Evaluating the removal of bacteria and biofilm with monofilament fibre debridement technology, compared to a cleaning product using a wound intelligence device

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Aims
To evaluate the performance of monofilament fibre debridement technology* compared to a pre-moistened cleansing and debridement cloth** in the removal of bacteria and biofilm using a wound intelligence device*** which leverages the principles of fluorescence.

Methods
Patients were selected with chronic wounds who demonstrated signs that biofilm was the primary cause of the wound being static or slow to heal. The treatments were carried out by a Nursing Sister who ran a leg ulcer clinic in North Wales.

A monofilament fibre debridement pad was used to mechanically debride the chronic wounds and expedite wound bed preparation. The same procedure was repeated using a pre-moistened cleansing and debridement cloth with poloxamer following manufacturer’s instructions for use.

A wound intelligence device was used to take images of fluorescence in bacteria ≥ 10^4 CFU/g on the surface of the wound bed before and after using the monofilament fibre debridement pad and compared with the before and after images using the pre-moistened cleansing and debridement cloth.

Results
Fourteen patients were recruited into the evaluation, nine using the monofilament fibre debridement pad and five using the pre-moistened cleansing and debridement cloth.

In all cases, the monofilament fibre debridement technology has superior ability to remove bacteria and biofilm when compared to the pre-moistened cleansing and debridement cloth with poloxamer.

Case study 1
Patient LC, A 26 year old male patient who had a post trauma DVT when he was 18 years old and was on Warfarin therapy. History of leg ulceration for the last 8 years.

Figure 1 & 2 – 6.3.18 before treatment with a pre-moistened cleansing and debridement cloth
Figure 3 & 4 – 6.3.18 after treatment with a pre-moistened cleansing and debridement cloth
Figure 5 & 6 – 12.4.18 before treatment with monofilament fibre debridement technology
Figure 7 & 8 – 12.4.18 after first treatment showing removal of superficial bacteria and uncovering deeper pockets of bacteria with monofilament fibre debridement technology
Figure 9 & 10 – 12.4.18 after second treatment showing removal of deeper pockets of bacteria with monofilament fibre debridement technology
Discussion
It was interesting to note that the red, bacteria/biofilm within the fluorescence images were often not within the chronic wound but on the peri wound skin, especially when there was dry scaly skin. This highlighted the importance of good peri wound skin management.

The case studies using monofilament fibre debridement technology demonstrated a two-step approach;
- Step 1 – remove the devitilised tissue peri wound skin and superficial bacteria/biofilm, then
- Step 2 – remove the deeper pockets of bacteria/biofilm

Conclusion
The monofilament fibre debridement technology has shown better removal of bacteria and biofilm when compared with a pre-moistened cleansing and debridement cloth using fluoresce imaging in this evaluation.

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* Debrisoft® - L&R UK Ltd
** UCS™ Debridement - Medi UK Ltd
*** MolecuLight i:X™ Imaging Device – distributed in the UK by Smith & Nephew

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