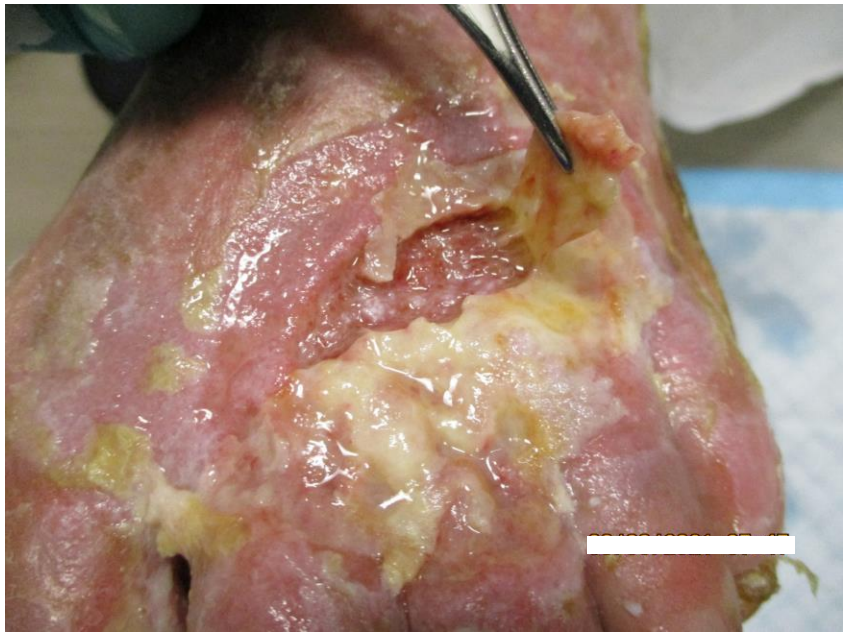
Slough: Loosely Attached



Proteinaceous,
Gelatinous,
Coagulum



Loosely Attached Slough: Curette, Scrub, or Peel It Off

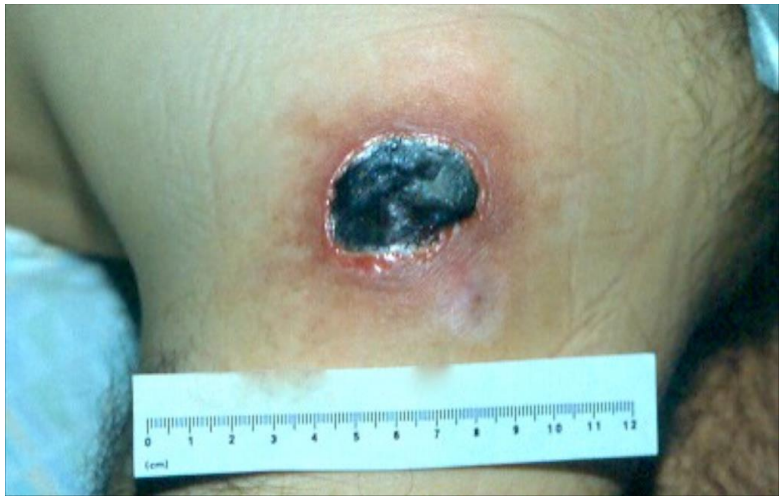


Firmly Attached Slough: Cut It Off*

*If patient is a candidate for sharp debridement. Can use other forms of debridement.

Cannot be curetted, scrubbed, or peeled off.

Necrotic Tissue



Mixed Slough and Necrotic Tissue

Slough and Necrotic Tissue Are Associated with High Bioburden

- Devitalized tissue supports microbial colonization and growth
  - Lack of blood supply impedes host defenses against microbes
  - Hypoxic environment is conducive to bacterial growth, particularly facultative anaerobes
  - Moist slough and necrotic tissue are a nutrient-rich environment for microbes
  - Physically hinders cell migration
- The diversity of microbes in a wound is impacted by wound location and characteristics

Mayer DO, et al. *J Wound Care.* 2024;33(Suppl 6b):S1-S32. Schultz G, et al. *Wound Repair Regen.* 2017;25(5):744-757. Townsend EC, et al. *Wound Repair Regen.* 2024;32(6):783-798.

The Slough Project

- Pilot study to describe human and microbial components of slough
- Slough collected from wounds of various etiologies
- Findings
  - Slough is highly polymicrobial
    - Assessed by both quantitative cultures and qPCR
      - 1.0×10^2 - 8.0×10^7 CFU/inch^2 wound via culture
      - 4.2×10^3 - 4.6×10^8 CFU/inch^2 wound via qPCR
    - Most common taxa: *Corynebacterium* spp., *Pseudomonas* spp., and *Staphylococcus* spp.
  - Slough exhibits signatures associated with both wound etiology and location
  - Protein profiles from healing wounds are significantly different from nonhealing wounds

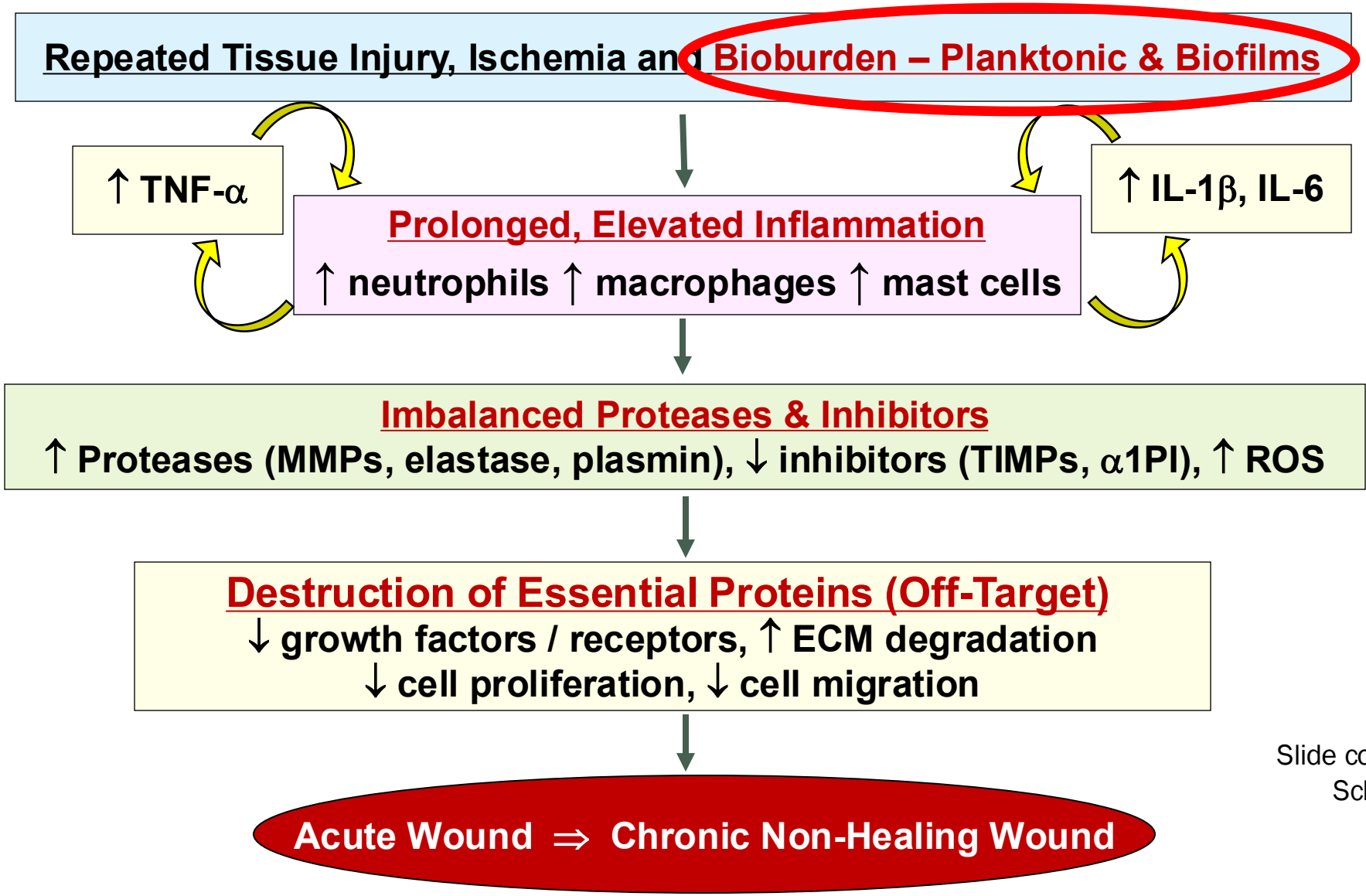
Kalan L, et al. *Wounds International.* Published May 2023. Accessed July 2026. Available: https://woundinfection-institute.com/resources/slough-composition-analysis-and-effect-on-healing. Townsend EC, et al. *Wound Repair Regen.* 2024;32(6):783-798.

How Do Microbes Impair Wound Healing?

- Many bacteria secrete virulence factors such as toxins and/or proteases that can harm host cells
  - These factors facilitate bacterial invasion, cellular attachment, formation of biofilms, avoidance of host detection, and can inhibit WBC phagocytosis
  - Bacterial proteases can disrupt cell membranes and degrade host cytokines, immunoglobulins, and antimicrobial peptides
  - Leads to a prolonged inflammatory response and causes delayed healing
- Microbes share antibiotic resistance genes
- Microbes compete with host cells for local nutrients

Uberoi A, et al. *Nat Rev Microbiol.* 2024;22(8):507-521. Lindsay S, et al. *Int Wound J.* 2017;14(6):1237-1247.

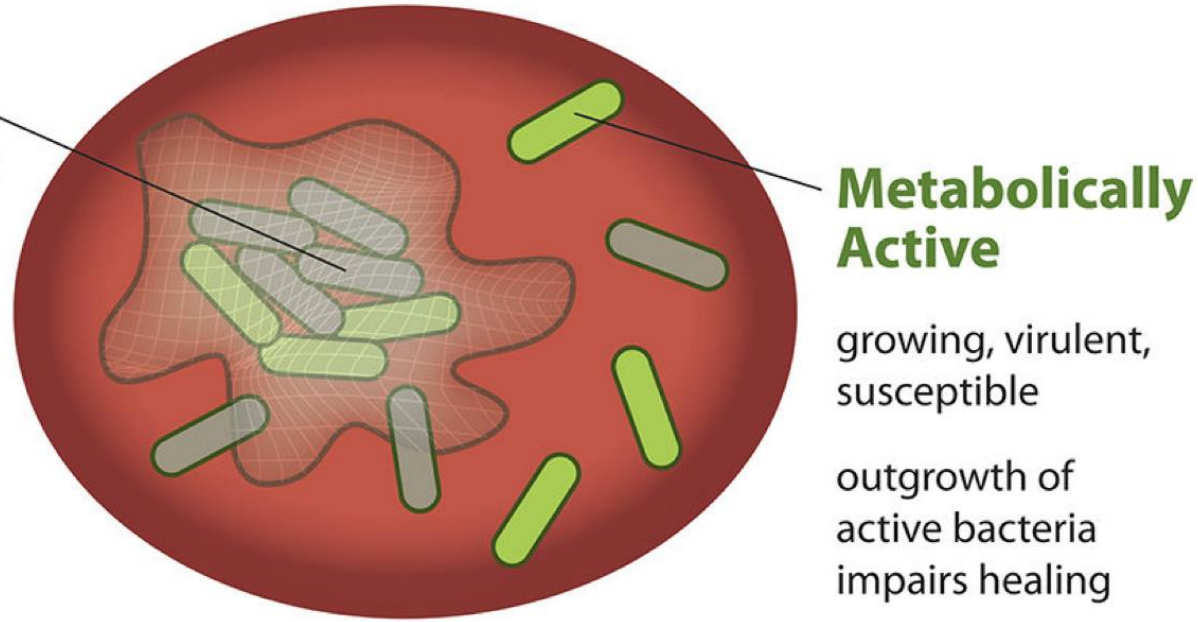
Mechanism of Chronic Wound Pathophysiology



Slide courtesy of Greg Schultz, PhD

Mast BA, Schultz GS. *Wound Repair Regen*. 1996;4(4):411-420. Molasy B, et al. *J Appl Microbiol*. 2026;137(2):lxag025.

What about Biofilm?



Stewart PS, et al. *Wound Repair Regen*. 2024;32(6):858-871.

