

# NEVER COMPROMISE



There's only one

**vashe**<sup>®</sup>  
wound solution

 **URGO**  
MEDICAL  
Healing people<sup>®</sup>

# MOST AVAILABLE OPTIONS FORCE YOU TO **COMPROMISE...**

## THE RIGHT BALANCE

COMPETING FACTORS BETWEEN WOUND CLEANSERS CURRENTLY AVAILABLE  
MAKES FINDING THE RIGHT BALANCE DIFFICULT.



### SAFETY

**EXAMPLE:** Normal saline

**COMPROMISE:** Safe, but lacks proven efficacy

When the safest (or non-preserved) options are used, patients are not proactively protected from their predisposed risk of infection.<sup>1,3</sup> This may predispose them to infection and/or delayed wound closure.<sup>3</sup>

### EFFICACY

**EXAMPLE:** Hypochlorite preservative-based/blended solutions, Polyhexanide/PHMB, or CHG

**COMPROMISE:** Some evidence of effectiveness, but strong evidence of damage to healthy cells

When some cytotoxic, traditional options are used (e.g. Dakin's), even with dilution, patients may end up sacrificing the key cells necessary to promote healing of skin and wound closure.<sup>2</sup>



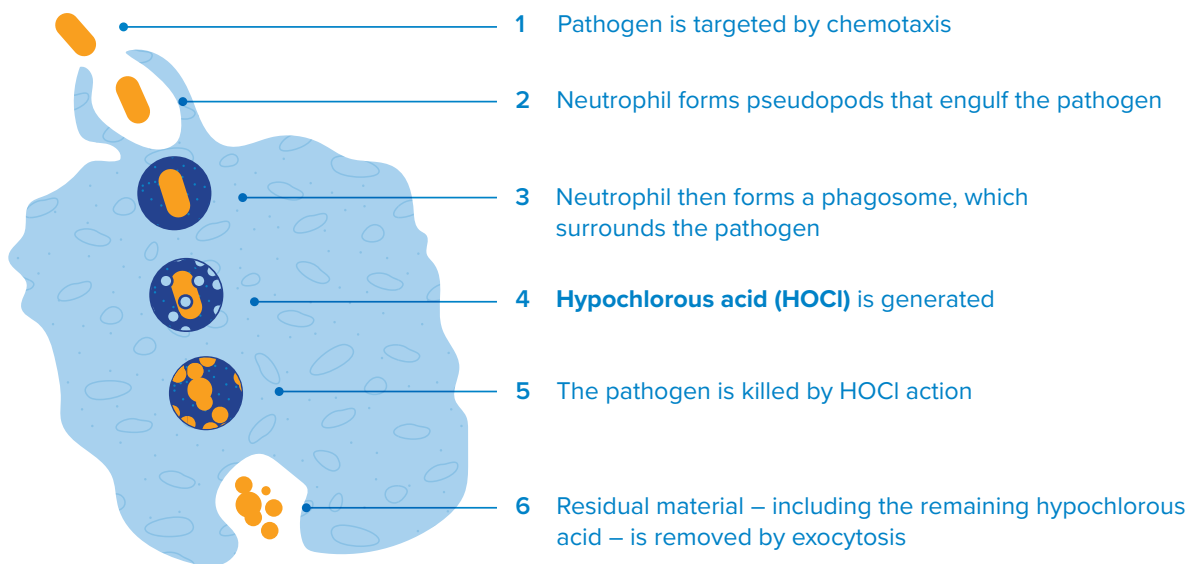
<sup>1</sup>. Day A, Alkhalil A, Carney BC, Hoffman HN, Moffatt LT, Shupp JW. Disruption of Biofilms and Neutralization of Bacteria Using Hypochlorous Acid Solution: An In Vivo and In Vitro Evaluation. *Adv Skin Wound Care*. 2017 Dec;30(12):543-551. doi: 10.1097/01.ASW.0000526607.80113.66. PMID: 29140837. <sup>2</sup>. Ortega-Peña, Silvestre & Hidalgo-González, Christian & Robson, Martin & Krötzsch, Edgar. (2016). In vitro microbicidal, anti-biofilm and cytotoxic effects of different commercial antiseptics: Antibiofilm effects of different commercial antiseptics. *International Wound Journal*. 14. 10.1111/iwj.12625. <sup>3</sup>. Hiebert JM, Robson MC. The immediate and delayed post-debridement effects on tissue bacterial wound counts of hypochlorous acid versus saline irrigation in chronic wounds. *Eplasty*. 2016;16:e32.

# ... BUT WHAT IF YOU **DIDN'T HAVE TO?**

## INNATE IMMUNITY

ONE OF THE MOST POWERFUL PHENOMENA IN BIOLOGY,  
AND WE ARE LIVING PROOF.<sup>4</sup>

### The Human Inflammatory Response



Vashe Wound Solution contains 0.033% (330 ppm) of hypochlorous acid as an antimicrobial preservative.



