

Perfuse Medtec Sponsored Learning: What a Difference a Day Makes in Wound Healing Outcomes: A New Chapter in the geko™ Device Story

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Holly Murray is a registered nurse who graduated from Queen's University, Kingston, Ontario. She has worked 25 years in the home care setting and is a certified NSWOC. She has been working the past 10 years in a nurse-led ambulatory clinic in the Mississauga-Halton region in Ontario.

Kieron Day is a clinical research professional with over 20 years of experience in industry and academia. He specializes in creating key strategies to facilitate medical technology adoption and therapy expansion.

Rochelle Duong is a registered nurse who has transitioned into industry. She has worked within home and community care settings and is presently the National Director of Clinical and Market Development for Perfuse Medtec.

Predicting Venous Leg Ulcer Healing

Slow- and non-healing venous leg ulcers create significant socioeconomic burdens for patients and health-care systems. It is estimated that 3% of total health expenditure in Australia is spent on the treatment of chronic leg ulcers, where 70% are predominantly venous in etiology.

It is often difficult to determine whether a VLU will be hard to heal. Evidence on healing trajectory of VLUs varies. In general, 70% of VLUs will take approximately 24 weeks to heal. 30% of VLUs will remain unhealed even in the presence of best practice treatment protocols. For these reasons, there is a need for a Venous Leg Ulcer Risk Assessment tool (VLURA) to better stratify patients and predict wound healing outcomes.

Table 1. Risk Factors for Delayed VLU Healing

Physiological	e.g., lack of high compression, larger wound area, longer ulcer duration
Economic	e.g., low socioeconomic status
Social	e.g., lack of social support
Psychological	e.g., anxiety, stress, depression

Many factors may delay healing of VLUs (Table 1). After reviewing current evidence regarding risk factors for delayed VLU healing and analyzing predictors for delayed healing from databases, an expert wound advisory group has developed a 10-item VLURA tool (Table 2). Four of the 10 items remained significantly related to delayed healing: patients who live alone, compression <30mmHg, PUSH score of ≥ 10 , ulcer area reduction of <25% in 2 weeks.

A validated venous leg ulcer risk assessment tool can

Table 2. A 10-Item Venous Leg Ulcers Risk Assessment Tool

1. Age	6. Size of ulcer area (in cm ²)
2. Duration of ulcer (weeks)	7. Type of compression
3. Does the patient live alone?	8. Risk assessment score from baseline visit
4. Calf and ankle circumference	9. Size of ulcer area from baseline visit (in cm ²)
5. Wound bed presentation	10. Current size of ulcer area (in cm ²)
https://www.vlur-risk-tools.org.au/	

help clinicians identify risk factors for delayed healing. Clinicians can then determine realistic outcomes for patients, guide early referrals and tailor treatment plans. This VLURA tool can also be converted to IT applications for phones, tablets and handheld devices to enable efficient and accurate use. Ultimately, a VLURA tool such as this will help improve healing rates for patients with VLUs, leading to cost savings for the patients and health-care systems.

Measuring Progress to Wound Healing

Wound healing is a complex biological process, and measuring wound healing is often challenging. Traditionally, wound healing rates can be evaluated either by total area healed or percentage area healed. Both metrics provide an inherent bias when analyzing wound healing rates. Area-to-perimeter ratio compared to wound diameter (i.e., wound margin advance [WMA]) demonstrates a linear relationship and is a much better representation of the rate of healing and predictor of wound healing as it removes bias (Figure 1).

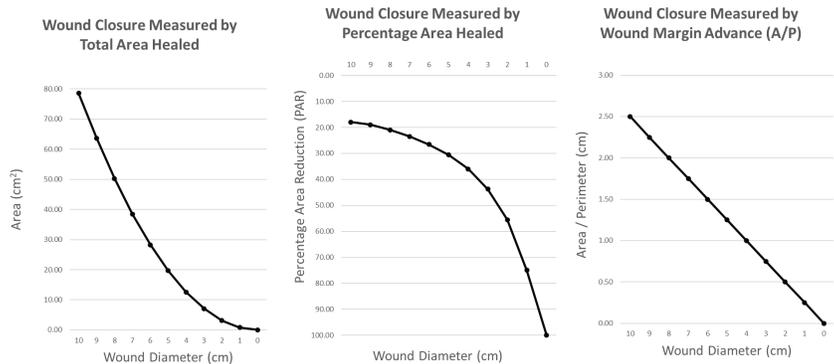


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Figure 1. Comparison of Wound Closure Metrics



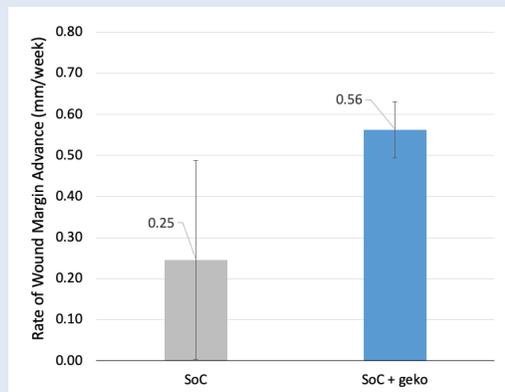
How a Change in Practice Improved VLU Healing Outcomes

The geko™ device is a muscle pump activator that stimulates the common peroneal nerve at the lower leg, activating lower leg muscle pumps, and can increase circulation up to 60% achieved normally by walking. It is often used as adjunctive therapy for the management of VLUs.

At a nurse-led ambulatory wound clinic, 30 days of standard-of-care treatments for VLUs was required prior to adding the geko™ device to the care plans. An evaluation with 18 patients was conducted to compare the healing outcomes of VLUs with standard-of-care only and standard-of-care plus the geko™ device. The evaluation demonstrated that,



Figure 2. The Effect on Rate of Wound Margin Advance of Adding geko™ to Standard Care (N=18)



by shortening the time to initiating the geko™ device treatments (from 14.3 weeks to 3.8 weeks), VLU closure was significantly faster (~55% increase in rate of healing) (Figure 2). Faster healing times translate to earlier patient discharge from wound care services. This, in turn, reduces the socioeconomic burden of VLUs for patients and health-care systems.

Cost Savings when the geko™ device is used:

Cost of VLUs and the use of the geko™ device

- Direct nursing care
- Dressing supplies
- geko™ device
- Length of healing

Savings

In home and community care:
Cost avoidance of \$6200/patient

In acute care:
Cost avoidance of \$2300/patient