The Bottom Line…

- Debridement is essential to disrupt biofilm and remove nidus of infection
- Non-toxic antimicrobials are crucial to destroy metabolically active planktonic bacteria
- Promotion of a mildly acidic pH with the use of appropriate topical antimicrobials can control bacteria and promote wound healing

- (In addition to holistic care of the entire patient, including treatment of underlying pathologies and addressing nutrition and lifestyle issues that may interfere with healing)

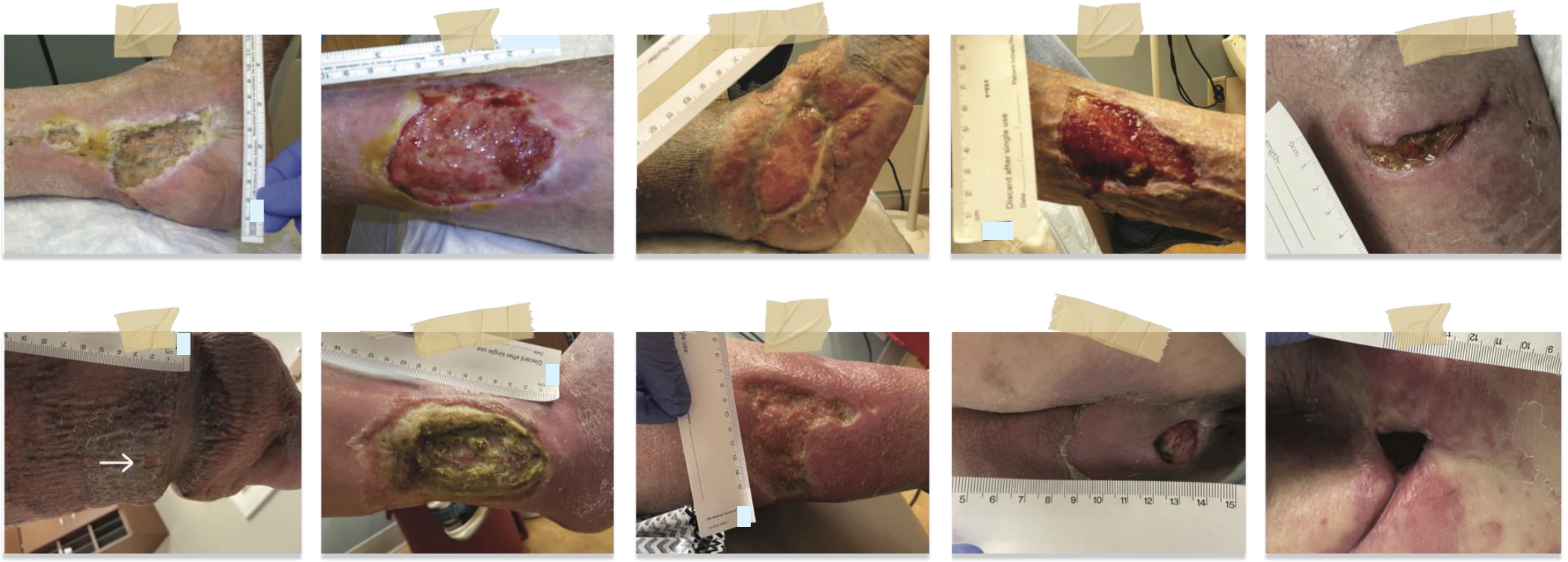
Clinical Pearls

- Slough and necrotic tissue create a perfect milieu for microbial growth
- There is an ongoing battle between these microbes and host defenses
- Our choices for wound cleansing and debridement can affect the outcome of that battle

Microacidification to Optimize De-Sloughing

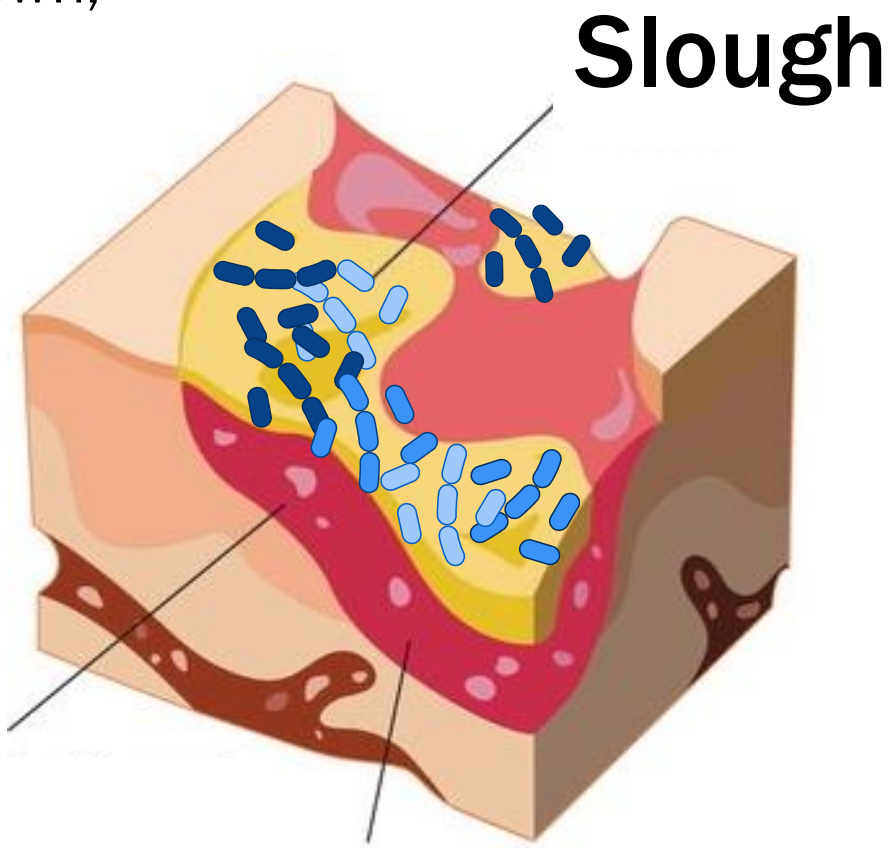
Lindsay Kalan, PhD
Canada Research Chair in Skin Microbiome and Infectious Disease, McMaster University
Hamilton, ON, Canada

Wound Appearance Does Not Indicate Slough Characteristics or Healing Trajectory



Slough Is Infiltrated with Microbes

- Slough is a product of inflammation, tissue breakdown, and allows microbial infiltration and proliferation
- In chronic wounds, slough is polymicrobial
  - Many different species of bacteria are present
- Restoring the environment to mimic healthy skin is a goal



Acidic pH Is a Measure of H+ ions (Potential of Hydrogen)

Acids are H+ > OH-

Neutral is H+ = OH-

Bases are H+ < OH-

Academic Approach. Accessed July 7, 2026. https://www.academicapproach.com/mastering-the-ph-scale-a-simple-guide-for-act-science-success/

What Do We Know about Skin and Wound pH

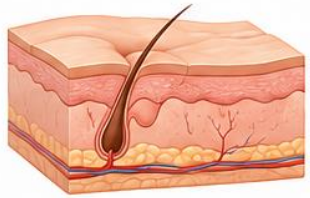
- Normal pH of skin surface (stratum corneum): 4.5-5.5
- pH of underlying tissue: 7.4
- Acute wounds: Mean of 7.44; returns to acidic pH as wound heals and closes
- Chronic wounds: 7.15-8.9
  - The skin's acid mantle is lost
  - Tissue and protein degradation lead to alkaline byproducts
  - Bacteria feed on protein products and produce waste, further increasing the alkalinity of the wound
  - Some bacteria thrive in an alkaline environment and proliferate more

Sim P, et al. *Int J Mol Sci*. 2022;23:13655. Percival SL, et al. *Wound Rep Regen*. 2014;22:174-186.

Why Should We Care about Wound pH

HEALTHY SKIN

Acid mantle intact



- Intact barrier function
- Protective acidic environment
- Supports normal immunity

4.5 – 5.5

Healthy skin
(acid mantle)

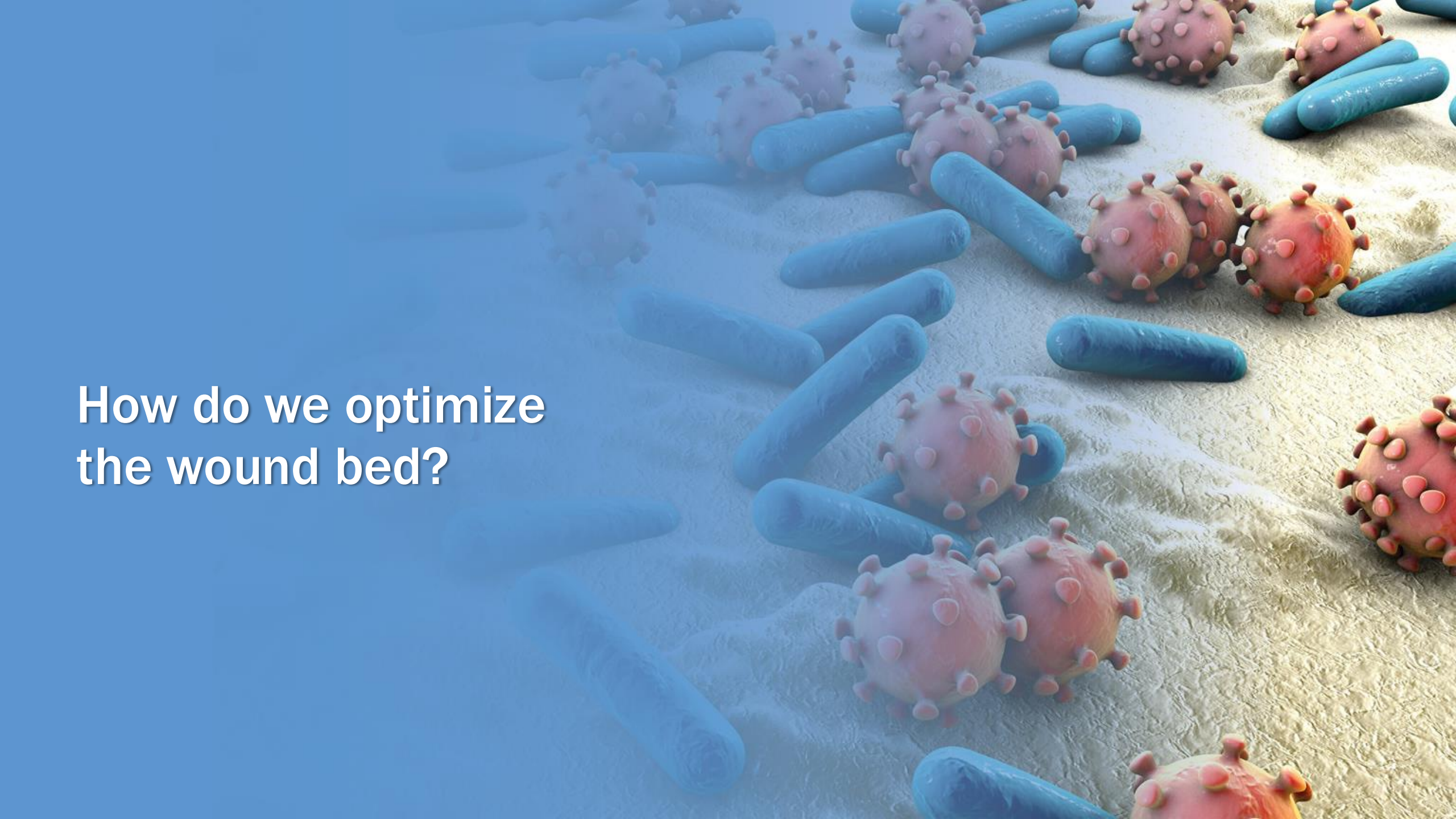
pH and Wound Healing

- Acidic pH
  - ↑ ECM synthesis by fibroblasts
  - ↑ release of O_2 from oxyhemoglobin
    - Improved tissue oxygenation
  - ↑ macrophage activity
  - ↑ angiogenesis
  - ↑ keratinocyte differentiation
  - Controlled protease (MMP) activity
  - ↓ bacterial proliferation and biofilm formation
- Alkaline pH
  - ↑ bacterial growth and biofilm formation
    - ↑ risk of wound infection
    - Leads to immunological response - *inflammation*
  - ↑ protease activity via ↑ MMPs and ↓ TIMPs
  - ↓ release of O_2 from oxyhemoglobin
  - Slower or stalled wound healing

ECM = extracellular matrix; MMP = matrix metalloprotease; TIMP = tissue inhibitors of metalloproteases.

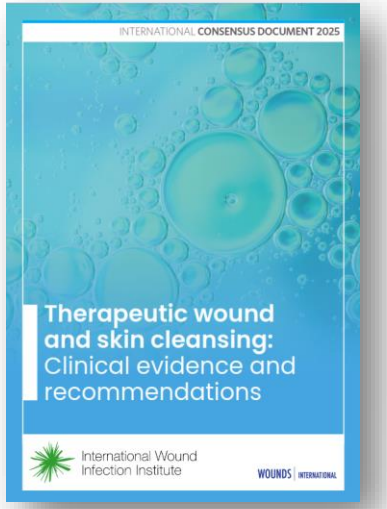
Percival SL, et al. *Wound Repair Regen*. 2014;22:174-186. Metcalf DG, et al. *Wound Med*. 2019;26(1):100166.

