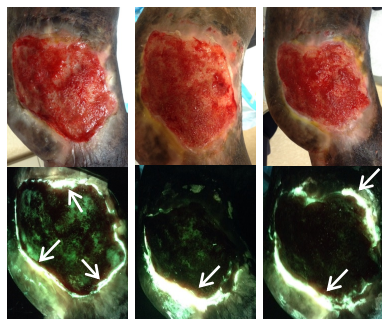


## Case 1: Persistent bacterial fluorescence perpetuates chronicity

67 y/o male (Fitzpatrick Score VI) with neuropathy presented with a DFU on top of right midfoot that had been present for >1 year but did not appear to be clinically infected.

Post-debridement images (below): significant bacterial burden remains



This wound was chronically affected by *Pseudomonas aeruginosa* (cyan fluorescence), prominently at the wound periphery, despite unspecific clinical signs and symptoms. Blinding in the clinical trial rendered the provider unaware of the imaging findings. As a result, pseudomonal infection was not suspected, and adjuvant antimicrobials were not prescribed to combat the residual bacterial load after debridement. The wound had not healed after 12 weeks despite biweekly in-clinic treatment and offloading.

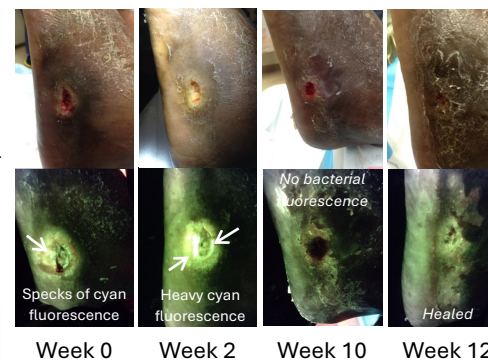
Week 0 37.6 cm<sup>2</sup>    Week 6 45.1 cm<sup>2</sup>    Week 12 38.9 cm<sup>2</sup>

## Case 2: Removal of bacterial fluorescence coincides with healing

63 y/o male (Fitzpatrick Score V) presented with a DFU on top of left forefoot that had been present for <3 months. Bacterial fluorescence imaging following debridement (Week 0) revealed small regions of cyan fluorescence indicating *Pseudomonas aeruginosa* at >10<sup>4</sup> CFU/g on the left periphery of the wound. 2-weeks later, this area of cyan fluorescence had increased substantially despite no clinical signs of infection.

After 8-weeks of antimicrobial cleansing, biweekly sharp debridement, and a 2-week course of oral antibiotics the cyan fluorescence dissipated, and the DFU decreased in size. It remained negative for bacterial fluorescence and went on to heal completely after 4 more weeks.

\*images for Week 2 were taken prior to debridement



## How are predictive diagnostic tools useful in wound care?

Objective information helps define a resource-conscious practice through individualized treatment plans that derive into better outcomes.



MolecuLightDX™

## Case 3: The absence of bacterial fluorescence supports timely healing of chronic wounds

80 y/o male (Fitzpatrick Score I) presented with a DFU on top of left toe that had been present for >3 months (SA=2.85 cm<sup>2</sup>).

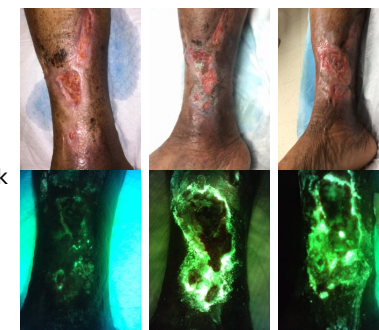
A focus of this patient's wound care plan was on maintaining an absence of bacterial fluorescence to provide a greater chance of healing. This chronic wound healed after only 8 weeks of treatment.



Week 0    Week 2    Week 4    Week 6    Week 8 Healed!

