GAPS IN PRACTICE : WOUND IRRIGATION VERSUS WOUND CLEANSING

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INTRODUCTION

The term wound cleansing is used often in literature and in the clinical setting but is not well defined. Historical and cultural practice often drives a clinician to use a solution or technique. International consensus guidelines from the International Wound Infection Institute (IWII) and the Journal of Wound Repair and Regeneration offer three parts to wound bed preparation: wound cleansing, wound debridement, and prevention and treatment of biofilm. . The author reports that based on her observations as an experienced nurse practitioner, that bedside clinicians in general do not follow the guidelines due to logistical constraints.

Antimicrobial preserved solution use is encouraged by the IWII and other guidelines particularly with their ability to provide biofilm based wound care (BBWC). Commercially available antimicrobial preserved cleansers come in two forms, bottles and sprays. Per the IWII guidelines, wound irrigation for cleansing needs to be performed with 4-15 pounds per inch (PSI) when the intention is to remove debris and germs via the mechanical action. Being too aggressive with irrigation can also have harmful effects. When delivered with high enough pressure, high pressure may drive bacteria deeper into the wound.

The authors observed and identified several challenges in practice:

- Knowledge gap
- Inappropriate supplies
- Difficulty in understanding or following manufacture or guideline instructions.

Wound cleansing methods identified by observation are spraying, soaking, and anointment:

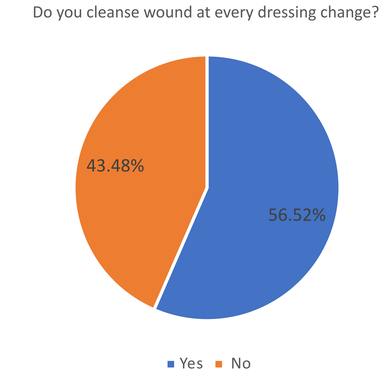
- Spraying did not likely allow any residence time of the cleanser on the wound and often was applied incorrectly.
- Most clinicians in the authors facility were known to use a 10mL pre-filled normal saline solution (NSS) syringe with just dripping of the saline onto the wound bed. This is more “wound anointment”, than “wound cleansing”.
- For some chronic wounds or actively infected wounds, the clinicians in the authors facility utilized a pure Hypochlorous Acid preserved cleanser (pHA) soaked into gauze and applied directly to the wound for 5-10 minutes..
- Wound cleansing solutions observed were both cytotoxic and non-cytotoxic. The rationale for cleanser selection was further explored.

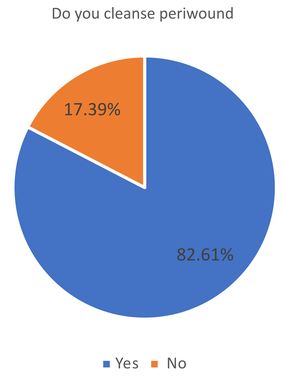
METHOD

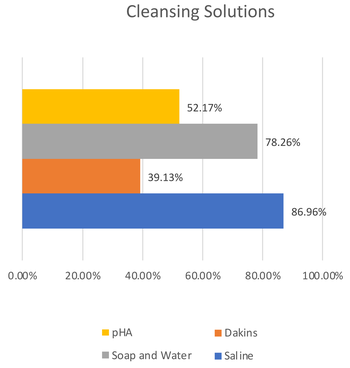
A survey based on the free access SurveyMonkey software (marketed by Momentive Inc) was sent to surgical nursing staff, surgical residents, wound care clinicians, and trauma surgeons querying about their practice on wound cleansing via email (anonymous) over a three-week period. There was an option for free text comments after every question. The answers were analyzed for consensus.

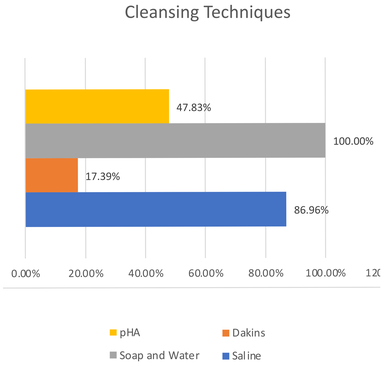
RESULTS

The survey resulted in 23 responses that showed that 56% of participants cleansed the wound at every dressing change. Of those who cleansed the wound, 83% cleansed the periwound, while 17% did not (Fig 1). Of those who did cleanse the wound, 86% cleansed with irrigation while 17% soaked the wound (Fig 2). The three options for solutions listed were Normal Sterile Saline (87%), a hypochlorite solution (39%), soap and water (78.26%) and pHA (58%), (Fig 3). All of the respondents used the sprinkling technique, 87% used the irrigation (with angiocath) technique, 48% used the wipe technique (Fig 4) i.e. using a dry gauze to wipe the wound.