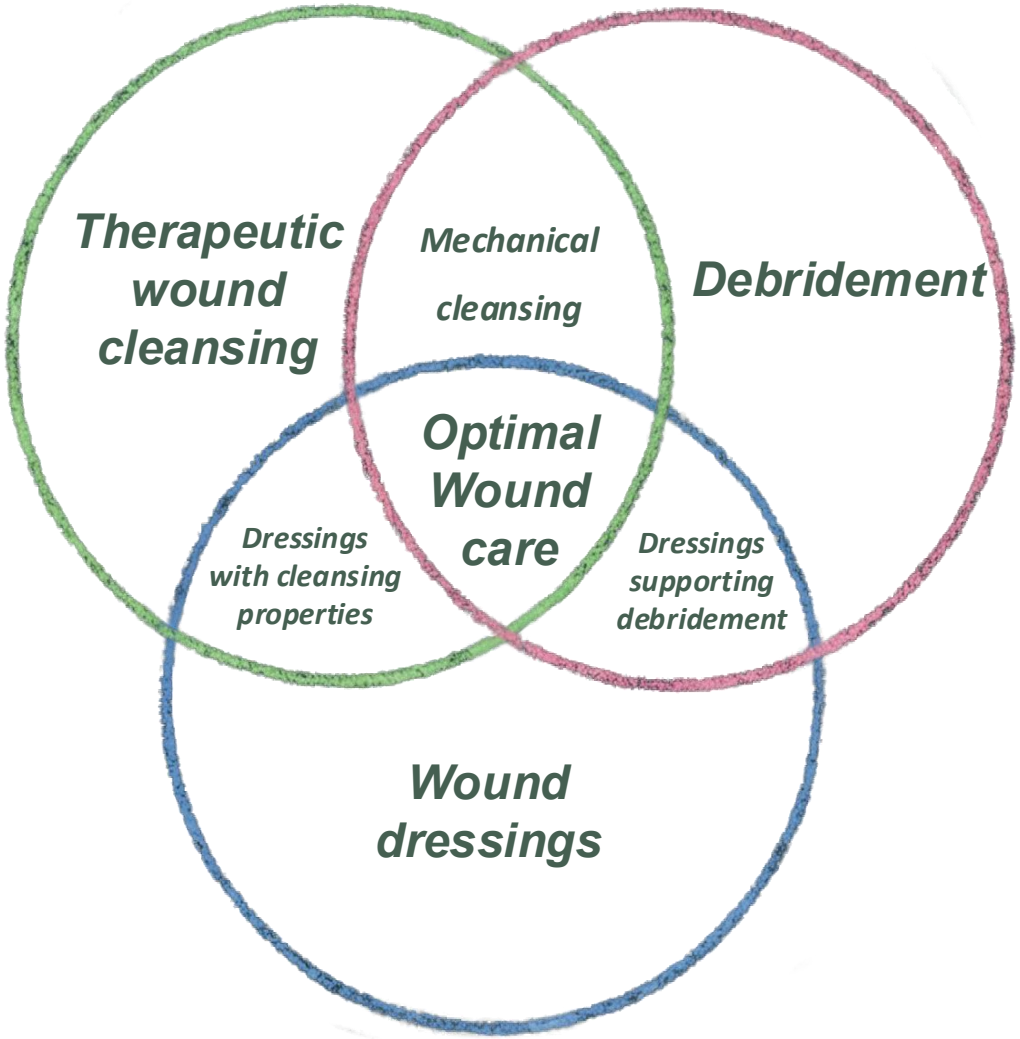
How do we optimize the wound bed?



Cleansing and Continuous Debridement Matter

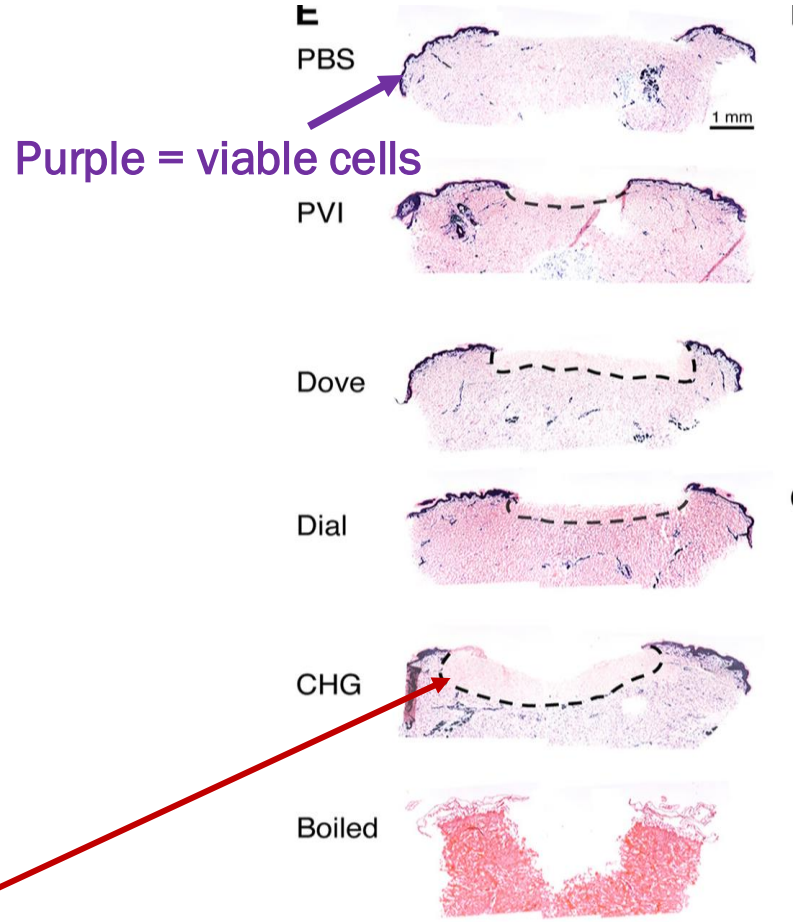
"Given the microbial density in all samples, the need for therapeutic wound and periwound cleansing and debridement is reinforced."





Wound Cleansers Can Impact pH

- There are many choices in wound cleansers
- Commercial wound cleansers vary considerably in chemical composition and pH
  - This may influence their biological effects on the wound bed
- Not all cleansers are **safe** (no toxicity to human cells) ***and*** **efficacious** (removal of bioburden)
- There is evidence that cleansers with acidic pH are less cytotoxic to cells

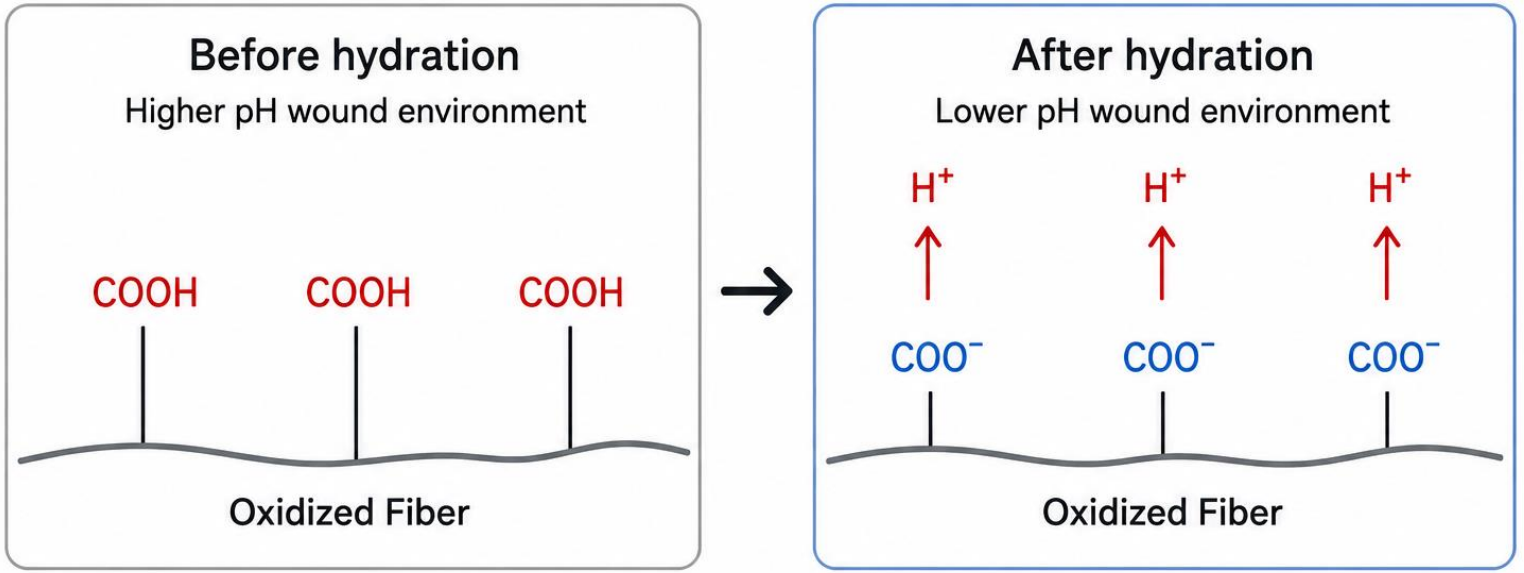


Human skin wounds treated with different cleansers

Wound Repair Regen. 2022;30(5):573-584.

Wound Dressings with Acidic Groups Can Release H+

- Wound fluid contact with oxidized fibers can release H+ ions
- This influx can cause microacidification of the wound environment
- An acidic environment (ie, low pH) can create conditions to facilitate slough removal and wound cleansing



$$COOH \longrightarrow COO^- + H^+$$

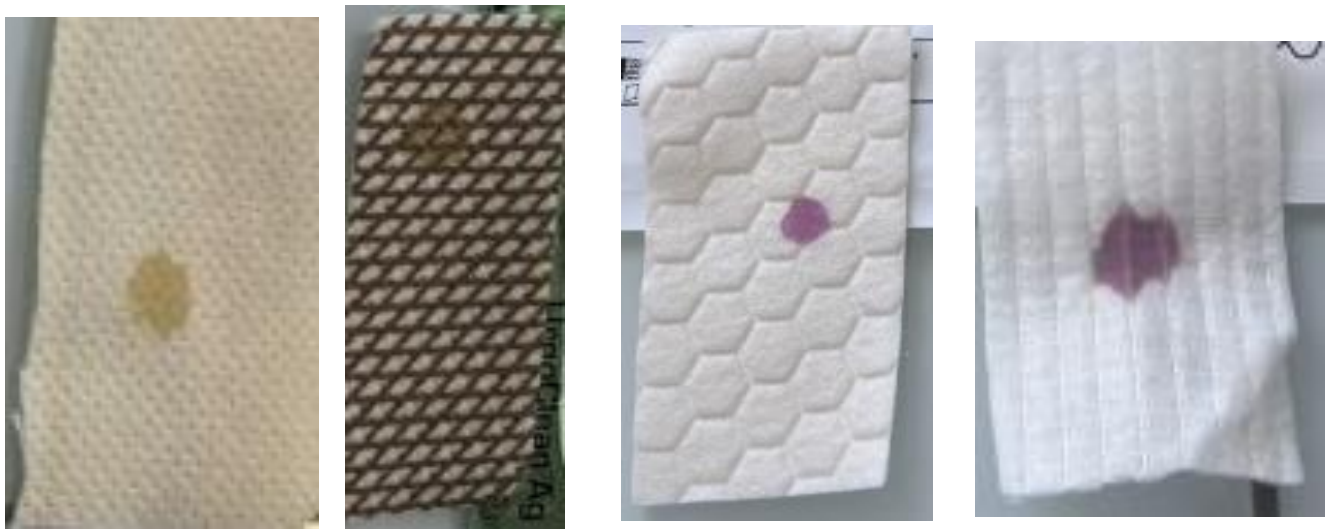
Acidic carboxyl groups (COOH) on the oxidized fiber release hydrogen ions (H^+) into wound fluid, creating a more acidic wound microenvironment.

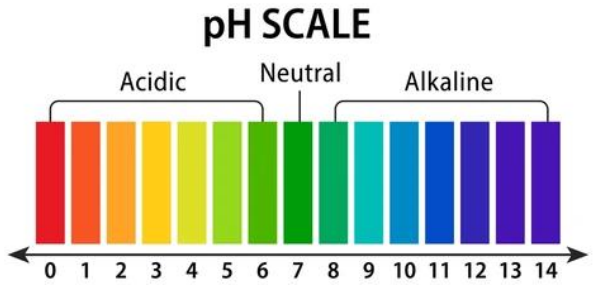
Sim P, et al. *Int J Mol Sci*. 2022;23(21):13655. Percival SL, et al. *Wound Repair Regen*. 2014;22(2):174-186.

Wound Dressings with Acidic Groups Can Release H+

- You can observe microacidification when alkaline solutions (purple) are added directly to fiber dressings

- Fibers releasing H+ neutralize and acidify the buffer (yellow)



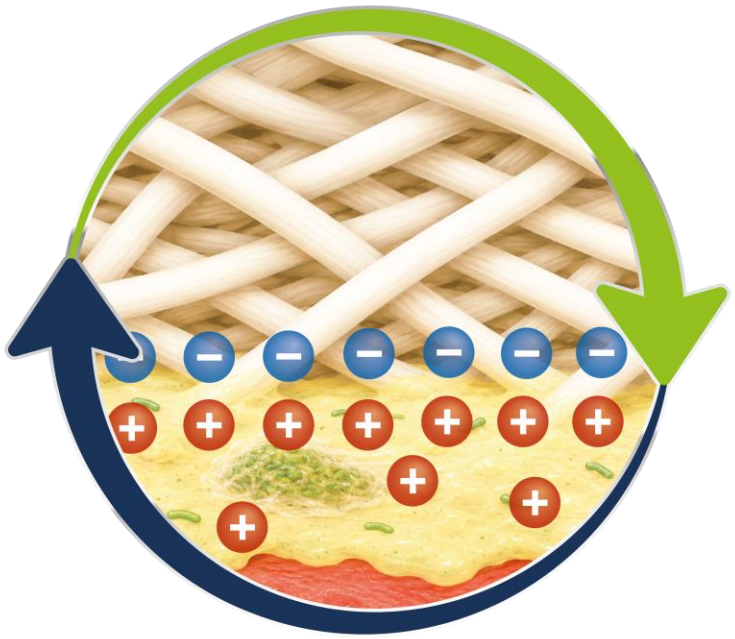


Data on File

So, What Is Microacidification?

