

Perfuse Medtec Inc Sponsored Learning: Time, Edema and Other Impediments to Healing . . . Why is This Important in Wound Care?



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Cathy Burrows has a broad range of clinical backgrounds, with the past 20 years focused on wound care. She has been an active member of Wounds Canada since 1999, has chaired numerous committees and was president from 2007 to 2009. In 2008, Cathy completed the Masters of Science in Community Health (Wound Prevention and Care) at the University of Toronto.

Rochelle Duong specializes in wound care and currently works as the Manager, Clinical Programs. She is responsible for the Wound Care Program, wound care clinics and Home and Community Care Medical Supplies and Equipment formulary for the Mississauga Halton LHIN.

Robyn Evans is the Medical Director of the Wound Healing Clinic at Women's College Hospital, involved in research and teaching, and a family physician in the community. She is part of the faculty of the International Interprofessional Wound Care Course (IIWCC) through the University of Toronto. She is senior faculty for Wounds Canada, supporting the development of interprofessional education programs for clinicians as well as delivery and evaluation of these programs.

Carol-Ann Rabley-Koch graduated with an Honours Bachelor of Science degree in Kinesiology from the University of Waterloo in 1981. Following graduation, she completed the nursing program at St. Clair College in Chatham. She holds a diploma in alternative health care and is a certified member of Nurses Specialized Wound, Ostomy and Continence Canada.

Understanding Edema

Edema, or swelling produced by expansion of the interstitial fluid volume, is caused by fluid volume overflow, low protein states (leading to reduced oncotic pressure) and/or damage to the capillaries and/or lymphatics. Edema can lead to skin changes (stasis dermatitis), hyperpigmentation, cellulitis, pain, quality-of-life issues, lipodermatosclerosis, mobility issues and ulceration. It can also lead to infection: stasis changes lead to breakage into the skin barrier; edema fluid neutralizes the fatty acids of sebum, reducing bactericidal properties of the skin; poor local perfusion is caused by the swelling; tinea pedis develops between toes due to swelling and moisture. Arterial edema is caused by blockages in large vessels. Usually the capillaries constrict when the leg is dependent, but when

arterial edema is present, the capillaries dilate.

To manage edema, clinicians must identify its cause(s), use compression therapy and improve calf-muscle-pump function. Compression therapy is the gold standard, but it can lead to issues such as skin irritation, discomfort/pain, mechanical issues, nerve damage, forefoot edema, swelling above the knee and maceration. While many dressings are available, they do not address the underlying cause of the edema.

The geko™ device (Figure 1) stimulates the common peroneal nerve, which activates lower leg muscle pumps to increase blood circulation, reduce edema and support healing. The device reduces edema in three ways:

1. By eliciting muscle contraction of the calf and foot

2. By changing the volume and velocity of blood flow by increasing flux to the wound bed and periwound skin
3. By decreasing venous pooling

Figure 1. geko™ device



Early intervention with the geko™ device has proven to be effective in the treatment and management of edema and wound healing.

Early Intervention with geko™ Device for Venous Leg Ulcers (VLUs) Predicted to Not Heal within 24 Weeks

The geko™ device was evaluated and added to the Mississauga Halton (MH) LHIN compendium in 2017. Audits conducted six to nine months following its addition found very few referrals to the device, and long wait times before device use caused by delays in getting vascular studies

(90–100 days). During these delays, many wounds deteriorated. A quality improvement initiative looked at using the Venous Leg Ulcer Risk Assessment (VLURA) tool to classify risk and identify wounds that were unlikely to heal within a 24-week period and trigger earlier use of geko™ as a first-line adjunctive therapy (within two weeks). Results showed a mean daily healing rate of just under 1.5%, compared with -2.25% per day before use of the device. Without the use of geko™, the average time for closure is about 15 weeks for all VLU patients in MH LHIN. Healing time while using the geko™ device averaged 12 weeks for patients at risk of not healing in 24 weeks. This initiative demonstrates that early intervention using the geko™ device improves healing outcomes and decreases costs related to VLUs.

Kuhnke and Maxwell conducted a qualitative study looking at the experience of patients living with VLUs. Pain was a leading issue reported, leading to psychosocial issues such as relationship distress and emotional crisis. Participants reported VLUs had a negative effect on them and on their family, associated with decreased functional status and ability to dress and walk, and intensified dependency. In contrast, participants identified hope and optimism that the geko device would bring healing, including shrinking or closing of the wound, fewer or no trips to the clinic, less or no pain medication and the ability to wear pants, socks and shoes.

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Presentation Digest is a production of Wounds Canada (www.woundscanada.ca).

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