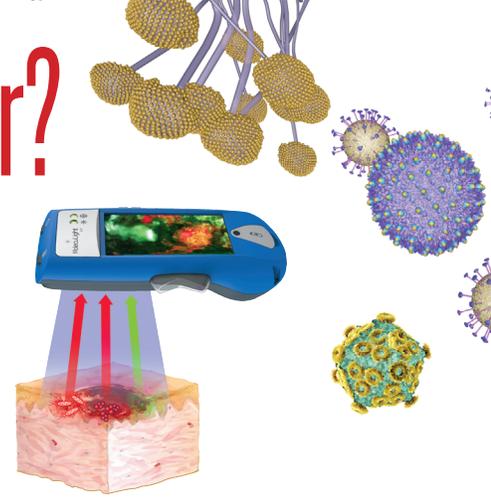


How effective is your wound cleanser?

An evaluation using bacterial fluorescence imaging



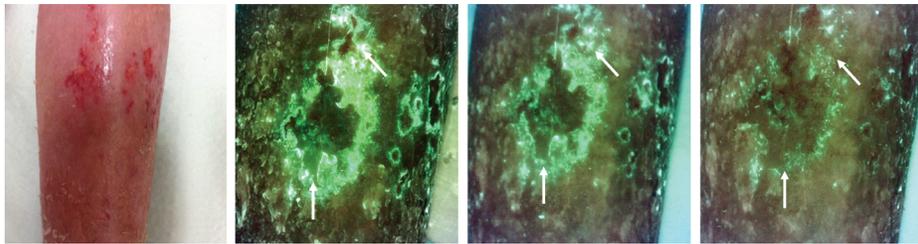
By Rosemary Hill BSN CWOCN WCC (C)



INTRODUCTION

- Wound cleansing to remove surface bacteria is an essential component of wound bed preparation.¹
- It is challenging for clinicians to objectively assess at the point of care the effectiveness of a wound cleanser in removing the surface bacteria.
- Most cleansers are cytotoxic, therefore the provincial health authority of British Columbia, Canada mandated that only normal saline be used.²
- Two novel, non cytotoxic and tissue compatible wound cleansers were identified by the provincial authority to improve the removal of surface bacteria: a hypochlorous acid solution and a modified sodium hypochlorite solution.
- This study aimed to objectively evaluate and compare the effectiveness of the two novel wound cleansers to substantiate selecting a specific cleanser and switching from normal saline as best practice.

Fluorescence Images



Standard Image

Post Saline Cleanse

Post Hypochlorous Acid Soak

Post Modified Sodium Hypochlorite Cleanse

(Anasept® Antimicrobial Skin & Wound Cleanser)

METHODS

Bacterial Fluorescence Imaging (MolecuLight i:X)

- When excited by 405 nm violet light, tissues fluoresce green while bacteria fluoresce red (porphyrin-producers, e.g. *Staphylococcus aureus*) or cyan (pyoverdine-producing *Pseudomonas aeruginosa*)
- This enables real time, point of care detection and localization of bacteria at loads of moderate to heavy within and around wounds³⁻⁵

COMPARISON STUDY

- Wounds (n=15) were cleansed with normal saline, as per best practice, after which a fluorescence image was acquired to visualize any concerning levels of bacteria remaining within and around the wound.
- Wounds were next soaked with the hypochlorous acid for a minimum of five minutes (per manufacturer guidelines), scrubbed and then re-imaged.
- Wounds were lastly sprayed with sodium hypochlorite solution and immediately scrubbed and re-imaged.

PRODUCT USED IN EVALUATIONS:

- 1) Saline - 0.9% Sodium Chloride (Isotonic) Solution
- 2) Hypochlorous acid
- 3) Modified sodium hypochlorite:

Anasept® Antimicrobial Skin & Wound Cleanser (Anasept® is a registered trademark of Anacapa Technologies, Inc.)



CONCLUSIONS

- Saline cleansing, according to best practice, left behind widespread bioburden in all wounds.
- Heavy bioburden in and around wounds can be identified from the fluorescence images and fluorescence images provide an objective method of evaluating the effectiveness of cleansing and performing targeted cleansing at the point of care.
- The evaluation found that sodium hypochlorite solution was superior to both normal saline and the competitor hypochlorous solution in removing *Pseudomonas* and other bacteria.
- Based on the results, the provincial authority now recommend that wounds exhibiting heavy bioburden be cleansed with sodium hypochlorite solution.



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Anasept® is a registered trademark of Anacapa Technologies, Inc

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4. Wu YC et al. Handheld fluorescence imaging device detects subclinical wound infection in an asymptomatic patient with chronic diabetic foot ulcer: a case report. International Wound Journal, 2015.
5. Ottolino Perry et al. Improved detection of wound bacteria using autofluorescence image guided wound sampling in diabetic foot ulcers. International Wound Journal (In revisions). The MolecuLight i:X is manufactured by MolecuLight, Inc. 425 University Avenue, Suite 700 Toronto, ON, M5G 1T6 Canada