

vashe[®]
wound solution

Never Compromise

Safety or Efficacy





86%

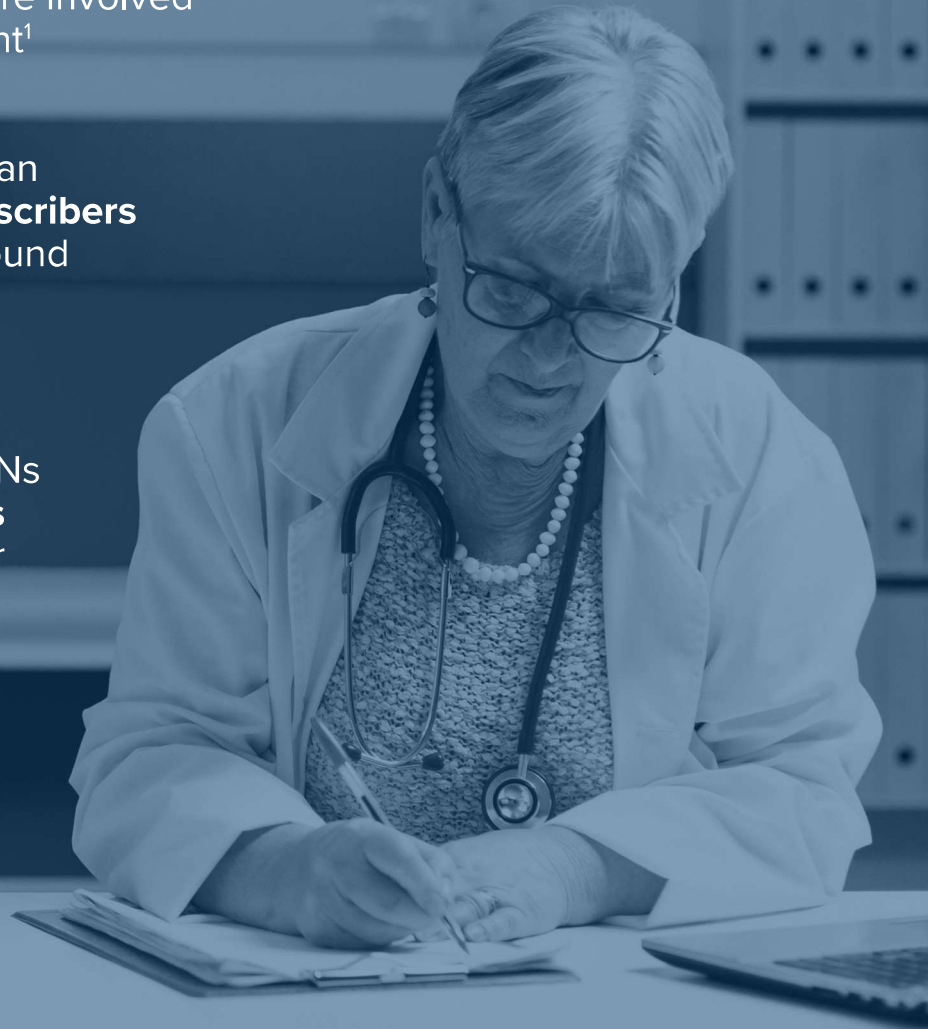
WOCN reported on average **4+ departments** are involved in wound treatment¹



WOCNs reported an average of **4+ prescribers** are involved in wound treatment plan¹



Almost $\frac{1}{2}$ of WOCNs have **4+ cleansers** to choose from for wound treatment¹



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



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

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**Never
Compromise.**



Meets all new consensus guidelines requirements



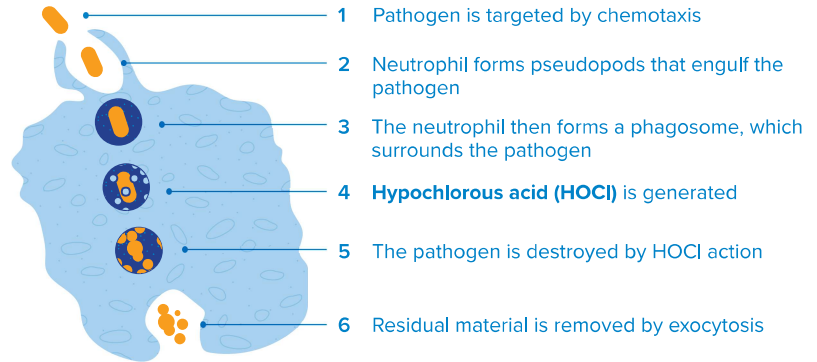
Allows you to standardize your practice



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 (pHA) 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 exposure¹⁰