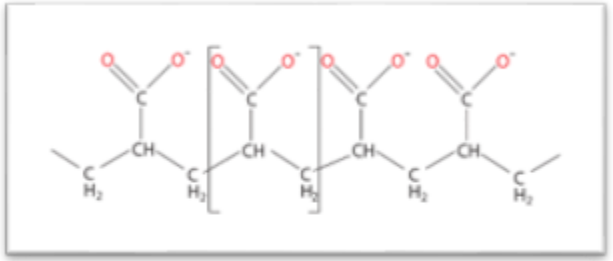
- Microacidification is the targeted reduction of pH at the wound surface, helping create a local environment that favors healing while minimizing changes to the surrounding tissue
- Removing slough, using skin pH cleansers, and maintaining skin-like pH between dressing changes helps prolong the therapeutic window
- Creating and maintaining an optimal wound microenvironment is a key component of effective wound bed preparation
- Every dressing change is an opportunity to restore and preserve a wound environment that supports healing

Microacidification Helps Charged Dressings Pull Slough



Dressing Fiber Type	Negative Charge in mmol unites per 10 x 10 cm dressing
Negatively-charged fiber dressing	4.3
Carboxymethyl cellulose gel dressing	0.26
Polyvinyl alcohol dressing	0.16
Alginate dressing A	0.09
Alginate dressing B	0.07

16X



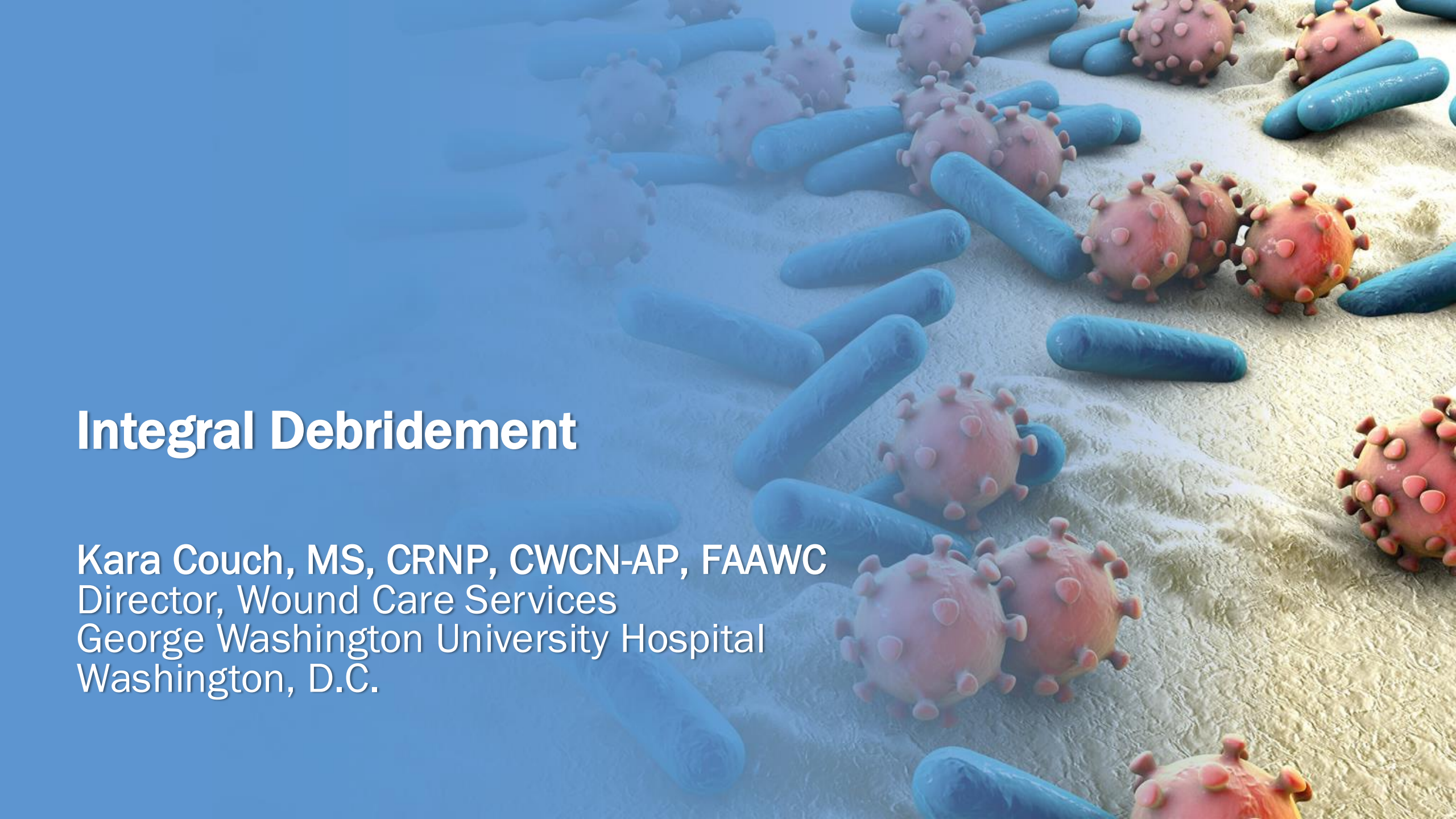
Data on File

Clinical Pearls

- The acidic nature of healthy skin serves to prevent infection and maintain barrier integrity
- Inflammation, slough formation, and microbial biofilm can create an alkaline wound environment
- Continuous integral debridement alongside products that maintain healthy skin-like pH will support wound healing

Integral Debridement

Kara Couch, MS, CRNP, CWCN-AP, FAAWC
Director, Wound Care Services
George Washington University Hospital
Washington, D.C.



Debridement and Bioburden

IWII Findings

Slough is a complex mixture of proteins and is polymicrobial

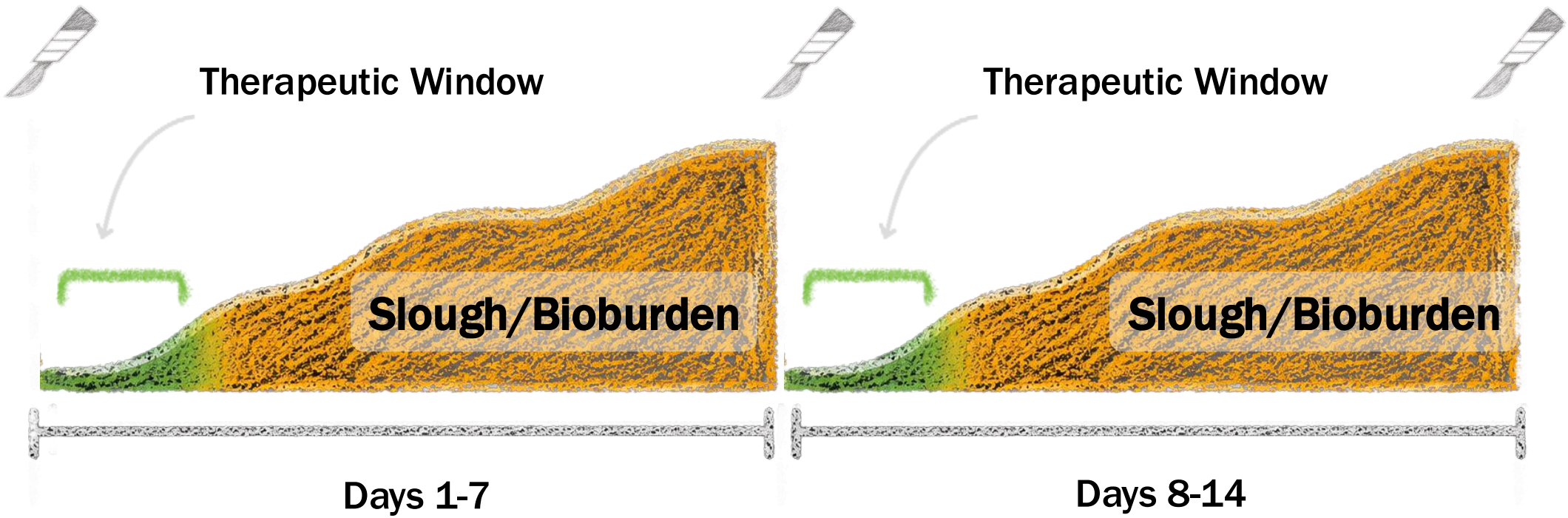
Slough from chronic wounds has high concentration of pro-inflammatory proteins as a result of excessive or prolonged inflammation

Clinical Practice Impact

Broad-spectrum topical antimicrobials are needed, and options are limited due to their therapeutic index and stewardship efforts

New formats of debridement options are needed to address slough faster and continuously

Current Debridement Cycle



Sharp Debridement Maintenance Debridement Maintenance Debridement

Weekly Wound Clinic Evaluation

Post-sharp debridement

Next appointment

Slough and microbial colonies reform within 24 hrs and dressings aren’t targeting slough

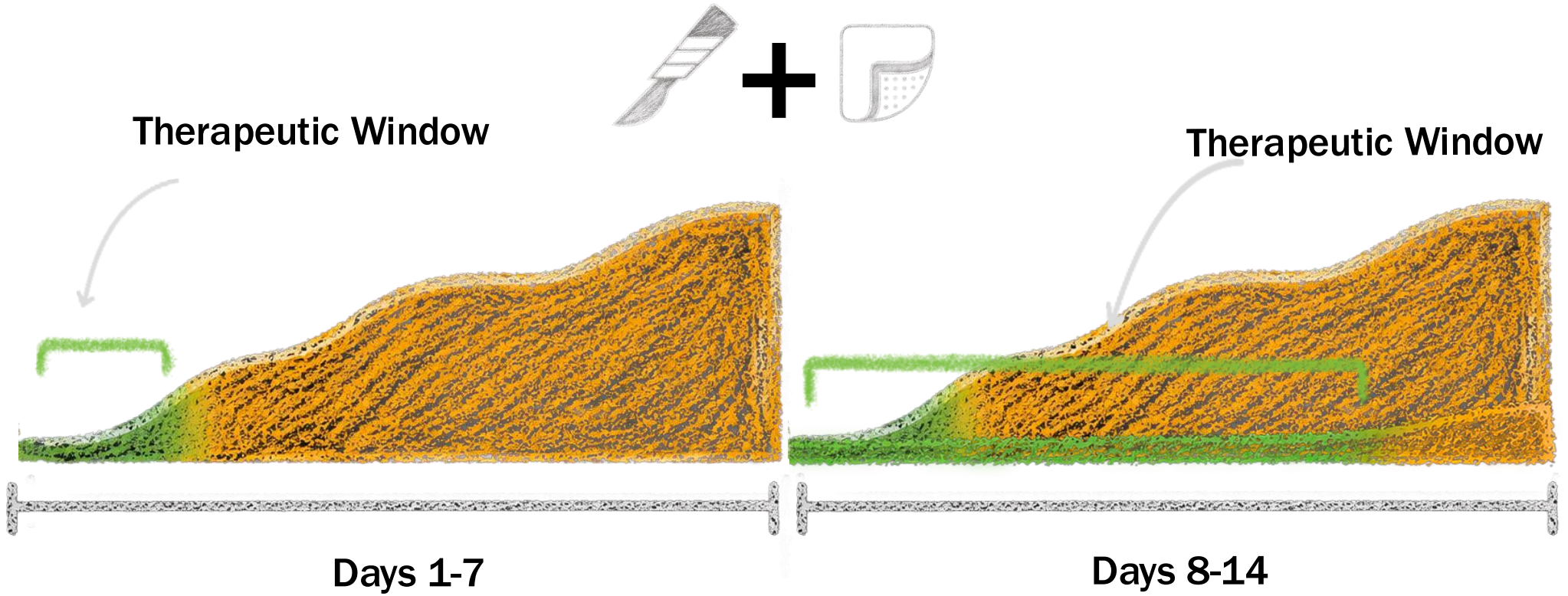
Integral Debridement: A Call for Practice Change

Scan to download

- Definition: The combined use of different, but complementary, methods of debridement on the same wound
  - Takes a holistic and complete approach
  - Allows for a tailored, patient-centric approach
  - Can help bridge limitations in a health professional's scope of practice and knowledge base, potentially enabling more effective outcomes

Mayer DO, et al. *J Wound Care*. 2024;33(Suppl C):S2–S29.

