

Building the Framework: Developing an Ontario Strategy for Lower-limb Preservation

By Mike Setterfield, MSc; Emma Jowett, HBA

The notion that lower-limb amputation is a devastating complication of diabetes and peripheral vascular disease (PVD) is not new. Nor is the idea that many individuals with diabetes or PVD live in fear of having a toe, foot or limb amputated. It has been documented that almost 85% of lower-limb amputations are preceded by a diabetic foot ulcer and that up to 80% of major lower-limb amputations are preventable.¹⁻² Recent International Working Group on the Diabetic Foot (IWGDF) guidelines recommend the following five key elements to prevent foot ulcers:³

1. Identify the patient with an at-risk foot
2. Regularly inspect and examine the patient and their at-risk foot
3. Educate the patient, family and health-care professionals
4. Ensure routine wearing of appropriate footwear
5. Treat risk factors for ulceration

Preventing amputations results in significant benefits for patients and their families and also saves health-care system dollars and resources.⁴⁻⁶

In Ontario, Canada (population 14.73 million), there are approximately 40 major lower-limb

amputations every week related to diabetes and PVD,⁷ with direct health-care costs of \$140 million annually.⁸⁻⁹ Recent publications of health administrative data from Ontario describe a wide range of lower-limb amputation rates in populations with diabetes and peripheral artery disease across 14 health regions (Local Health Integration Networks), with the highest rates in Northern Ontario regions.¹⁰ In addition, amputation rates provincially have increased over the last decade, leading to a hypothesis that the current Ontario landscape would benefit from integrated regional amputation prevention efforts.¹⁰⁻¹¹ Moreover, the average lower-limb amputation rate in Ontario is twice as high as in other high-income jurisdictions with publicly funded health-care systems (see Figure 1),^{10,12} adding evidence to the hypothesis that the Ontario health-care system needs to focus on lower-limb preservation. Furthermore, regional amputation prevention efforts have been implemented in other Canadian provinces, which can provide lessons learned and serve as models to inform efforts in Ontario. (See page 26 for information on how Alberta has addressed this issue.)

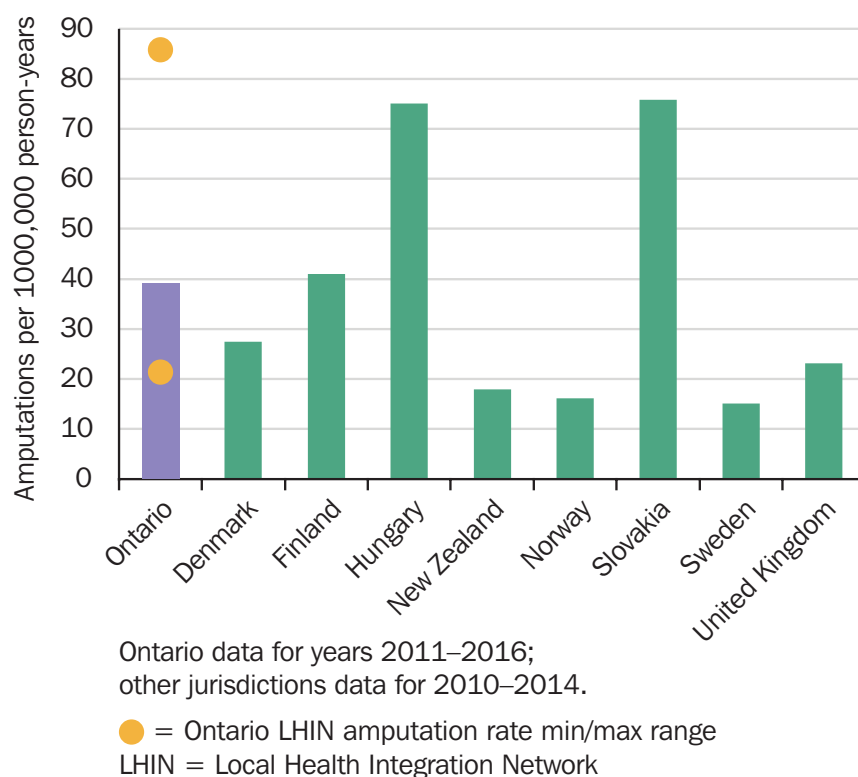


Figure 1: Major and Minor Lower Limb Amputation Rates Among Patients with Diabetes or PAD in Ontario and Other Jurisdictions with Publicly Funded Health-care Systems

