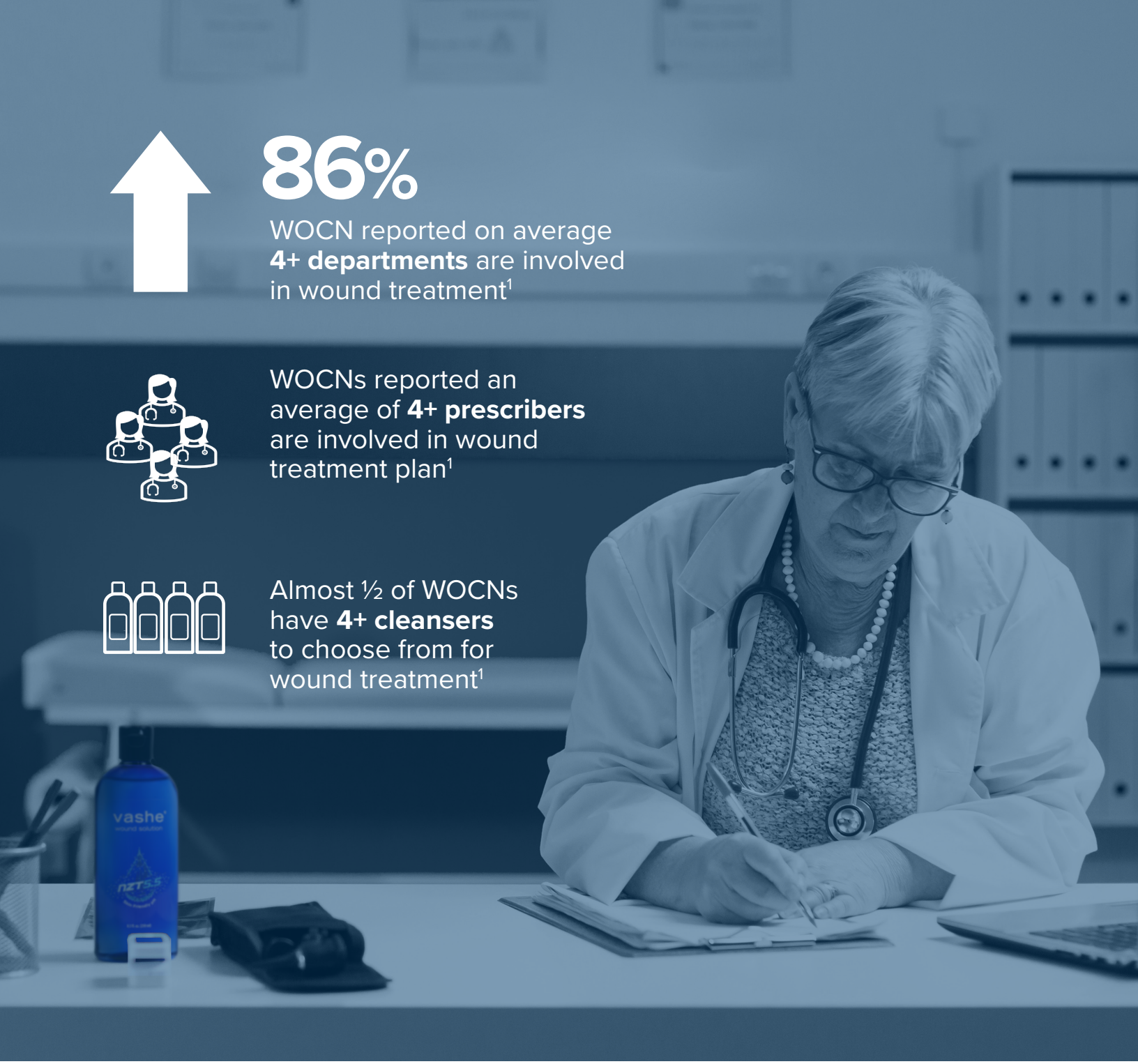
vashe®
wound solution

Never **Compromise**

Safety or **Efficacy**



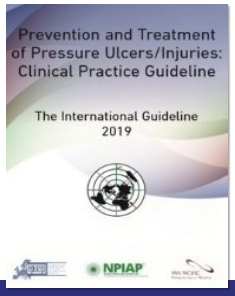
Evolving Practice means Never Compromise

Wound bed preparation and cleansing technologies have significantly evolved in the last decade. Newer products now take into consideration the need for a cleanser that can disrupt microbial colonies while maintaining the integrity of key wound healing cells.

As a result, expert guidelines now include evidence-based recommendations that can lead to improved outcomes and cost savings without compromising safety and effectiveness.