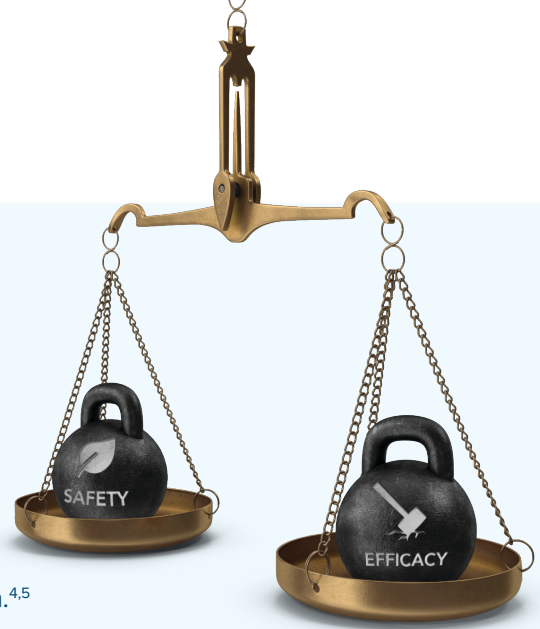
<sup>4</sup>. Wang L, Bassiri M, Najafi R, et al: Hypochlorous acid as a potential wound care agent: Part I. Stabilized hypochlorous acid: A component of the inorganic armamentarium of innate immunity. J Burns Wounds. 2007;6:65-79.

# vashe<sup>®</sup>

## wound solution

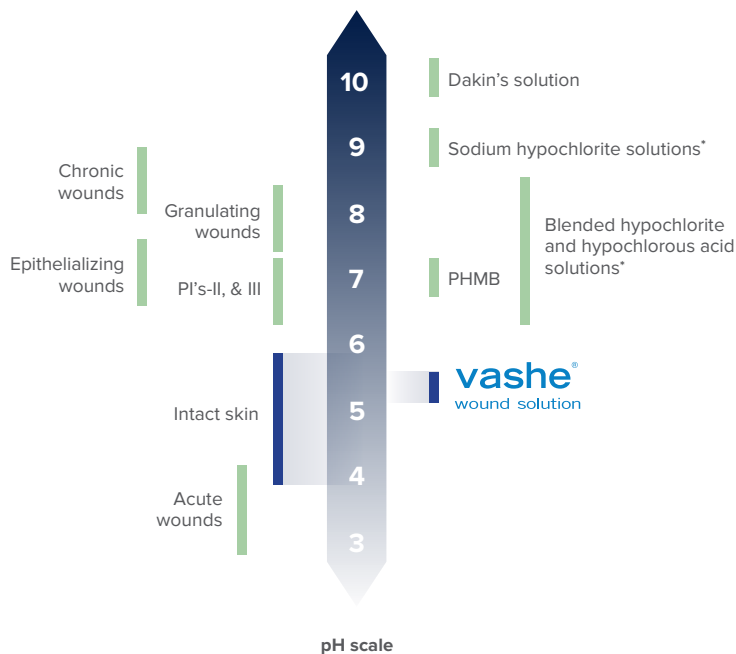
The best of both worlds:  
**Safety & Efficacy**

Vashe's superiority is driven by a **pH** associated with optimal wound healing and a robust innate immunity system.<sup>4,5</sup>



## WHY pH MATTERS

### THE ROLE OF pH IN CHRONIC WOUNDS AND SOLUTIONS



### Wound Progression

- As chronic wounds heal, there is a significant decrease in the wound pH
- Protease activity and oxygen release
- Reduced toxicity of bacterial end products
- Enhanced destruction of abnormal collagen
- Angiogenesis
- Increased macrophage and fibroblast activity and control of enzyme activity

**Wound pH and healing are related.<sup>6-9</sup>**

"...pH has the greatest influence on the antimicrobial activity of chlorine in solution. An increase in pH substantially decreases the biocidal activity of chlorine, and a decrease in pH increases this activity." It can take twice as long for hypochlorite solutions to kill when pH increases from 6 to 8. Certain studies demonstrated that lowering pH from 9 down to 4.4 was not only effective against bacteria but spores as well."<sup>5</sup>

\*Preservative within solution

5. Block SS. Disinfection, sterilization, and preservation. Philadelphia: Lea & Febiger; 2000. 6. Nagoba BS, Suryawanshi NM, Wadher B, Selkar S. Acidic environment and wound healing: a review, Wounds 2015;27(1):5-11. 7. Shukla VK, Shukla D, Tiwary SK, Agrawal S, Rastogi A. Evaluation of pH measurement as a method of wound assessment. J Wound Care. 2007 Jul;16(7):291-4. 8. Gethin, Georgina. (2007). The significance of surface pH in chronic wounds. Wounds UK. 3 (3) 52-56. 9. Jones EM, Cochrane CA, Percival SL. The Effect of pH on the Extracellular Matrix and Biofilms. Adv Wound Care (New Rochelle). 2015 Jul 1;4(7):431-439.