Developing a Strategy

A key adviser to the Ministry of Health, CorHealth Ontario (CorHealth) provides overall leadership and strategic direction to support the planning and delivery of high-quality cardiac, stroke and vascular care in the province. CorHealth, together with a provincial advisory committee of vascular and wound care experts, primary and community care providers, and patient and family advisers, chaired by Dr. Ahmed Kayssi, is developing a multi-year Ontario lower-limb preservation strategy (the Strategy). The breadth and depth of expertise of the advisory committee is amplified by members working in smaller interprofessional workstreams before bringing components to the large group for validation. This approach allows the committee to focus on a patient-centred, evidence-based strategy. The Strategy's goal is to reduce avoidable, non-traumatic major lower-limb amputations in Ontario through improved early identification of patients

with at-risk feet and complications, and access to integrated vascular lower-limb wound and diabetic foot care.

A significant Strategy resource currently in development is a practical framework that will provide a roadmap for regional adoption and delivery of evidence-based lower-limb preservation care and services in Ontario. The framework, built on foundational patient care pathways for the prevention and management of diabetic foot complications and for the prevention and management of vascular wounds, will include:

- Minimum best-practice care requirements
- Essential elements of care delivery, including virtual care
- A model of care that can be adapted to unique regional environments

Key performance measures and funding policy recommendations will be integrated. An important component of the Strategy is curating resource toolkits for health-care providers and to support

patient education and self-management. The framework's implementation will be tested through demonstration programs across the province. These programs will be encouraged to include relevant stakeholders from across the continuum of care—such as primary care, home care, wound care, acute care and, importantly, patients and family members—in shaping implementation.

The new system of Ontario Health Teams is a logical structure to support the framework vision of integrated care for at-risk individuals.

Key learnings will be incorporated into the Ontario Framework for Lower-Limb Preservation, creating a co-designed product to support successful provincial implementation and adoption.

CorHealth recognizes the importance of this work, the unwavering commitment of our advisory committee, and the tireless efforts of our provincial stakeholders who are passionate about improving outcomes and quality-of-life for individuals living with diabetes and peripheral vascular disease. Together we will continue to improve

access to high-quality best-practice early screening and integrated vascular lower-limb wound and diabetic foot care, and reduce avoidable, non-traumatic major lower-limb amputations in Ontario.

To learn more about the Strategy, please contact Mike Setterfield at mike.setterfield@corhealthontario.ca. ■