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 pHA-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%
<i>Escherichia coli</i>	15 seconds	99.999%
<i>Acinetobacter baumannii</i>	15 seconds	99.999%
<i>Bacteroides fragilis</i>	15 seconds	99.999%
<i>Candida albicans</i>	15 seconds	99.999%
<i>Enterobacter aerogenes</i>	15 seconds	99.999%
<i>Enterococcus faecium</i>	15 seconds	99.999%
<i>Haemophilus influenzae</i>	15 seconds	99.999%
<i>Klebsiella oxytoca</i>	15 seconds	99.999%
<i>Klebsiella pneumoniae</i>	15 seconds	99.999%

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



Safe for key cells

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

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 effects¹⁶

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 evaluation¹⁷**

Addressing Patient Comfort



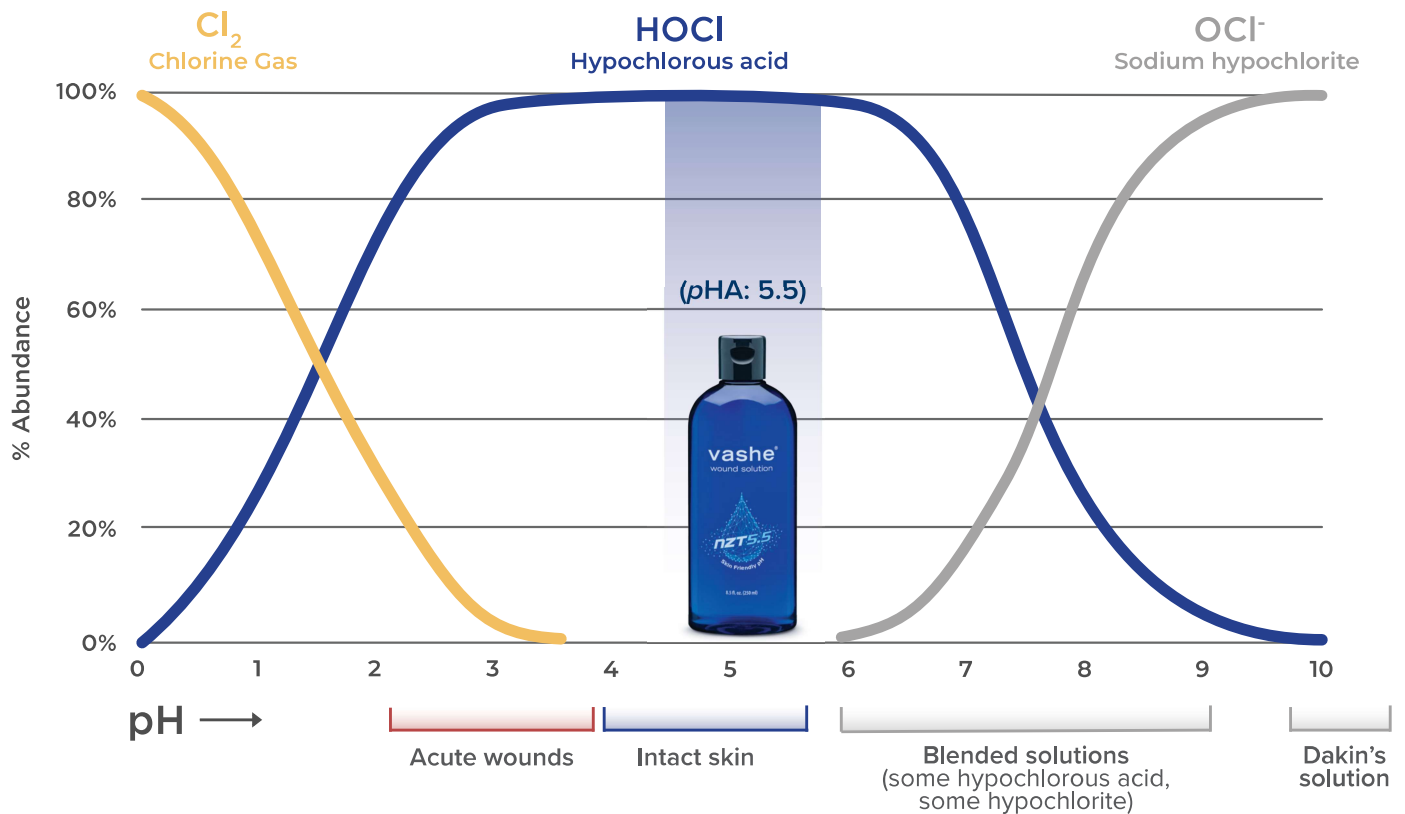
The importance of pH

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 release¹⁹
- Reduced toxicity of bacterial end products²⁰
- 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