Integral Debridement



Integral Debridement

Integral Debridement:
Sharp and Continuous Debridement of Slough

Effective

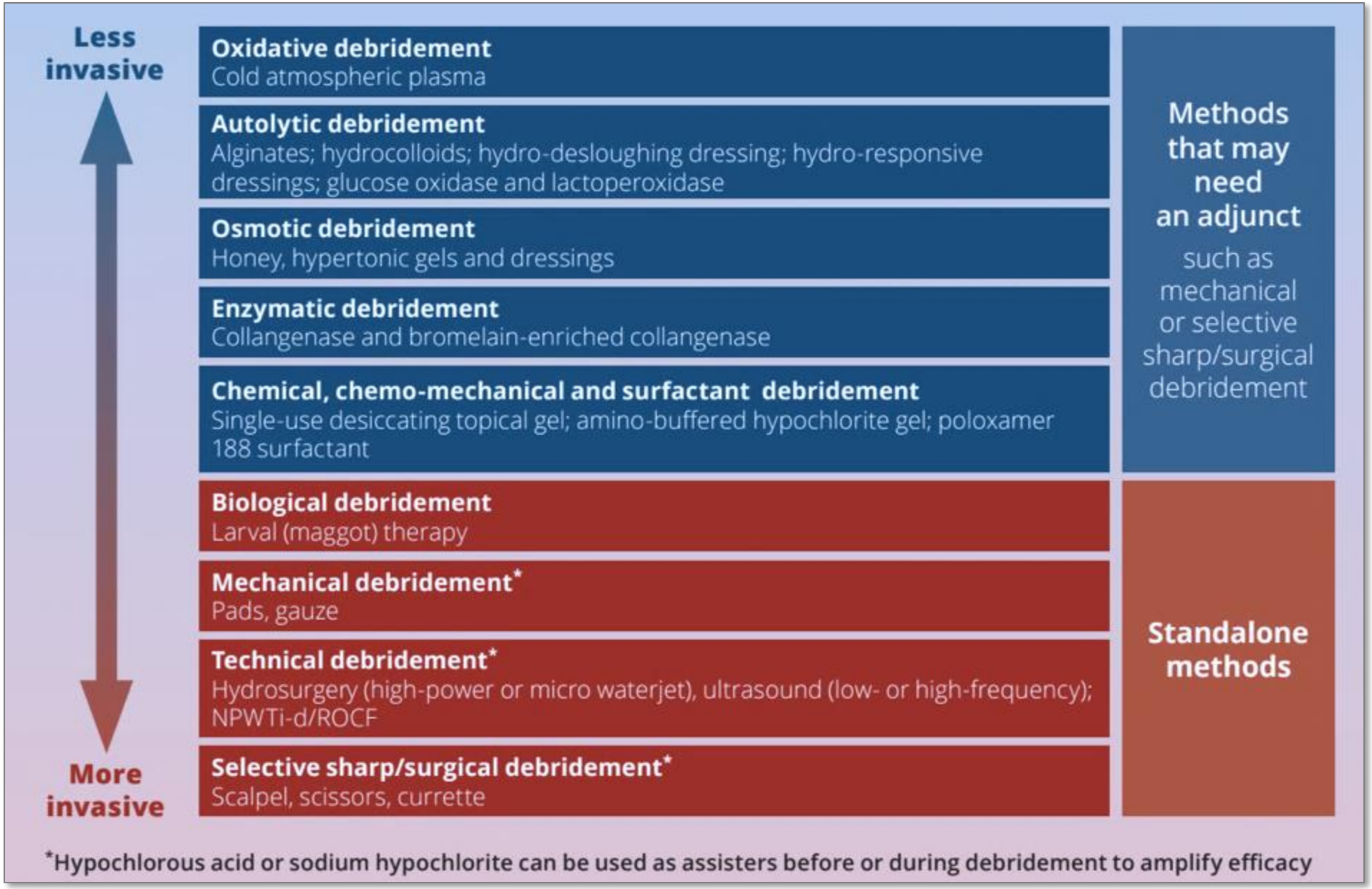
Continuously removes slough and wound debris as it forms and mitigates reformation of microbial colonies post-sharp debridement

Accessible

- Affordable
- Reimbursed
- No special trips to pharmacies or copays
- Not limited by scope of practice

Easy and Comfortable

Easy to use by healthcare providers and well tolerated by patients



NPWTi-d = negative pressure wound therapy with instillation and dwell; ROCF = reticulated open cell foam.
Mayer DO, et al. *J Wound Care*. 2024;33(6):Sup C.

Continuous Integral Debridement

Figure 2. Continuous integral debridement

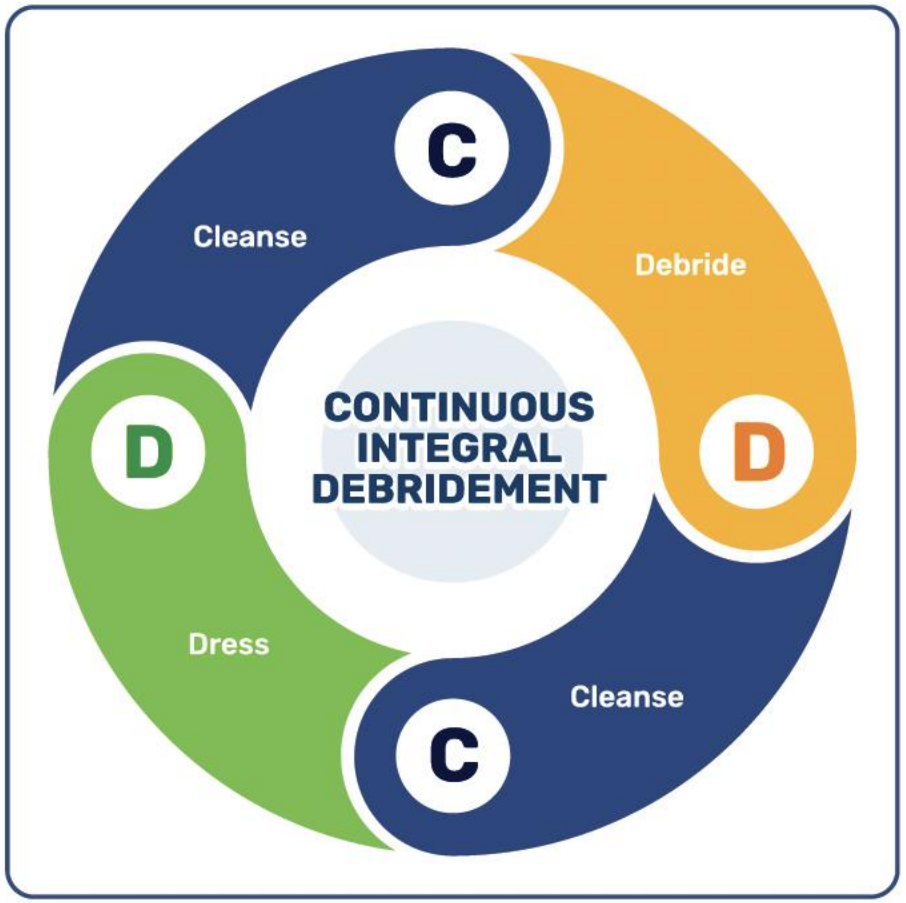
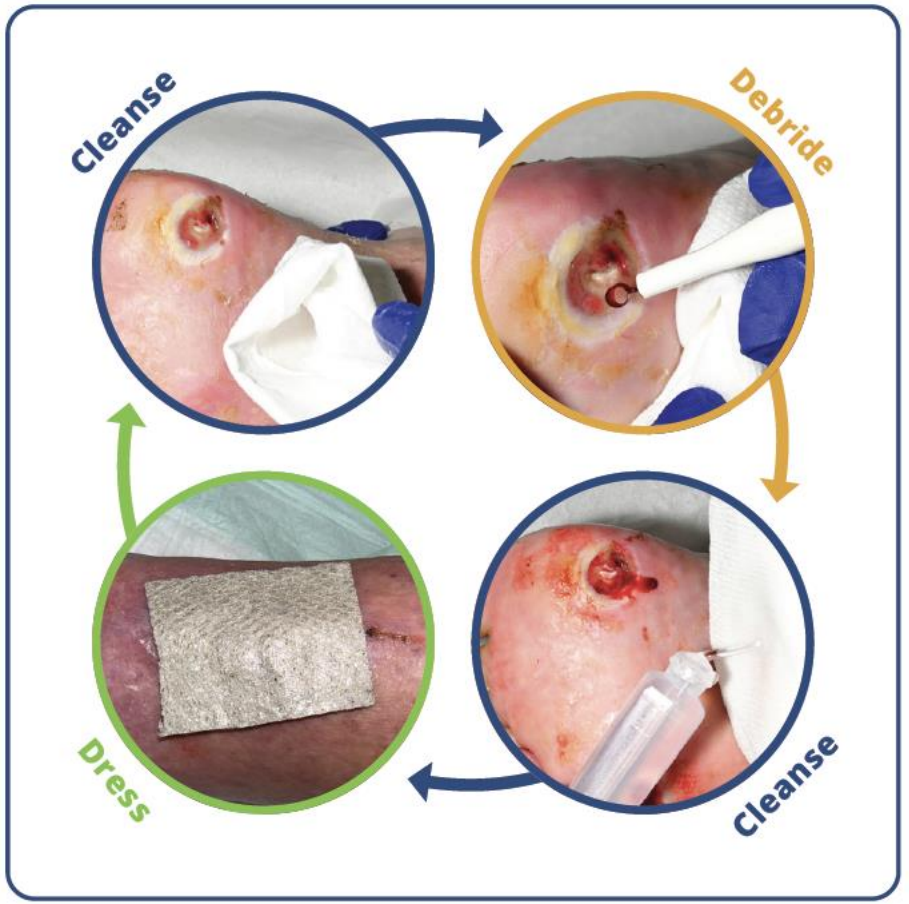
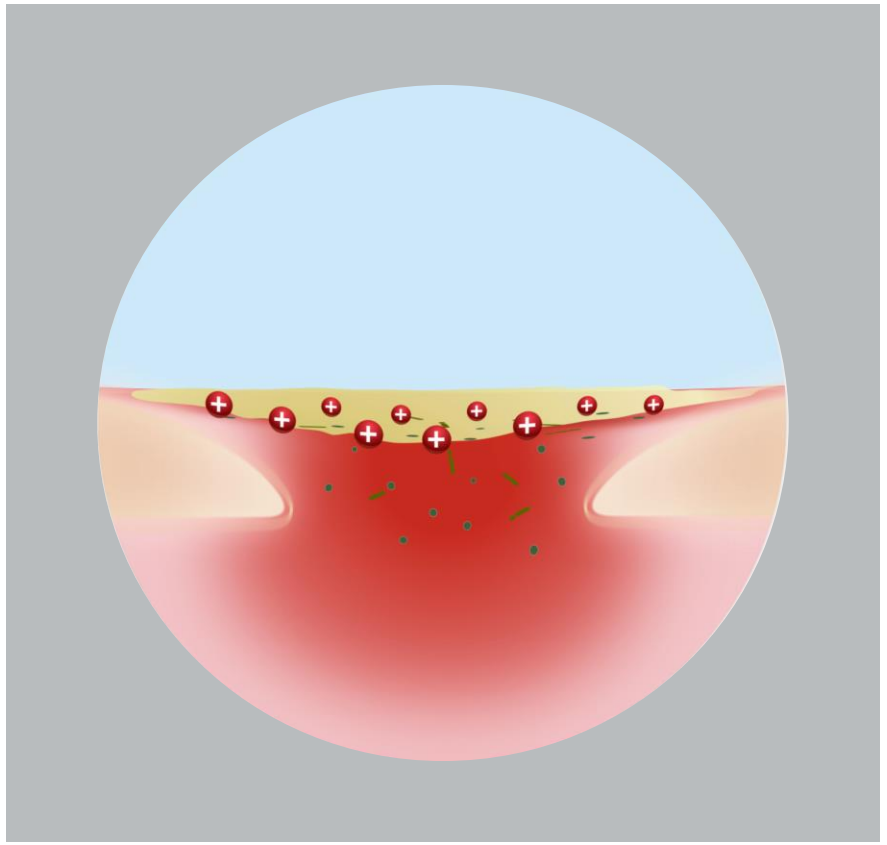


Figure 3. Steps of continuous integral debridement



Mayer DO, et al. *J Wound Care*. 2024;33(Suppl C):S2–S29.

