Clinical Validation of SnapshotGLO for Bacterial Bioburden Detection in Wound Care: Results from a high-volume clinical site

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BACKGROUND

Early identification of bacterial bioburden in wounds is critical for optimizing treatment and preventing complications. SnapshotGLO (Kent Imaging, Inc. Calgary, Canada), a bacterial autofluorescence imaging (BAF) device, was evaluated for clinical utility in real-world settings. This work reports the findings of this validation study.

METHODS

This observational retrospective analysis was performed on prospectively collected clinical data collected at a high-volume wound care clinic to assess the real-world clinical utility of the SnapshotGLO bacterial autofluorescence imaging device. Between July and October 2025, 87 adults aged 21–98 years were evaluated over multiple visits as part of routine care. Clinicians received standardized training on device use and interpretation before data collection. During standard wound assessments, SnapshotGLO images were captured without altering clinical workflows.

A total of 414 wound images were obtained, representing a broad range of wound types - including diabetic foot ulcers, pressure ulcers, venous leg ulcers, surgical wounds, and traumatic injuries - across diverse anatomical locations such as the foot, lower extremity, sacrum, and abdomen. Bacterial cultures were performed on a subset of wounds based on usual clinical judgment, and BAF imaging. The findings from these cases were then retrospectively compared with culture results to evaluate device performance. All data were collected during routine clinical encounters.

RESULTS

The diversity of wound etiology and location in this dataset reflects real-world clinical complexity and supports evaluation of the BAF imaging device under conditions representative of everyday wound care practice.

Of the 414 wound images collected, 90 had corresponding clinical bacterial culture results and were used to evaluate the performance of the SnapshotGLO BAF device. Clinicians identified all 90 wounds as having bacterial bioburden based on SnapshotGLO BAF imaging alongside routine assessment. Culture testing confirmed bacterial presence in 86 of these cases, yielding a Positive Predictive Value (PPV) of 95.5%, demonstrating strong agreement between BAF imaging and microbiological culture findings.

Figure 1: SnapshotGLO device displaying RGB image (L) with wound measurement alongside BAF image (R) side by side.

Figure 2: Sample RGB and corresponding BAF images from the dataset of two different wounds

Clinicians also provided qualitative feedback, reporting that the imaging technology added meaningful, actionable insights to their evaluations. They noted that BAF imaging enabled and guided more precise debridement by highlighting areas of high bacterial load and enhanced their confidence in managing infection. Overall, the device supported better-informed clinical decision-making and improved treatment planning.

DISCUSSION AND CONCLUSION

In this real-world evaluation, SnapshotGLO exhibited high reliability for detecting elevated bacterial bioburden, as evidenced by a high Positive Predictive Value, a strong concordance with culture results. When used as an adjunct to clinical signs and symptoms (CSS) assessment, BAF imaging offered immediate, objective visualization of bacterial load and spatial distribution, thereby reducing diagnostic uncertainty and enabling more timely, targeted clinical decisions. Clinician reports indicated improved precision of debridement and greater confidence in infection management.

Key limitations include verification bias: culture testing was performed only on subset of wounds deemed bioburden-positive, constraining performance characterization to PPV and precluding estimation of sensitivity, specificity, and negative predictive value. Additionally, findings were derived from a single clinical site, which may limit generalizability.

Future work will focus on expanding validation to additional clinical sites and specialties, including systematic culture testing for both bioburden-positive and bioburden-negative wounds to enable full sensitivity and specificity analyses. Ongoing efforts will also evaluate device performance across diverse wound etiologies, anatomical locations, and patient populations, and explore integration with advanced analytics to further enhance clinical decision-support. Collectively, these efforts aim to develop evidence-based workflows that leverage bacterial imaging to improve wound care outcomes and streamline infection management.