

# Battling Biofilm in Diabetes-Related Foot Ulcers Using MORE THAN SILVER technology.

Biofilm is formed when communities of microorganisms attach to a surface or each other and secrete protective extracellular polymeric substances. At least 78 per cent of static, slow-healing or deteriorating wounds have been found to contain biofilm <sup>(i)</sup>. As most non-healing wounds contain biofilm, and research suggests it has a role in delayed healing, biofilm is an increasingly important focus in research and innovation in wound care.

## How biofilm delays wound healing in diabetic foot ulcers

Biofilm is associated with impaired epithelialisation and granulation tissue formation (wound closure) and promotes a low-grade inflammatory response that interferes with wound healing <sup>(ii)</sup>. New healthy tissue cannot form so the wound becomes chronic. The body's inflammatory response is not always successful at removing the biofilm and often damages healing tissues. It is suggested that this inflammatory reaction actually increases exudate, perpetuating biofilm reproduction.

Another challenge is that most microorganisms in biofilm communities are tolerant to standard antibiotics, antiseptics, and other antimicrobial treatments. The ideal dressing should control the moisture around the wound, absorb exudates, and protect the wound from infections and manage microorganisms <sup>(iii)</sup>.

## The Power of Three: How a unique anti-biofilm wound dressing can improve foot ulcer healing

Standard anti-microbial dressings are known to kill bacteria, there is a suggestion that it is difficult for the silver to penetrate the layer of extracellular polymeric substances (EPS) which impairs its anti-microbial ability.

Whilst traditional cleansers are helpful in the battle against biofilm, current evidence suggests they need to be left in situ for prolonged periods of time to be efficacious against common microbes such as Staphylococcus Aureus <sup>(iv)</sup>. Yet long soaking times (more than 15 minutes), are simply not practical in most cases. The authors of this paper drew the following conclusion:

**“When using porcine explants and human *in vivo* tissue samples, our data are highly suggestive that the exposure time of topical antimicrobial wound solutions and irrigation solutions is too short”.**

Johani et al, 2018

In the battle to heal chronic wounds, there is an invisible enemy: biofilm. It is a primary cause of chronic infection <sup>(v)</sup>, blocking the effective action of antibiotic and antiseptic agents <sup>(vi)</sup>. And it is present in at least 78% of chronic wounds <sup>(vii)</sup>. But thanks to our breakthrough MORE THAN SILVER™ technology - which contains ionic silver together with a surfactant and a metal chelating agent - our dressing delivers superior <sup>(viii, ix)</sup> anti-biofilm performance compared to other silver dressings.

### References:

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- vi. Percival SL, Bowler PG. 2004. Biofilms and their potential role in wound healing. *WOUNDS*, 16: 234-240.
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