How Charged Fibers Work

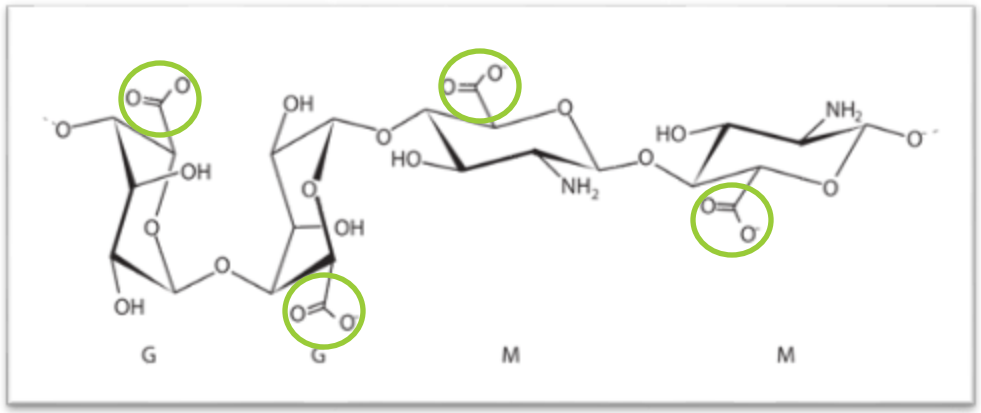


Based on electrostatic interactions, charged fibers rely on *2* distinct properties

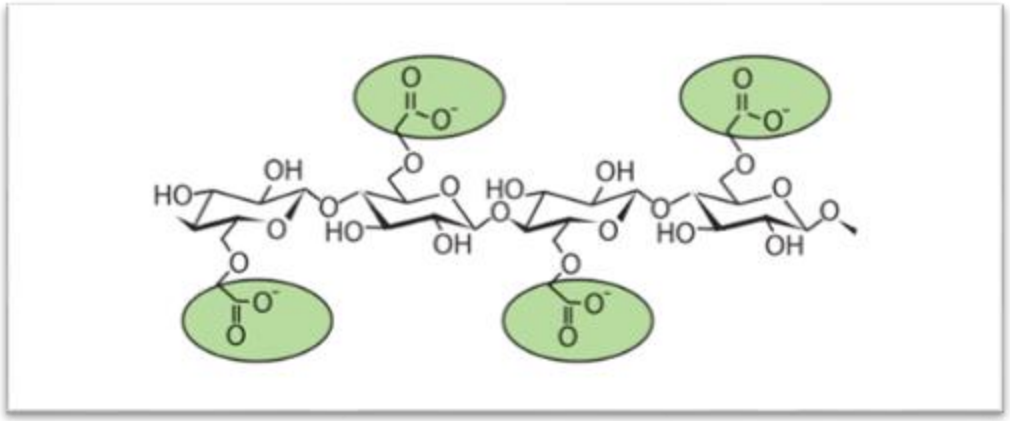
- A high density of negative charges
- The ability to create localized microacidification *at the interface between the dressing and the wound, promoting electrostatic interactions*

Negative Charges in Dressings

Alginate:
Negative charges are far apart



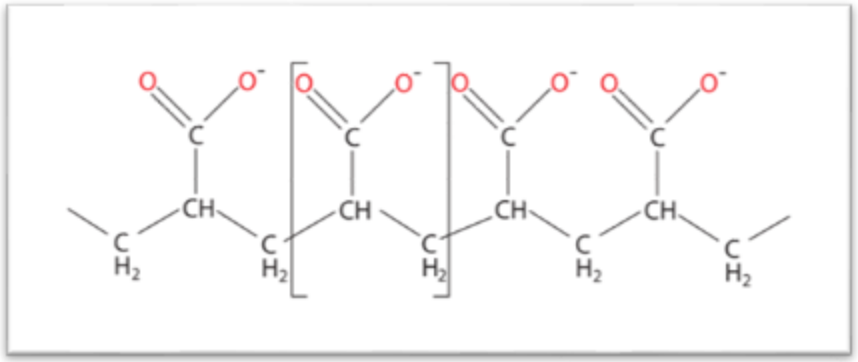
Carboxymethylcellulose (CMC):
Negative charges are far apart



Morozkina S, et al. *Polymers (Basel).* 2022;14(17):3604.

Negatively-Charged Fiber (NCF) Dressing: Negative Charges Are Very Close

Product	Negative Charge in mmol units per 10x10 cm dressing
Negatively Charged Fiber Dressing	**4.13**
Alginate Dressing A	0.07
Alginate Dressing B	0.09
Carboxymethyl Cellulose gelling dressing	**0.26**
Poly Vinyl Alcohol, PVA dressing	0.16



Charge measurements:

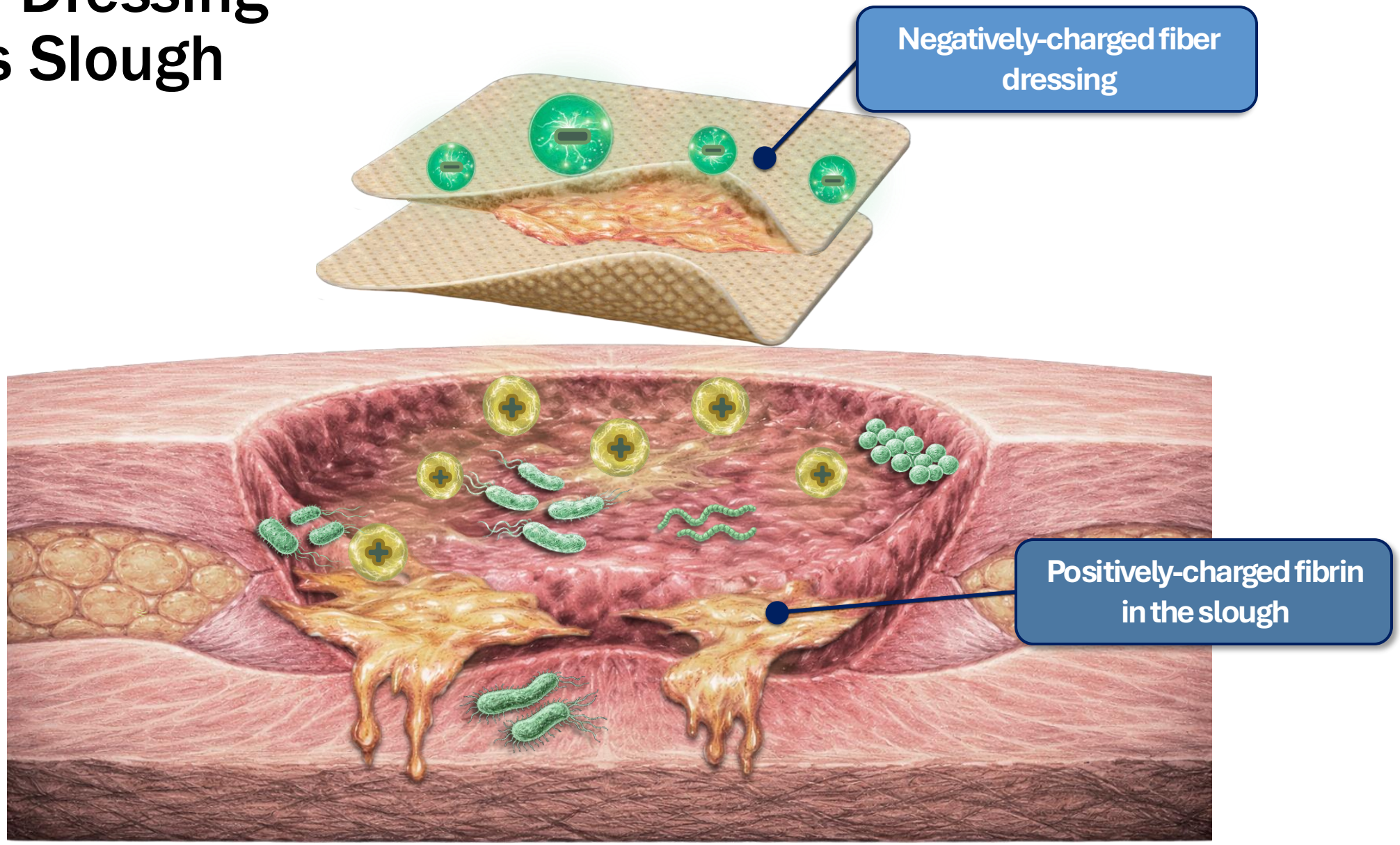
NCF dressing charge is 16x stronger

NCF = negatively-charged fiber.

Binds, traps, and removes slough, exudate, and bacterial residues

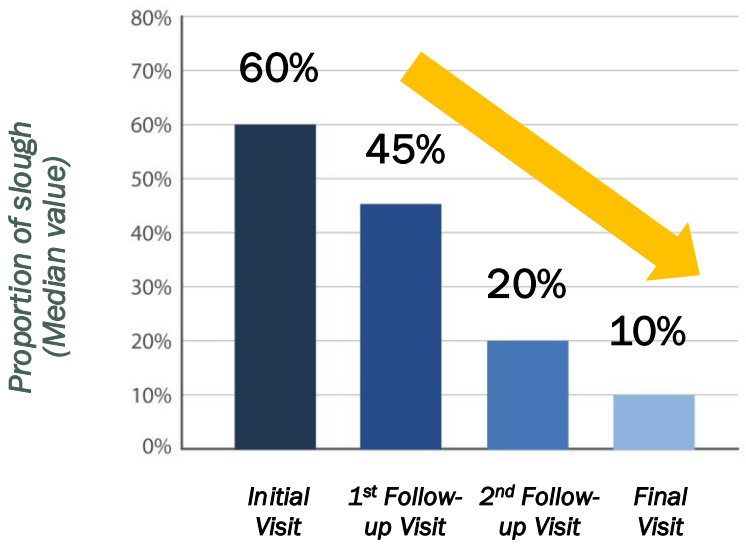
Atraumatic, pain-free removal

How NCF Dressing Removes Slough



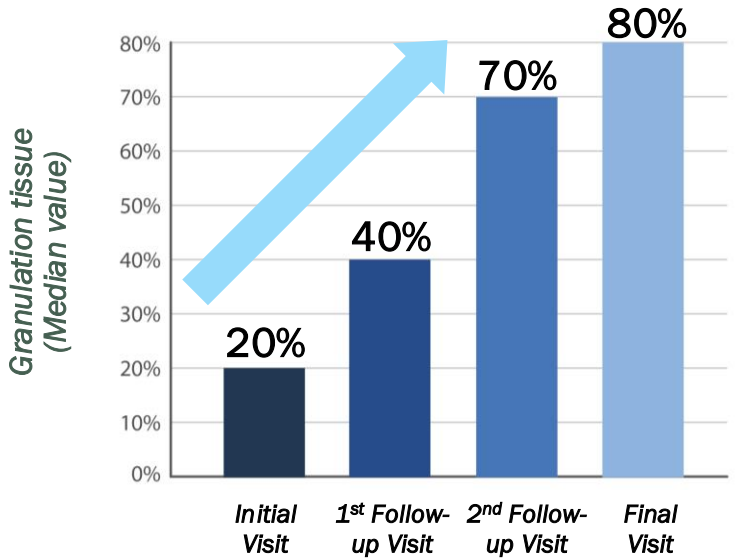
Observational Study: Proven Continuous Debridement

Reduction of slough



1,558 Patients

Increase in granulation tissue



Infection 87.3%

Malodor 86.7%

Maceration 65.6%

Spontaneous pain 60.4%

Reinboldt-Jockenhöfer F, et al. *J Wound Care.* 2025;34(4):261-270.

Patients Who Benefit from NCF Dressings

✓

Post sharp debridement wounds

✓

Sloughy wounds

✓

Wounds that cannot be sharp debrided

Case: Sacral Pressure Injury

55-yr-old with chronic desmoid tumors, enterocutaneous fistula (ECF), chronic pain, and malnutrition developed an unstageable hospital-acquired pressure injury (HAPI) on the buttock 2/2 deconditioning. Was having twice weekly OR dressing changes of ECF. OR debridement of ulcer was planned, but improved too fast with NCF.

Case: Right Leg Knee Burn

46-yr-old with T2DM and HIV kneeled on his deck while sealing it during the summer and didn't realize he sustained full-thickness burns. Patient is severely neuropathic.

Case: Left Leg Knee Burn

Same patient; this is the other leg

Case: Chest Tube Nonhealing Wound

14-yr-old with Ewing sarcoma developed this wound from a chest tube after rib resection.
Patient needed to start radiation therapy and was on chemo. Mother tried ointments without success.

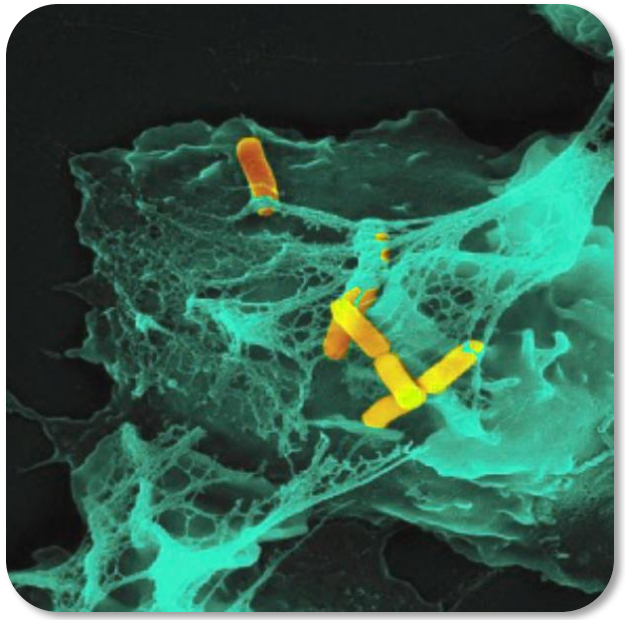
Ideal Antiseptic Agent Properties

BOX 4 | Properties of an ideal antiseptic agent (To et al, 2016; Kramer et al, 2018; Babalska et al, 2021)