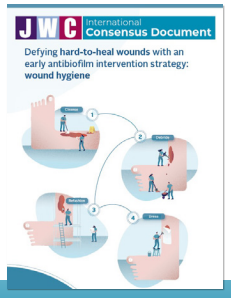
Following evidence-based consensus guidelines

November 2019



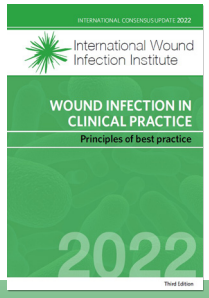
National Pressure Injury Advisory Panel
International Guidelines

March 2020



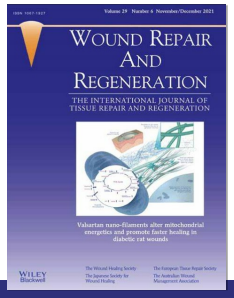
JWC International Consensus Guidelines:
Hard-to-heal wounds

March 2022



International Wound Infection Institute:
Wound Infection in Clinical Practice

April 2022



Wound Repair and Regeneration:
Treatment Guidelines

Limited evidence exists on the ability of saline to address high levels of microbes or bacteria present in chronic wounds, while other antimicrobial preservatives present in cleansers could compromise wound healing. Using a cleanser that can remove or disrupt microbial colonies is a critical component to wound healing.[2,3]

The ideal cleansing solution should balance the need for removal of microbial colonies while avoiding damage to key wound healing cells. Cytotoxicity to these key cells; fibroblasts, keratinocytes, vascular and endothelial cells should be considered as they are required to heal the wound.[2-5]

Traditional cleansers such as hydrogen peroxide, traditional sodium hypochlorite (e.g. Dakin's solution), povidone-iodine and chlorhexidine are proven to be cytotoxic to necessary healing cells, which leads to "hard-to-heal" wounds burdening healthcare. A wound cleanser for frequent use should both disrupt and remove germs/microbes and preserve wound cells to promote a healthy wound environment.[2-5]

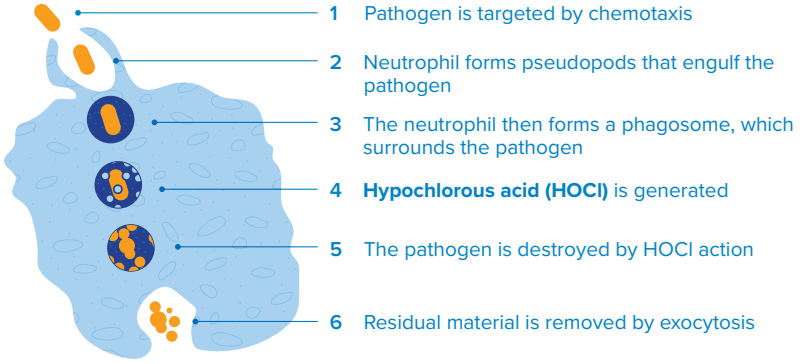
vashe®
wound solution

Never Compromise.

- **Meets all new consensus guidelines requirements**
- **Allows you to standardize your practice**
- **Enables continuity of care that can lead to better outcomes.**

Replicating the body's natural response to invading pathogens:

After a pathogen enters the body, neutrophils are quickly deployed from the bloodstream to respond. Through a complex biochemical pathway, *Pure* hypochlorous acid (*p*HA) is produced naturally by the human body to neutralize invading pathogens.



Proven efficacy

A recent prevalence study confirmed that almost 80% of chronic wounds contain high levels of microbes.[6,7] Those microbes are thought to be the root cause of ~80% of all infections in humans and responsible for potentially delaying healing in 60% of chronic wounds.[8,9]

Pure hypochlorous acid (pHA) has the ability to disrupt microbial colonies after short exposure[10]

No known clinically relevant resistance to ***pHA***, non-mutagenic properties unlike other solutions (antimicrobials and antibiotics)

80-100 times more effective than sodium hypochlorite[11,12]

Effective as a preservative against fungi, spores, viruses and multi-drug resistant bacteria

When a *p*HA-preserved wound cleanser is used in clinical studies, significant quantities of pathogens are mechanically removed from wounds, allowing the immune system to sustain the reductions.[13-15]

Organism	Time to kill	% Reduction
MRSA	15 seconds	99.999%
VRE	15 seconds	99.999%
Escherichia coli	15 seconds	99.999%
Acinetobacter baumannii	15 seconds	99.999%
Bacteroides fragilis	15 seconds	99.999%
Candida albicans	15 seconds	99.999%
Enterobacter aerogenes	15 seconds	99.999%
Enterococcus faecium	15 seconds	99.999%
Haemophilus influenzae	15 seconds	99.999%
Klebsiella oxytoca	15 seconds	99.999%
Klebsiella pneumoniae	15 seconds	99.999%

