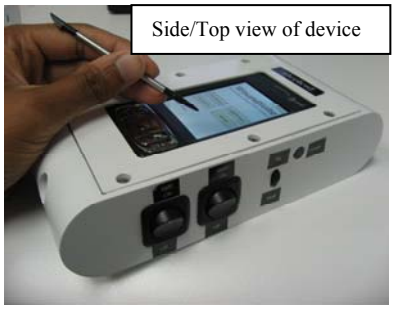
Wound Measurement Device

http://www.mobilityrerc.gatech.edu/

Description

A low-cost and high-precision wound measurement device that offers an option to current low- and high-tech devices.


Side/Top view of device

Goals of the System

- Low cost
- Ease of use.
- Non-contact.
- Time saving.
- Hand held and battery operated.
- Increased intra- and inter-rater reliability.

Competing Devices/Methods

Higher cost systems include

Software-based systems: Vista Medical, PictZar
Hardware-based systems: MAVIS, ARANZ Medical Silhouette
Most Direct Competition: VisiTrak by Smith & Nephew

Low cost systems include

Ruler Based Method
Transparency Trace Method
Kundin gauge


Device in use

Design Features

Border Detection

- Calculation of wound border is done by an iterative edge detection method

Surface Area Calculation and Accounts for Skew

- Laser pointers and computer vision techniques permit distance measurement and accounts for skew
- Distance measurement and known camera properties allow for accurate calculation of area

Touch Screen Interface

- Permits the user to identify 4 points on the border so that the device can use a semi-automatic border detection
- The user can then either accept the detected area or manually correct or re-trace the border of the wound.

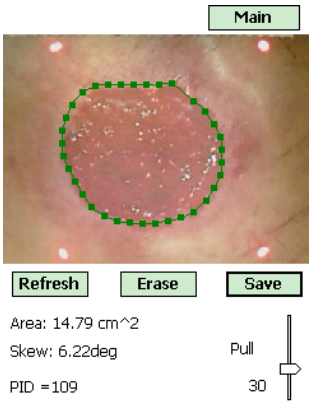
Quality of Measurement

Repeatability

- Based on 20 wound images, 3 clinicians, 2 trials/clinician
  - Intra-rater reliability: >0.989/rater
  - Inter-rater reliability: 0.986 overall

Accuracy at Different Distances and Skew Angles

- Based on two B/W shapes with known areas
  - ≈ 2.53% error
- Exceeds those of photography, tracing, and Kundin gauge



Scalable Functioning

The design lends itself to a variety of products exhibiting additional features. These include, but are not limited to:

- Interfacing software to upload wound pictures onto a PC via Bluetooth or USB connection
- Integration of a wound healing scale such as the PUSH to track wound outcomes
- Addition of spectral imaging of the wound bed to inform clinicians about tissue types within the wound and potential identification of spectral indicators of infection or bioburden.
- Depth measurement: the use of a simple line laser may be able to quantify depth
- Integration of a patient management system in which a database of patient and wound information is kept and managed

Contact Us

For additional information about this technology refer to http://mobilityrerc.catea.org/factsheets/wmd_factsheet.pdf or call 404-894-4960
Georgia Institute of Technology, Atlanta, GA