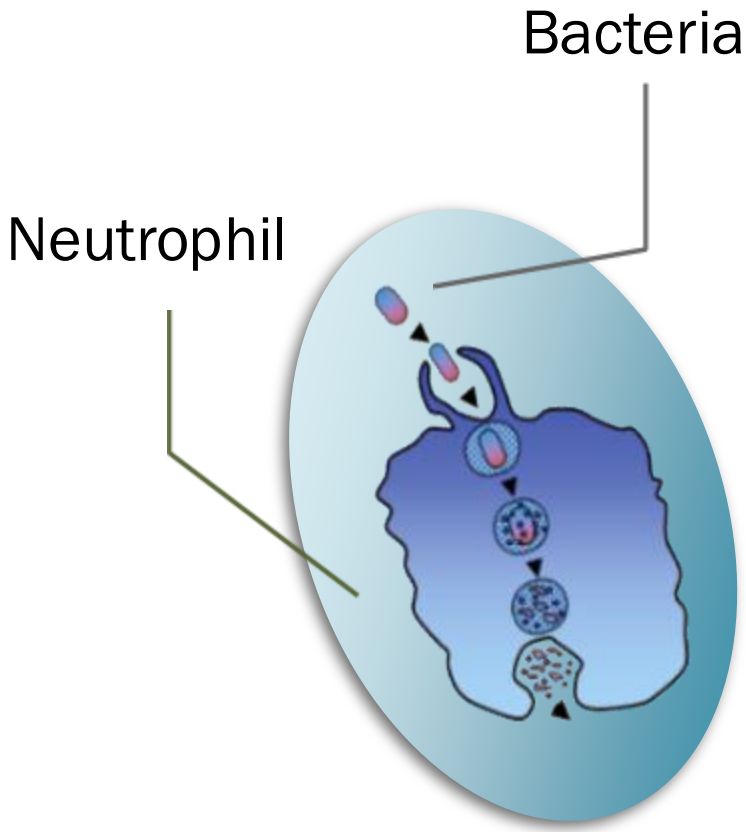
- Possess antimicrobial activity at the site of action against a broad spectrum of microorganisms, including Gram-positive and Gram-negative bacteria, fungi and viruses
- Ability to penetrate biofilm
- Does not cause resistance or cross-resistance
- Is fast-acting in acute wounds
- Can handle excess wound exudate (if it is a dressing)
- Cost-effective
- Non-traumatic
- Easy and safe to use
- Does not cause allergic reactions or pain
- Is not toxic, carcinogenic or mutagenic
- Tolerability should be equal to Ringer solution, physiological saline or an inert hydrogel
- Suitable chemical and physical properties – e.g. in regard to colour (does not colour the skin), smell and consistency.

Mrozikiewicz-Rakowska B, et al. *Wounds International.* Published 2023. Accessed July 7, 2026. https://woundsinternational.com/consensus-documents/use-of-wound-antiseptics-in-practice/

Hypochlorous Acid (HOCl): The Body's Natural Microbicide



Oxidative Burst Pathway



$H_2O + O_2$

↓ NADPH Oxidase

O_2^-

↓ Dismutase Superoxide

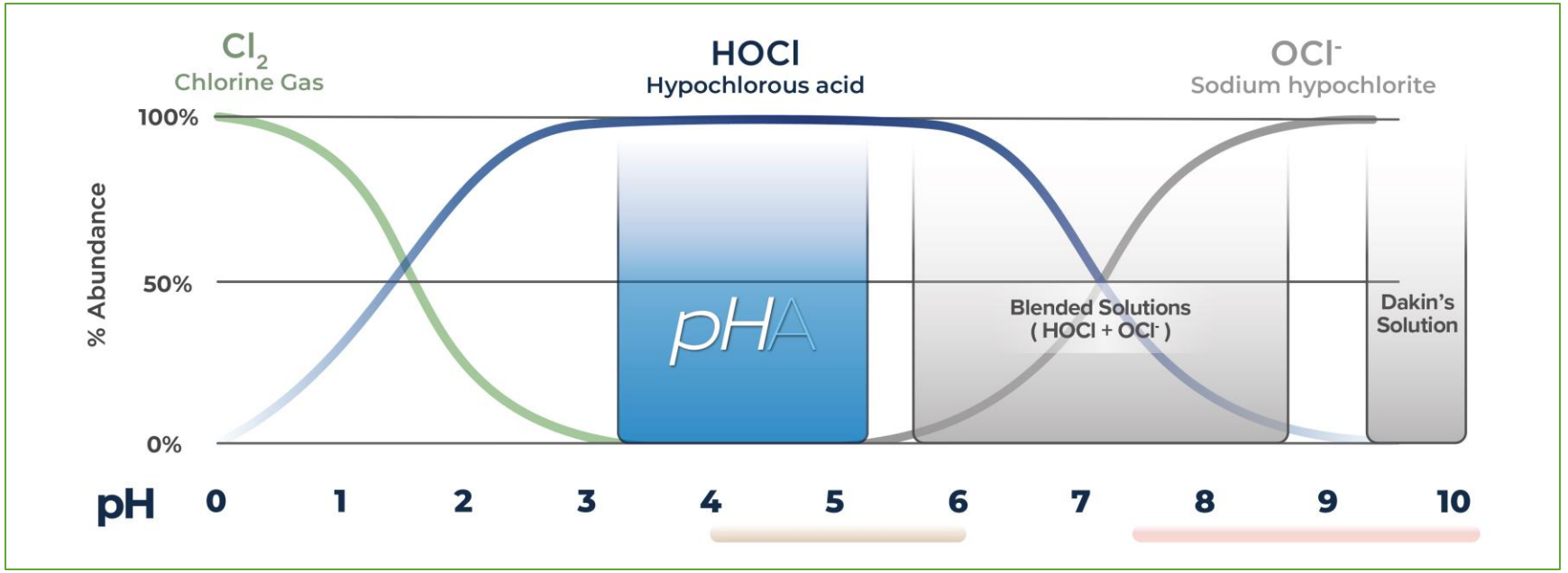
H_2O_2

↓ Myeloperoxidase

HOCl

Slide courtesy of Dr. Greg Schultz

The Connection of pH to Wound Healing



Healthy, Intact Skin – pH 4.0-6.0

(Acidic environment)

- Higher antimicrobial properties
- Favorable to wound healing
- Preserves skin function
- Increased macrophage and fibroblast activity
- Ensures stratum corneum cohesion and barrier function

Vulnerable Skin: pH >7.5

(Alkaline environment)

- Allows pathogens to thrive
- Impedes healing process
- Inflammation and irritation
- Same pH as chronic wounds

Therapeutic Index

A quantitative measurement of the relative safety of a solution regarding risk of damage to healthy cells

Therapeutic Index Calculation

$$\frac{\text{Efficacy}}{\text{Damage}}$$

Higher values indicate greater safety and potential clinical effectiveness (>1)

Clinical Management Extra

Therapeutic Indices of Topical Antiseptics in Wound Care: A Systematic Review

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CME 1 AMA PRA Category 1 Credit™
NCPD ANCC 2.5 Contact Hours
Rx 2.0 Pharmacology Contact Hours

GENERAL PURPOSE: To review the therapeutic indices of topical antiseptics for bacterial species commonly isolated from chronic wounds.
TARGET AUDIENCE: This continuing education activity is intended for physicians, physician assistants, nurse practitioners, and registered nurses with an interest in skin and wound care.
LEARNING OBJECTIVES/OUTCOMES: After participating in this educational activity, the participant will:
1. Explain the mechanisms underlying chronic wound physiology and their implications for effective wound healing and management.
2. Evaluate the role of therapeutic index values for topical antiseptics in chronic wound management.
3. Apply evidence-based treatment strategies for chronic wound management.

ABSTRACT

BACKGROUND: Chronic wounds place a heavy burden on healthcare systems and reduce patients' activities of daily living. Increased bacterial bioburden (local infection, covert infection) impairs wound healing. With increased antimicrobial resistance, alternative antimicrobial strategies are important.
OBJECTIVE: To determine the topical antiseptic therapeutic index values for common wound bacterial species. The therapeutic index is a ratio comparing lowest concentration that causes mammalian cell cytotoxicity to the minimum bactericidal concentration; higher values indicate greater safety / clinical benefit.
DATA SOURCES: MEDLINE and EMBASE databases were searched from conception to June 2023. Common wound bacterial species and their in-vitro minimum bactericidal concentrations were compared to the minimum mammalian cell cytotoxicity concentration.
STUDY SELECTION: The authors identified 37 qualifying articles.
DATA EXTRACTION: Antiseptic, bacterial organism, mammalian cell type, minimum bactericidal concentration, and mammalian cell cytotoxicity concentration values.
DATA SYNTHESIS: The therapeutic indices for the topical antiseptics were generally low, with most ranging between 0.5 and 3.0. The highest therapeutic index values for *Escherichia coli* (6.49), *Staphylococcus aureus* (6.31) and *Pseudomonas aeruginosa* (8.81) were achieved by hypochlorous acid. The highest therapeutic index value for methicillin resistant *S.aureus* (12.1) was achieved by polyhexamethylene biguanide.
CONCLUSIONS: Antibiotic stewardship principles need to be applied to topical antiseptics due to some isolated topical antiseptic resistance and cross-resistance to oral antimicrobials. The choice of antiseptic should not be made solely based on therapeutic index values but individualized with the wound healing condition including covert infection.
KEYWORDS: bacterial bioburden, chronic wounds, minimum bactericidal concentration, therapeutic index, topical antiseptics, wound care

ADV SKIN WOUND CARE 2025;38:10-8.
DOI: 10.1097/ASW.0000000000000233

To earn CME credit, you must read the CME article and complete the quiz online, answering at least 10 of the 12 questions correctly. This continuing educational activity will expire for physicians on December 31, 2026, and for nurses March 5, 2027. All tests are now online only; take the test at http://cme.lww.com for physicians and www.NursingCenter.com/CE/ASWC for nurses. Complete NCPD/CME information is on the last page of this article. Dr. Sibbald is a consultant for Novartis Canada. All other authors and planners have no relevant financial relationships with any ineligible organizations regarding this educational activity. Lippincott CME Institute has identified and mitigated all relevant financial relationships. Submitted February 11, 2024; accepted in revised form July 16, 2024. Supplemental digital content is available for this article. Direct URL citations appear in the printed text and are provided in the HTML and PDF versions of this article on the journal's website (www.ASWCjournal.com).
*Gregory Schultz, PhD, died unexpectedly April 12, 2024. We appreciate his many contributions to wound care research, mentorships, and the journal.

Oropallo A, et al. *Int Wound J*. 2024;21(2):e14730.

Therapeutic Index Table

Cleansing Solution	Properties	Concentration	pH	Mean Therapeutic Indices
Betaine and poly-hexamethylene biguanide (PHMB)	Surfactant (betaine) Antimicrobial (PHMB)	0.1%	6-8	MRSA 12.12 P aeruginosa 1.14 E coli 0.66 S aureus 0.60 Note: some of the studies in this analysis used PHMB without added betaine at a range of concentrations
Chlorohexidine	Antimicrobial	0.05%	5.5-7	MRSA 2.43 P aeruginosa 0.70 E coli 1.15 S aureus 0.07
Hypochlorous acid (HOCl)	**Antimicrobial Hypotonic**	**0.03%**	**3.5-6.5**	**P aeruginosa 8.81 S aureus 6.31 E coli 5.49**
Sodium hypochlorite (NaOCl)	Antimicrobial	0.057%–0.125%	9-12	MRSA 0.008 E coli 0.004 S aureus 0.003 P aeruginosa 0.002
Povidone-iodine (PI)	Antimicrobial	10%	4	E coli 0.40 S aureus 0.69 MRSA 0.35

*Saline has no measurable therapeutic index

The Pipeline for New Antibiotics Is Shrinking

Topical antibiotics are often overused in wounds that are merely colonized rather than clinically infected.

Most chronic wounds contain bacteria, but presence of bacteria alone does **not equal infection.**

Antimicrobial stewardship in wound care focuses on:

- using antibiotics only when clinically indicated
- reducing unnecessary exposure
- preventing resistance
- preserving future treatment options

Stewardship is about preserving antibiotics for when they are truly needed.