Organism	Time to kill	% Reduction
Micrococcus luteus	15 seconds	99.999%
Proteus mirabilis	15 seconds	99.999%
Pseudomonas aeruginosa	15 seconds	99.999%
Serratia marcescens	15 seconds	99.999%
Staphylococcus epidermidis	15 seconds	99.999%
Staphylococcus haemolyticus	15 seconds	99.999%
Staphylococcus hominis	15 seconds	99.999%
Staphylococcus saprophyticus	15 seconds	99.999%
Streptococcus pyogenes	15 seconds	99.999%
Staphylococcus aureus	15 seconds	99.995%
C. difficile endospores	15 seconds	99.93%

Proven safety

Based on years of clinical experience, evidence and extensive testing, Vashe helps to accomplish the goals of wound bed preparation and has proven to be:

- Non-irritating
- Safe for key cells
- Safe around mucous membranes
- Has no known contraindications

FDA cleared

Animal Model	Results
Eye Irritation (Rabbit)	No ocular irritation
Skin Sensitization (Guinea Pig)	No skin sensitization, no delayed-contact hypersensitivity
Primary Dermal Irritation (Rabbit)	No dermal irritation, no erythema or edema
Acute Oral Toxicity (Rat)	No oral toxicity (LD50>5g/kg)
Cell-Based Assay	
Bacterial Mutagenicity	Non-mutagenic
Cytotoxicity	Biocompatible with fibroblasts and keratinocytes

Safe for key cells

Wound Irrigant	Results	% Cell Survival (Fibroblasts & Keratinocytes)
Hypochlorous Acid (@ 4x the normal % of Vashe Wound Solution)	**Pass**	**> 75%**
Saline (0.9% NaCl, pH 5.0)	Pass	> 75%
Dakin's Solution (0.25%)	Fail	< 25%
Dakin's Solution (0.5%)	Fail	< 25%
Chlorhexidine gluconate (4%)	Fail	< 25%
Hydrogen peroxide (3%)	Fail	< 25%
Povidone iodine (7.5%)	Fail	< 25%
Povidone iodine (10%)	Fail	< 25%

Hypochlorous acid (at four times the normal percent of Vashe) is non-cytotoxic (grade 0), in contrast to other commonly used cleansers with significant cytotoxic effects[16]

A study was conducted in an outpatient wound center where Vashe was used for general cleansing on 31 patients. This study found that:

- **86% of chronic wounds healed**
- **Pain was reduced from 4.7 visual analog scale (VAS) to 0 at the end of the evaluation**
- **Odor was reduced from 4.58 VAS to 0 at the end of the evaluation[17]**