# THE BEST OF BOTH WORLDS

## THE SAFETY OF SALINE<sup>10</sup>...

### Biocompatibility and Toxicity Data for Vashe Wound Therapy<sup>10,11</sup>

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

The column to the right shows hypochlorous acid (at 4 times the normal % of Vashe Wound Solution) is non-cytotoxic (Grade 0), in contrast to other commonly used cleansers that had significant cytotoxic effects (Grade 3).<sup>10</sup>

### Comparative Cytotoxicity Testing of Hypochlorous Acid\* and Commonly Used Wound Irrigants Against Human Dermal Fibroblasts and Keratinocytes (n=5 per group, $p<0.01$ )<sup>10</sup>

Wound Irrigant	Results	Grade
Hypochlorous Acid (@ 4 times the normal % of Vashe Wound Solution)	Pass	0
Saline (0.9% NaCl, pH 5.0)	Pass	0
Dakin's Solution (0.25%)	Fail	3
Dakin's Solution (0.5%)	Fail	3
Chlorhexidine gluconate (4%)	Fail	3
Hydrogen peroxide (3%)	Fail	3
Povidone iodine (7.5%)	Fail	3
Povidone iodine (10%)	Fail	3

## ...WITH A POWER BEYOND DAKIN'S<sup>12</sup>

Vashe Wound Solution has been tested against many common pathogens, including fungi, spores, and multi-drug-resistant bacterial strains. In clinical studies, the organisms are mechanically removed from the wounds in great numbers, allowing the immune system to sustain the reductions.<sup>12-14</sup>

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%

\*Preservative within solution

10. Sampson CM, Sampson MN. Hypochlorous acid: A safe and efficacious new wound therapy. Poster presented at: World Union of Wound Healing Societies; 2008; Toronto, Ontario, Canada. 11. Data on file with Urgo Medical North America. 12. Vashe Wound Solution data developed from Kill Time Assay. 13. Bohn G, Champion S, Eldridge K. Can the use of Hypochlorous Acid change your dressing selection? Poster presentation at *Symposium for Advanced Wound Care*; Spring 2014; Orlando, FL. 14. Nerandzic MM, Rackaityte E, Jury LA, et al. Novel Strategies for Enhanced Removal of Persistent Bacillus anthracis Surrogates and Clostridium difficile Spores from Skin. *PLoS One*. 2013;8(7):e68706. doi:10.1371/journal.pone.0068706.

## THE RESULTS



When compared to normal saline, treating wounds with Vashe resulted in a **19.5% reduction** in OR visits, **13.7% faster** wound closure, and a **36% reduction** in length-of-stay.<sup>15</sup>



Compared to an HOCI-preserved solution, treating wounds with normal saline alone **increased the treatment cost** of debridements by 24% and **increased the average daily hospital cost** (including interventions) by 56%.<sup>15</sup>



The use of Vashe with collagenase results in **more efficient wound bed preparation and debridement** versus saline with collagenase.<sup>16</sup>



Vashe assists in the management of hard-to-heal chronic wounds by **penetrating and disrupting** the polysaccharide/protein matrix of wound pathogen biofilms.<sup>17-18</sup>



Effective mechanical reduction wound bioburden – Compared to other commonly used wound solutions, Vashe represents an alternative antimicrobial preservative option **without concerns of emergent antibiotic resistance**.<sup>13</sup>



In a study using Vashe for general wound cleansing with 31 patients in an outpatient wound care center: **86% of chronic wounds healed** at evaluation end, a remarkable **reduction in pain**, and **wound odor** was eliminated.<sup>19</sup>



Vashe soaks as a home care treatment protocol resulted in **reductions of 1.9 and 1.0 visits per episode** for VLU's and PU's respectively.<sup>20</sup>

For more information on the results of these studies, please contact your local Vashe account manager or refer to the references below.

## WAYS TO USE VASHE



**Packing dressing**



**General wound cleansing**



**(NPWT-id)**



**Adjunctive debridement modalities**

## HOW TO GET VASHE

Bottle Size/Pack Size	Vashe Wound Solution	Vashe Wound Solution for Instillation Applications*
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

<sup>15</sup>. Gallagher, K., Hermans, M., Cardenas, L. Alberto, E. A retrospective health economic analysis of a stable hypochlorous acid preserved wound cleanser versus 0.9% Saline Solution as Instillation for Negative Pressure Wound Therapy in Serious and Infected Wounds. Poster presented at SAWC Spring 2021. <sup>16</sup>. Miller, C., Mouhass, A. Significant cost savings realized by changing debridement protocol. Ostomy Wound Management, 2014; 60 (9): 8-9. <sup>17</sup>. Robson, M. Treating Chronic Wounds with Hypochlorous Acid Disrupts Biofilm. Today's Wound Clinic, 2014, Nov/Dec. <sup>18</sup>. Harriott MM, Bhindi N, Kassis S, Summitt B, Perdakis 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. <sup>19</sup>. Niezgoda JA, Sordi PJ, Hermans MH. Evaluation of Vashe Wound Therapy in the clinical management of patients with chronic wounds. Adv Skin Wound Care. 2010;23(8):352-357. <sup>20</sup>. Wheeler, A. Improving Clinical and Fiscal Outcomes in the Home Care Setting with Hypochlorous Acid. Ostomy Wound Management. 2020; 66 (2): 8-119.