References

1. Pendsey SP. Understanding diabetic foot. *Int J Diabetes Dev Countries*. 2010;30(2):75–79.
2. Driver V, Madsen J, Goodman R. Reducing amputation rates in patients with diabetes at a military medical center. *Diabetes Care*. 2005;28(2):248–253.
3. Schaper NC, van Netten JJ, Apelqvist J, Bus SA, Hinchliffe RJ, Lipsky BA, IWGDF Editorial Board. Practical guidelines on the prevention and management of diabetic foot disease (IWGDF 2019 update). *Diabetes Metab Res Rev*. 2020;36(S1):e3266.
4. Ramsey SD, Newton K, Bough D, McCulloch DK, Sandhu N, Reiber GE, Wagner EH. Incidence, outcomes, and cost of foot ulcers in patients with diabetes. *Diabetes Care*. 1999;22:382–387.
5. Pedras S, Carvalho R, Pereira MG. Quality of life in Portuguese patients with diabetic foot ulcer before and after an amputation surgery. *Int J Behav Med*. 2016;23(6):714–721.
6. Diabetes Action Canada. Diabetes Foot Inpatient Cost Analysis in Toronto. Toronto: Diabetes Action Canada; 2021. Retrieved from: <https://diabetesaction.ca/diabetic-foot-inpatient-cost-analysis-in-toronto>.
7. Canadian Institute for Health Information, Discharge Abstract Database, unpublished data.
8. Statistics Canada. Table 17-10-0009-01: Population Estimates, Quarterly. Ottawa: Statistics Canada; 2021. Retrieved from: www150.statcan.gc.ca/t1/tbl1/en/tv.action?pid=1710000901.
9. Registered Nurses' Association of Ontario. Low-cost Interventions Could Save People's Limbs, Lives and Millions of Ontario's Health-care Dollars. Toronto: Registered Nurses' Association of Ontario; 2016. Retrieved from: <https://rnao.ca/fr/news/media-releases/2016/04/12/low-cost-interventions-could-save-peoples-limbs-lives-and-millions>.
10. Hussain MA, Al-Omran M, Salata K, Sivaswamy A, Verma S, Forbes TL, et al. A call for integrated foot care and amputation prevention pathways for patients with diabetes and peripheral artery disease across Canada. *Can J Public Health*. 2019;110(2):253–255.
11. Hussain MA, Al-Omran M, Salata K, Sivaswamy A, Forbes TL, Sattar N, et al. Population-based secular trends in lower-extremity amputation for diabetes and peripheral artery disease. *CMAJ*. 2019;191(35):E955–E961.
12. Behrendt CA, Sigvant B, Szeberin Z, Beiles B, Eldrup N, Thomson I, et al. International variations in amputation practice: A VASCUNET report. *Eur J Vasc Endovasc Surg*. 2018;56:391–399.

Emma Jowett is a senior strategist in stakeholder engagement, strategy and communications at CorHealth Ontario (CorHealth) in Toronto, Ontario. She joined CorHealth in 2017 to provide stakeholder engagement, communications and operational strategy expertise in the delivery of cardiac, stroke and vascular initiatives. Prior to joining CorHealth, she focused on providing communications, strategic and operational expertise to organizations in the healthcare, finance and consumer packaged goods industries.

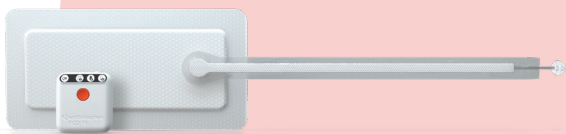
Mike Setterfield is a senior strategist (clinical) at CorHealth Ontario (CorHealth) with responsibilities for the vascular portfolio. He joined CorHealth (previously the Cardiac Care Network of Ontario) in 2011 to develop A Vascular Services Quality Strategy for Ontario, resulting in the expansion of the Cardiac Care Network's mandate to include vascular services in addition to its focus on cardiac services in Ontario. Prior to joining CorHealth, he spent several years working in the pharmaceutical and biotechnology industry holding positions in clinical research and medical affairs.

+ 51% more closed wounds^{1*}

PICO® sNPWT[†] has been shown to significantly reduce wound area and depth when compared with tNPWT[‡] in patients with VLU and DFUs over 12 weeks.¹

Turn around wound healing trajectory more effectively
than standard dressings and tNPWT with PICO.²

Smith+Nephew



PICO[®] 14

Single Use Negative Pressure
Wound Therapy System

Helping you get **CLOSER TO ZERO[®]**
delay in wound healing
smith-nephew.com/pico

References: 1. Kirsner R, Dove C, Reyzelman A, Vayser D, Jaimes H. A prospective, randomized, controlled clinical trial on the efficacy of a single-use negative pressure wound therapy system, compared to traditional negative pressure wound therapy in the treatment of chronic ulcers of the lower extremities. *Wound Rep Regen.* 2019. May 14 <https://doi.org/10.1111/wrr.12727>.
2. Dowsett C, et al. Use of PICO® to improve clinical and economic outcomes in hard-to-heal wounds. *Wounds International.* 2017;8, p53–58. *45 vs 22%; p=0.002; ITT population. † Single Use Negative Pressure Wound Therapy (sNPWT). ‡ Traditional Negative Pressure Wound Therapy (tNPWT).
©Trademark of Smith & Nephew. All Trademarks acknowledged. ©October 2019 Smith & Nephew.
AWM-AWD-20619 | CA48405 03/21

