INTRODUCTION
Circumferential wounds, as often seen in venous ulcers and burn wounds, are prevalent in clinical settings. Accurate measurement and monitoring of circumferential wounds remain challenging. Consequently, many clinical trials define them as exclusion criteria. Methods such as ‘stitching’ a series of images have been proposed but not shown to be a reliable approach. We present a novel imaging solution based on a mobile-platform to enable circumferential scanning of wounds.

METHOD
An iPad-based 3D stereo vision device (eCare inSight™, eCare Inc, Fairfax, VA) utilizing structured light was used for image acquisition. The user moves and reorients the camera until the full wound extent is imaged. Length, width, and area measures are calculated automatically using tessellation of the 3D mesh.

RESULTS/DISCUSSION
Each measurement took an average of 11 seconds to complete, with none exceeding 17 seconds. The study yielded a total of 30 data points across three users. Error in length and width measurements were noted to indicate a positive bias with none exceeding 5% of reference. Average area error was 4.3% with a maximal error of 8%.

CONCLUSION
We implemented a convenient and cost-effective method of evaluating circumferential wounds using a 3D stereo vision device with structured light. Preliminary analysis indicates 94% accuracy with no significant usability or workflow issues. In addition to real-time measurement acquisition, this implementation could also be expanded to support treatment decisions including calculation of dressing size and Parlland’s formula. Future development will focus on further improving accuracy and user experience.

REFERENCES
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