

Convatec Sponsored Learning:

Evidence Over Influence; Improving Patient Outcomes With An Antibiofilm Approach

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Non-healing wounds are debilitating with high morbidity and mortality in a highly vulnerable patient population. There is increased complexity of the wound care ecosystem due to increasing direct and indirect health-care costs; increasing aging population; increasing prevalence of comorbidities (e.g., diabetes, obesity); and increasing antimicrobial resistance.

Despite recent advances in wound care treatments, the number and global prevalence of hard-to-heal wounds is rising.¹ Hard-to-heal wounds are not only costly to health-care systems but burdensome for patients and their families.

and other microorganisms living together under a slimy protective layer known as extrapolymeric substance (EPS). EPS is made of sugars, proteins and extracellular DNA and are held tightly together by metal ions.^{5,6} Biofilms can cause persistent low-level inflammation in wounds and delay healing.⁷ They can be present at any point of the wound infection continuum. They are difficult to visualize and to remove at point of care and can reform within 24 hours after sharp debridement.⁸ Approximately 80% of bacteria in the natural world exist as biofilm (either attached to a surface or each other).⁹ Biofilm has been estimated to account for 80% of chronic infections in humans.⁹ In other words, biofilm is more common than you think!



The Problem: Biofilm

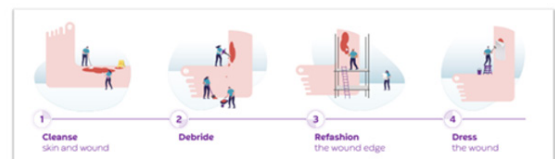
In March 2019, a group of international wound care experts convened to identify barriers and opportunities to drive broader adoption of biofilm-based wound care. At this meeting, the relatable concept of 'Wound Hygiene' was born. Although other underlying host factors may be hinder healing, it was increasingly acknowledged that biofilm is a key barrier to healing.²⁻³ A meta-analysis by Malone et al. demonstrated that biofilm was reported in 78.2% of chronic wounds.⁴

Biofilm consists of mixed communities of bacteria

The Solution: The Wound Hygiene Protocol

In March 2020, the Journal of Wound Care published a consensus document on Wound Hygiene. This document reframed the way HCPs talk about wounds by shifting from identifying wounds as "chronic" to "hard-to-heal" to illustrate the potential for successful outcomes with appropriate care.¹ Experts also developed a four-step, back-to-basics protocol (i.e., Wound Hygiene) to standard care to reduce microbial burden.¹

1. **Cleanse** (wound and surrounding skin)
2. **Debride** (initial debridement, as well as maintenance)
3. **Refashion** (the wound edge)
4. **Dress** (the wound with biofilm-targeted management)



An Antibiofilm Dressing As Part Of The Wound Hygiene Protocol

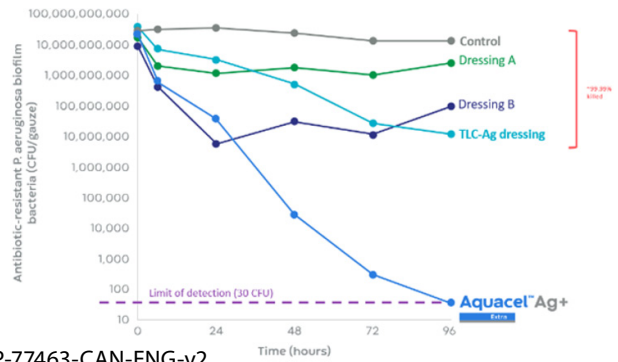
Aquacel® Ag+ was specifically engineered to overcome wound biofilm. It combines two powerful technologies – the Hydrofiber® technology and the More Than Silver™ technology. The Hydrofiber® technology allows the dressing to form a cohesive gel that absorbs and retains exudate, inflammatory proteases, debris, micro-organisms¹¹ and disrupts biofilm.¹² It provides a moist wound healing environment and facilitates autolytic debridement. The More Than Silver™ technology contains three important components:

- A surfactant (benzethonium chloride) to weaken the biofilm matrix¹³
- A chelating agent (EDTA) to disrupt biofilm’s EPS by removing metal ions that hold it together¹⁴⁻¹⁵
- Ionic silver (broad-spectrum antimicrobial).



These components work synergistically to weaken and break down biofilm and allow the ionic silver to kill exposed micro-organisms more efficiently.¹² Convatec has tested the efficacy of Aquacel® Ag+

on simulated wound biofilm models. These models often contain different bacterial biofilm grown on a piece of gauze and are saturated with simulated wound fluid and attached to simulated skin.¹⁶ They have been validated at an independent, accredited lab for repeatability, reproducibility, and robustness and are more stringent and sophisticated than other conventional in vitro models (e.g., CDC Biofilm Reactor, Colony Drip Flow Reactor). Using these wound models, Aquacel® Ag+ has been shown to be more effective in eradicating MRSA and Klebsiella pneumoniae dual-species biofilm after five days than competitive, silver-only dressings.¹⁶ Although some competitors may claim that their dressings can reduce Pseudomonas aeruginosa biofilm in vitro by 99.99%, Meredith et al. demonstrated that such claim only tells part of the story.¹⁶ Using the aforementioned wound models, Meredith et al. showed that Aquacel® Ag+ can completely eradicate P. aeruginosa biofilm after 96 hours while competitor dressings did not.¹⁶



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References available on request

For more information on Convatec please click here: www.convatec.com



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Nancy Livada PA-C is a Physician Associate in the U.S. with many years of wound care experience. She now heads up Global Medical Education in Advanced Wound Care for Convatec, where her mission is to provide exciting and ethical wound care education to healthcare providers around the world.

Dr. Scarlet Milo PhD is a Medical Scientific Liaison at Convatec, with a PhD in Biophysical Chemistry and over a decade of experience spanning scientific research, clinical education, and strategic medical affairs. Her work bridges R&D, marketing, and clinical practice, with a strong focus on improving patient outcomes through evidence-based innovation.