DISCUSSION

From the results of the survey, there is a disconnect between the current guidelines and current practice in many areas. The authors hypothesize that logistical constraints may prevent clinicians in successfully following the current guidelines. It may also reflect lack of understanding of the implementation factors around guidelines, or lack of operational definitions, or confusions around the terminologies e.g. whether wound irrigation means supply via pressure/spray, angiocath use, of just dripping of a vial of saline (anointing). Furthermore, this may indicate that a clear definition of wound cleansing is needed to include most recent guidelines.

As we can see from Figure 3, providers and nursing staff do not exclusively use one type of cleansing method, rather, they use a wide variety of methods, and several products are used, with rationale of choice not very well known. In general, from observation, it seems to be the case that Dakins, or pHA was used when the wound was deemed “dirty”, otherwise soap/water or saline was used on easy access to both.

Though the IWII and other guidelines recommend the use of cleansers that contain antimicrobial preservatives of high therapeutic index (margin of safety), such as hypochlorous acid, and not those of low therapeutic index, such as hypochlorite/Dakin’s, the average clinician does neither know nor appreciate the toxicological differences between hypochlorous or hypochlorite, perhaps as they “sound the same”. Risk to the patient therefore is not taken into account during wound cleansing or historical practice may be driving this.

Whether it was the bottle of hypochlorite (Dakins) or pHA (hypochlorous acid) was used, or soap and water, seems to be driven by providers choosing or ordering the product out of ingrained habit rather than a full awareness of product characteristics, or a conscious desire to follow treatment guidelines. These key patient safety/wellness related guidelines and product specific knowledge simply need to be incorporated better into clinician training.
Research should continue on the improved practice of soaking of products such as pHA vis a vis spraying or irrigating, or plain dripping of cleansers of all types. However, the development of better operational definitions such as the differences between soaking, dripping, or spraying, which are all lumped into the concept of irrigation should be the next goal of guideline setters and clinicians.

In our study we realized that there is a group of clinicians (close to 50%) who do not cleanse the wound at each dressing change. This group in general should learn the benefits of wound cleansing with each dressing change. Specifically, Biofilm Based Wound Care is a constant battle, and each cleansing opportunity give the clinician to push the battle lines a little bit farther to get to complete healing.

Evidence has shown that soaking with a pHA cleanser produces positive wound healing outcomes. This is a correct way to use this type of product as the data shows such soaking allows a good chance for the product to act on biofilms. Further work should be done to define wound cleansing and implement this as the standard of care in wound care.

REFERENCES

1. International Wound Infection Institute (IWII) Wound Infection in Clinical Practice. Wounds International, 2022.
2. Eriksson, E, Liu, PY, Schultz, GS, et al. Chronic wounds: Treatment consensus. Wound Rep Reg. 2022; 30(2): 156- 171. doi:10.1111/wrr.12994
3. Sibbald, GR MD, Elliott, JA, Et, Al. (2021) Wound Bed Preparation 2021, Advances in Skin & Wound Care: April 2021 - Volume 34 - Issue 4 - p 183-195 doi: 10.1097/01.ASW.0000733724.87630.d6
4. Day A, Alkhalil A, Carney BC, Hoffman HN, Moffatt LT, Shupp JW. Disruption of Biofilms and Neutralization of Bacteria Using Hypochlorous Acid Solution: An In Vivo and In Vitro Evaluation. Adv Skin Wound Care 2017 Dec;30(12):543-551. https://pubmed.ncbi.nlm.nih.gov/29140837/
5. Robson MC. Treating chronic wounds with hypochlorous acid disrupts biofilm. Wound Prevention and Management 2020;66 (5):9-10. https://www.todayswoundclinic.com/articles/treating-chronic-wounds-hypochlorous-acid-disrupts-biofilm
6. Rodeheaver, GT, Ratliff, CR. Wound Cleansing, wound irrigation, wound disinfection. In: Krasner DL, ed. Chronic Wound Care: The Essentials. Malvern, PA: HMP Communications, 2014; 47-62
7. https://procedures.lww.com/lnp/view.do?pld=26629&hits=irrigation,irrigated,irrigate,irrigating&a=false&ad=false&q=irrigation
8. European Pressure Ulcer Advisory Panel, National Pressure Injury Advisory Panel and Pan Pacific Pressure Injury Alliance. Prevention and Treatment of Pressure Ulcers/Injuries: Quick Reference Guide. (2019) Emily Hasler (Ed.). EPUAP/NPIAP/PPPIA
9. Harriott MM, Bhindi N, Kassis S, Summitt B, Perdikis G, Wormer BA, Rankin TM, Kaoutzanis C, Samaha M, Stratton C, Schmitz JE. Comparative Antimicrobial Activity of Commercial Wound Care Solutions on Bacterial and Fungal Biofilms. Ann Plast Surg. 2019 Oct;83(4):404-410. https://pubmed.ncbi.nlm.nih.gov/31524733/