

Modified Sodium Hypochlorite Wound Cleansing for Chronic Wounds: Focused Clinical Literature Review

Karen K. Giuliano, RN, PhD¹; Bill Richlen PT, WCC, DWC²; & Charlie P. Buscemi, PhD, APRN, CWCN, WOCNF³

¹University of Massachusetts Amherst; ²Wound Care Gurus; ³Florida International University, Miami, FL.

Background

- Most chronic wounds are colonized with bacteria which complicate and delay wound healing.
- Annually, chronic wounds impact \$10.5M Americans at a cost \$22.5B.
- Data supporting the antimicrobial activity of various antimicrobial agents is largely generated from laboratory studies, with a scarcity of clinical data on bacterial levels and healing rates in chronic wounds.
- The antimicrobial activity of sodium hypochlorite (NaOCl) has been well-established, making it a first-choice option for wound cleansing.
- While Dakins solution (multiple concentrations) has been used since 1915, it is associated with a high risk for tissue toxicity and limited clinical effectiveness data.
- This has led to the development of modified sodium hypochlorite formulations that can maintain antimicrobial activity with less risk for tissue toxicity.

Purpose

The purpose of this focused literature review was twofold:

1. To better understand the potential role of NaOCl for improving current options for cleansing of chronic wounds
2. To serve as a foundation for informing future clinical research as current empiric data to drive clinical practice are limited.

Contact

Charlie Buscemi, PhD, APRN, CWCN, WOCNF
cbuscemi@fiu.edu

FIU | Nicole Wertheim
College of Nursing
& Health Sciences
FLORIDA INTERNATIONAL UNIVERSITY



Methods

- A literature review (PubMed, CINAHL, EBSCO) to locate empiric data on wound cleansing and wound healing for chronic wounds using normal saline solution (NSS) vs. modified NaOCl 0.057% was conducted.
- Three studies that provided details of wound cleansing processes and/or quantitative measures of bacterial levels and/or wound healing were located and assessed for clinical relevance.

Results

- A total of 54 patients and 66 chronic wounds were included from the three studies.
- All 3 studies assessed wound cleansing effectiveness between NSS and NaOCl 0.057%, and two also used bacterial fluorescence imaging to verify effectiveness.
- All 3 studies found improved wound cleansing and reduced bacterial burden with NaOCl 0.057% as compared to NSS.
- In addition, 2 of the 3 studies measured wound healing as reductions in wound size and found that the proportion of wounds exhibiting a reduction in wound size was higher in chronic wounds with cleansed NaOCl 0.57% vs. NSS.



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Conclusion & Implications

- While the number of wounds and studies included in this review is small, results to date suggest that compared to NSS, modified NaOCl 0.057% is more effective in reducing bacterial burden and promoting healing in chronic wounds without associated toxicity.
- As NSS is often used as a standard of care in many clinical practice settings, more data are needed to replicate and further investigate these findings.
- Given the enormous negative consequences of chronic wounds on quality of life, patient outcomes, resource utilization, and healthcare cost, advancement in chronic wound cleansing clinical practice has the potential to generate a considerable and measurement impact.

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