Modern Wounds Need More than a Single-Function Solution

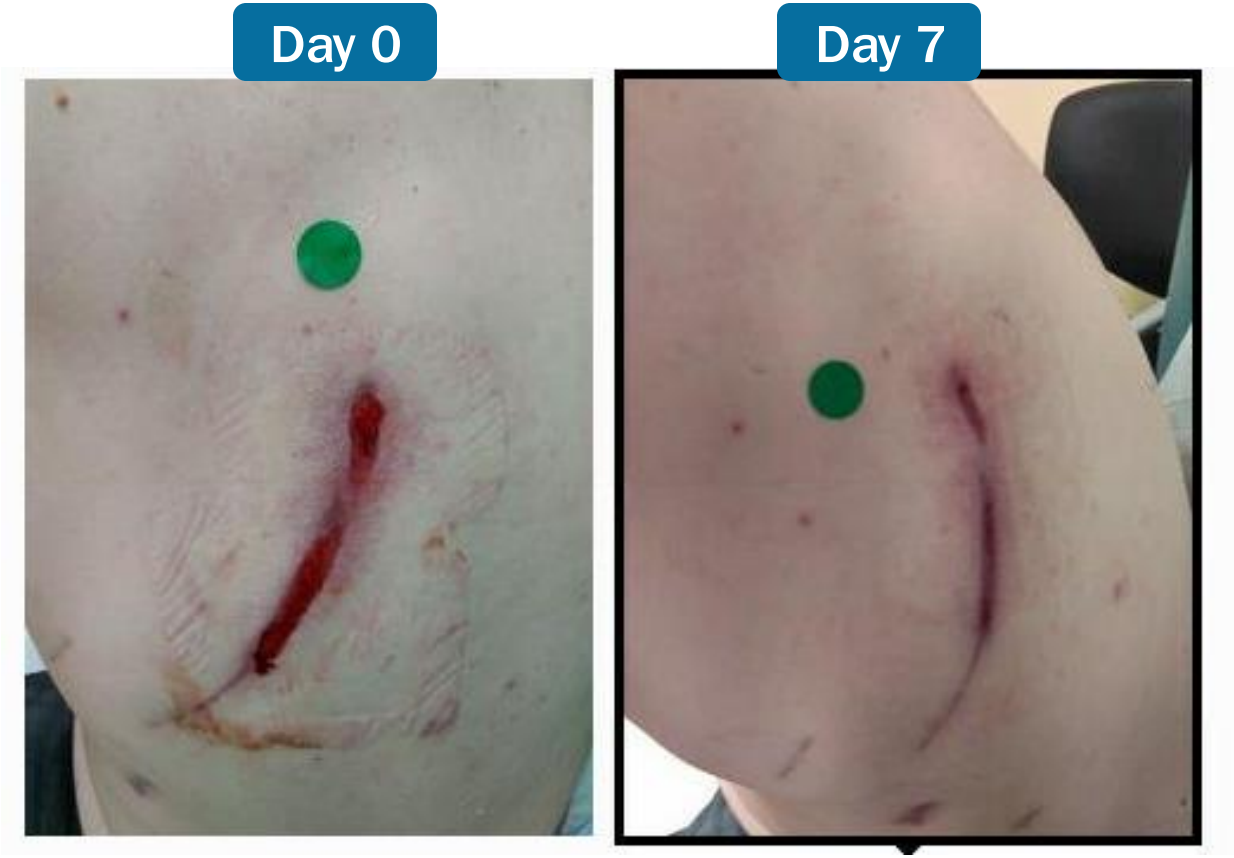
Case: Trauma Patient with Tire Burn on Chest

Treatment: **HOCl cleanse, HOCl antimicrobial wound gel**, non-bordered foam, changed daily

Case: Dehisced Posterior Chest Wound

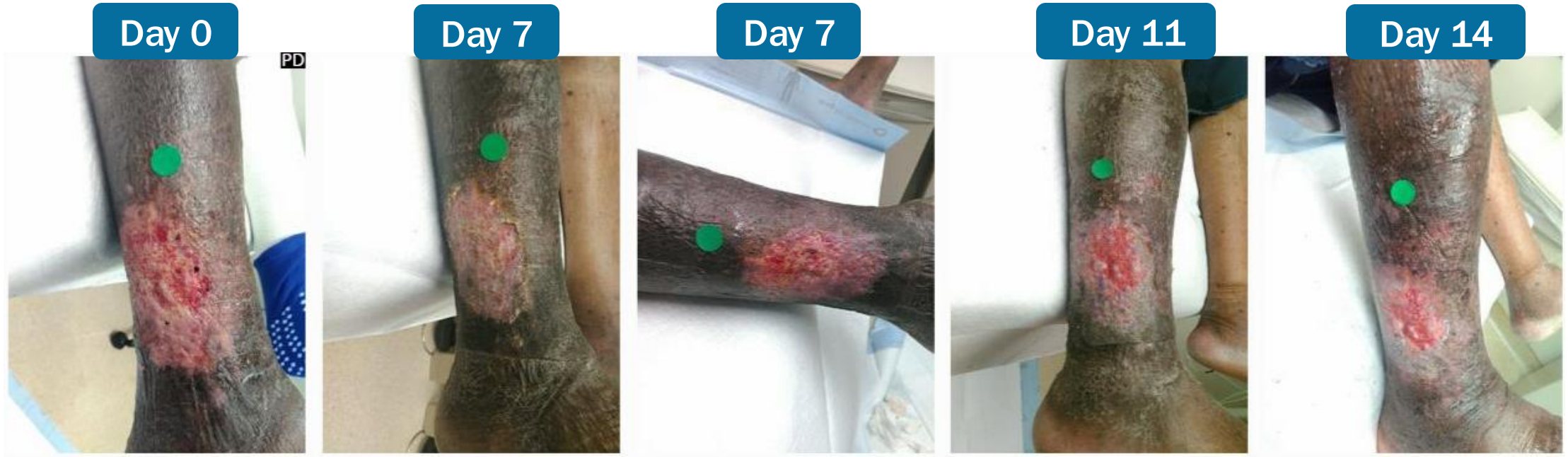
Chronic dehisced nonhealing surgical wound

Posterior back (3 months prior to evaluation)



Treatment: **HOCl cleanse, HOCl antimicrobial wound gel, NCF**, bordered foam, changed 2x/wk
Wound improved 54% in 1 wk

Debridement Properties Demonstrated in a Chronic Leg Ulcer



Treatment: **HOCl cleanse**, sharp debridement
Dressed with **HOCl antimicrobial wound gel**, bordered foam, and dual-layered compression wrap
Weekly changes

Debridement Properties Demonstrated in a Chronic Leg Ulcer

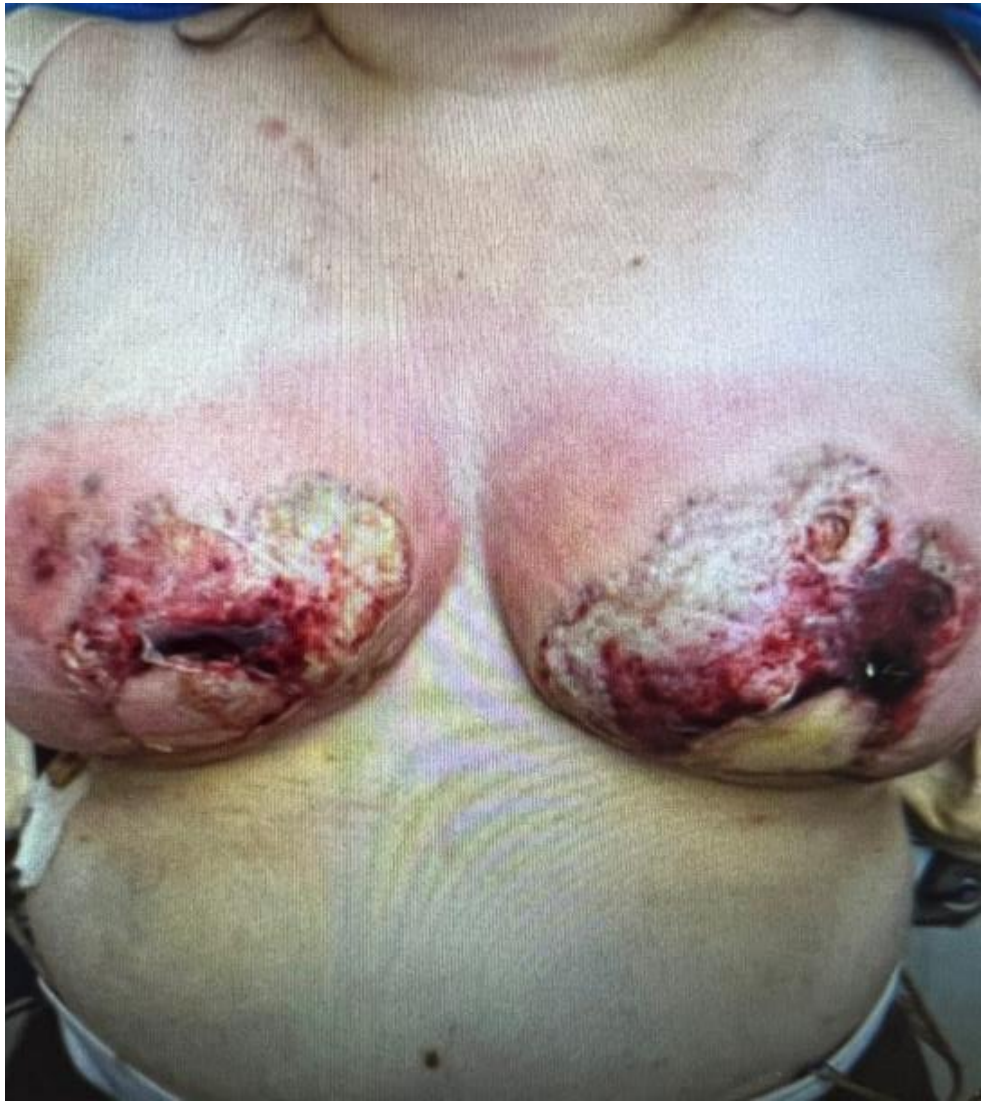
Wound improvement

Case: Pyoderma Gangrenosum (PG)

- 39y Female with BRCA gene underwent preventive mastectomies bilaterally with immediate reconstruction using DIEP flaps
- POD4, developed fevers, chills
- POD7, noted redness and blistering along the sternum, which got progressively worse
- Saw plastics daily x2 days, started on cefadroxil
- Admitted on POD10, biopsy showed pyoderma gangrenosum (PG)
- Started cyclosporine ≈2 wks after symptoms started
- Wounds treated with HBO x30 dives, HOCl compresses daily, and NCF covered with bordered foam
- Initial debridement done on day 6 of NCF

Case: PG, Day of Admission

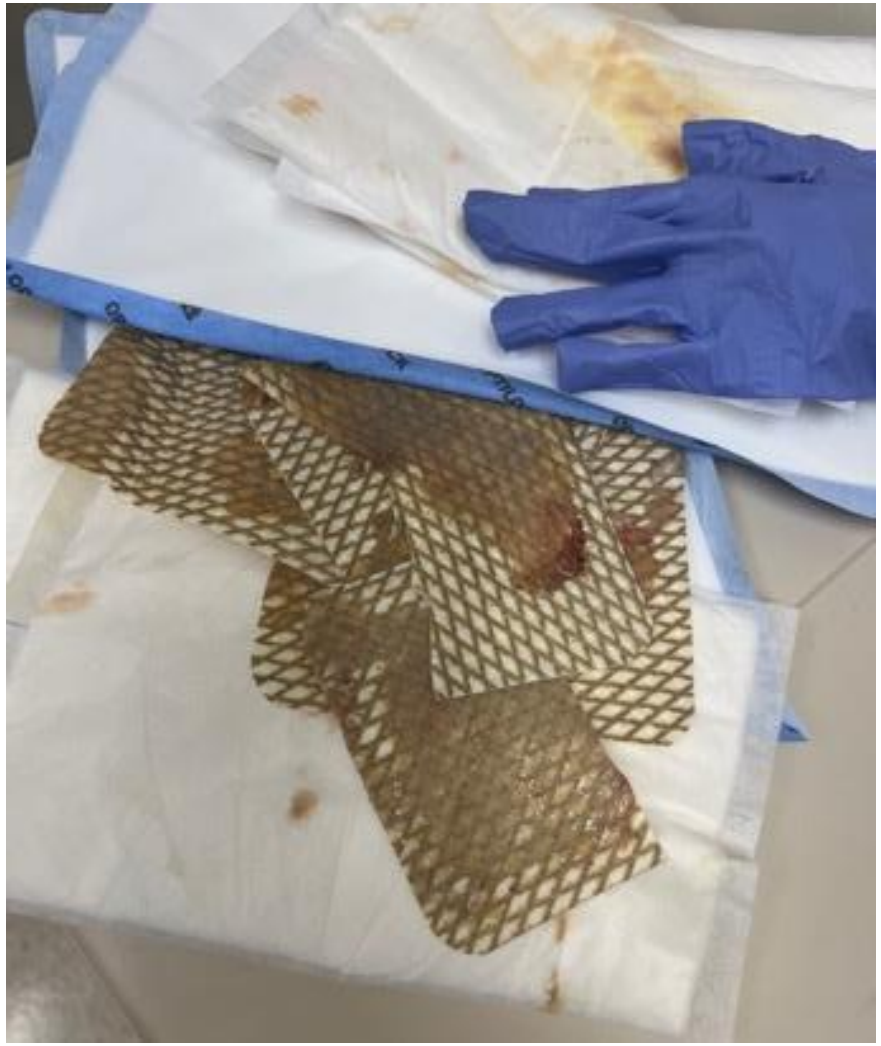
- Cellulitis (superinfection)
- Treated with vancomycin, ceftriaxone, daptomycin
- PO doxycycline and cephalexin



Case: PG, 1st Wk

Case: PG

- Rapid dissolution of the slough and eschar
- Drainage contained with silicone-bordered foam dressings
- Started cyclosporine 5 days after admission when biopsy came back



Case: PG, 2 Wks

Case: PG, 2 Wks

Case: PG, DIEP Donor Site

- Donor site for deep epigastric perforator (DIEP) also broke down centrally
- Managed also with HOCl compresses, NCF, and silicone-bordered foam dressings
- Changed 2x/wk

Case: PG, 1 Month

Case: PG, 6 Wks

Case: PG, 2 Months

Case: PG, Healed ≈6 Months

Clinical Pearls

- Integral debridement is a newly defined concept; however, it is the standard of care we all need to use
- Negatively-charged fibers bind to the positive charge of slough and are very effective in maintaining integral debridement between dressing changes and provider evaluations
- HOCl, when used as a gel, offers a powerful option that sets it apart from other topical antimicrobials
- HOCl is an excellent amplifier of debridement techniques

Questions?

Thank You!