**Care plan:** In-clinic antimicrobial cleansing and fluorescence-guided mechanical/sharp debridement to subcutaneous tissue every 2 weeks. At-home care included personal hygiene, offloading, and the use of absorbent dressings for exudate management.

69 y/o female was admitted with a venous wound on her right medial leg. Porcine-derived skin substitutes were applied weekly for 6 weeks. During the first application (Week 0), the wound displayed specks of cyan fluorescence indicative of *Pseudomonas aeruginosa*. By Week 4, the pseudomonal infection had progressed despite at-home exudate management and weekly sharp debridements at the clinic. Throughout care, this wound did not exhibit the classic clinical presentation of *Pseudomonas* infection (notably, no odor).



Week 0    Week 4    Week 6

## Why didn't the wound heal despite multiple CAMP applications and weekly care?

Due to the atypical clinical expression of symptoms, diagnostic sensitivity was low through standard of care. Fluorescence information was not available to the clinicians as they were blinded to its results. This demonstrates the pivotal role of having objective information at the bedside as an enabler of timely intervention.

## Case 4: Bacterial fluorescence reduces the efficacy of CAMPs

## Literature Review

**Eligibility criteria:** clinical studies that employed fluorescence imaging of wound bacteria and correlated fluorescence findings with longitudinal wound outcomes

**Search terms:** "molecuLight", "fluorescence imaging" OR "autofluorescence imaging" AND "wound area reduction" **Database:** PubMed/Embase

Reference	Sample	Association Y/N
Ai-Jalodi O et al. (J Wound Care, 2021)	N=15 chronic DFUs	Y – bacterial fluorescence disappeared in all of the DFUs that healed and persisted in all those that failed to achieve closure.
Armstrong DG et al. (Int Wound J, 2022)	N=138 chronic DFUs	Y – both the proportion of DFUs positive for bacterial fluorescence and the proportion of wounds experiencing delayed healing increased as bacterial loads increased from 10 <sup>4</sup> to >10 <sup>8</sup> CFU/g.
Cole W & Coe S (J Wound Care, 2020)	N=11 chronic wounds	Y – weekly wound area reduction was -27.7±10.1% per week when bacterial fluorescence was eliminated, vs +6.5±10.8% per week with its appearance.
Cole W et al. (Wound Manag Prev, 2023)	N=5 chronic lower extremity wounds	Y – a transition from positive to negative bacterial fluorescence in all wounds coincided with healing or >40% wound area reduction by 6-weeks
Derwin R et al. (Diagnostics, 2023)	N=27 acute & chronic wounds	Y – bacterial fluorescence, as determined both at the outset of treatment and at the study's final visit, significantly influenced PAR after 2 weeks (p=0.025).
Okeahialam NA et al. (Eur J Obstet Gynecol Reprod Biol, 2022)	N=55 dehisced perineal wounds	Y – bacterial fluorescence was significantly associated with delayed healing, per univariate, multivariate, and Kaplan-Meier analyses (p<0.05).
Okeahialam NA et al. (Acta Obstet Gynecol Scand, 2023)	N=13 perineal wounds with anal sphincter defects	N – regression showed that there was no significant difference in defect size in wounds with or without fluorescence over the course of wound healing.
Wu YF et al. (Biomedicine, 2022)	N=53 chronic wounds	Unclear – there were significantly more wounds with bacterial fluorescence in the 90-day healed group (p<0.001), however Spearman's rank test found this association to be insignificant (p=0.184).
Rahma S et al. (Diabetes Care, 2023)	N=56 chronic DFUs	Y – 12-week wound area reduction was greatest in those negative for bacterial fluorescence at baseline, followed by those positive with an associated change in wound management, and finally those with positive imaging but no change in wound management fared the worst.

**Summary of findings:** Studies among chronic and acute wounds suggest that the presence or absence of bacterial fluorescence is related to wound area reduction and complete wound closure over time. A formal systematic review is warranted to explore this relationship further and account for any risk of bias in these studies.