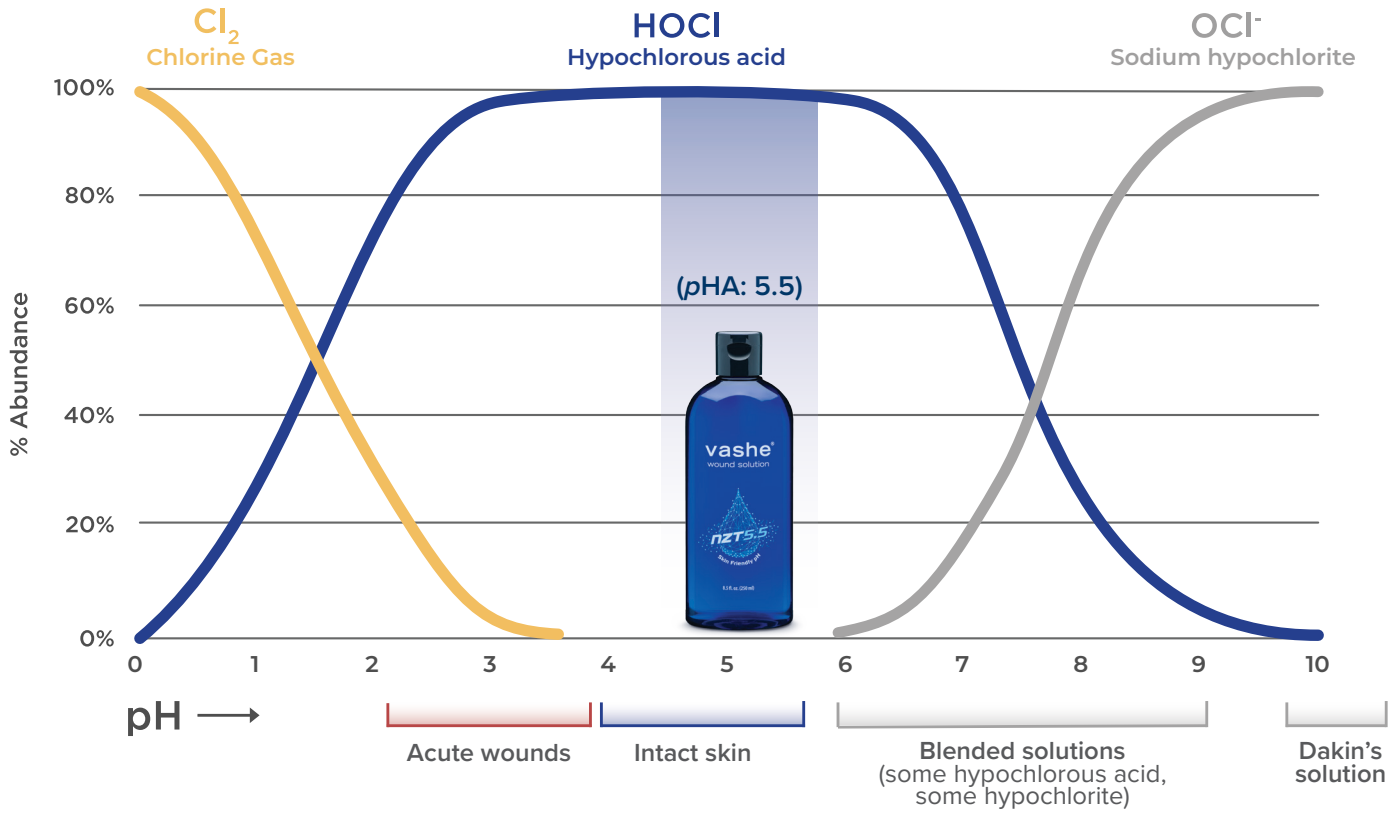
The importance of pH

Wound healing is optimal in slightly acidic environments where antimicrobial properties are higher. *Pure* hypochlorous acid has a pH between 3.5 and 5.5, which is favorable to wound healing environments that can aid in:[18]

- Optimal protease activity and oxygen release[19]
- Reduced toxicity of bacterial end products[20]
- Epithelization and angiogenesis[21,22]
- Increased macrophage and fibroblast activity[21,23,24]

Many cleansing solutions contain toxic ingredients, such as sodium hypochlorite, and have a highly alkaline pH. An alkaline environment can allow pathogens to thrive and potentially impede the healing process.[25]

Chlorine, Hypochlorous Acid, and Sodium Hypochlorite Abundance Based on pH + Relative pH of Wound Types and Various Solutions Used



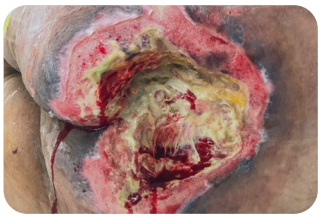
vashe® wound solution

A unique wound solution
manufactured at a pH of 5.5

Vashe in clinical practice

The effectiveness and versatility of a *p*HA-based cleanser allows for streamlining and standardization. Vashe can be delivered through cleansing, packing, soaking, adjunctive debridement modalities (such as enzymatic and ultrasonic debridement), and in conjunction with Negative Pressure Wound Therapy with instillation and dwell (NPWT-id) for a variety of skin/wound conditions.

Venous Leg Ulcers



Pressure injuries
(Stage I-IV)

Burns

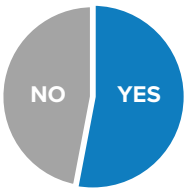
Post-surgical wounds

Diabetic Foot Ulcer

Pediatrics

Trauma

Unmatched Support



With so many potential variables, consistent wound cleansing seems impossible. When asked, almost **half** of clinicians said evidence-based practice is only attainable with continuous education and compelling evidence.[1]

Standardize

With an **evidence-based custom protocol** that meets your facility's needs & latest consensus guidelines.

Reduce SKUs

With a versatile solution that's appropriate for use in all departments

Empower Staff

With education your way: webinars, in person, or via many peer-reviewed publications

The Right Partner & Product

To discuss your custom protocol contact your URGO Account Manager or call 1-855-888-8273

Economic Benefits

A study was conducted among 24 patients with complex wounds including: necrotizing fasciitis, trauma, and pressure injuries. Negative Pressure wound therapy with instillation was initiated with Vashe vs. saline.[26]

Conclusions:

7 Day reduction in healing time

$141,280

Cost savings per patient

Another study was conducted consisting of 17 adult patients with complex wounds, of multiple etiologies. Patients were randomly assigned to receive either Vashe or saline irrigation during low frequency ultrasonic debridement.[27]

Conclusions:

55% **Less** complications

$3K-$33K **Cost savings** per complication

Vashe ordering information

Bottle Size/ Pack Size	Pour-Top Bottle Catalog Code	Instillation Bottle Catalog Code
4.0 fl. oz. (118 ml) Bottles/24-Pack	00312	Not available
8.5 fl. oz. (250 ml) Bottles/12-Pack	00313	00316
16.0 fl. oz. (475 ml) Bottles/12-Pack	00314	00317
34.0 fl. oz. (1 liter) Bottles/6-Pack	00322	00323

Vashe is also available over the counter! Visit vasheotc.com to learn more and order.

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