Pathways and Outcomes:

The Importance of Timely Interventions

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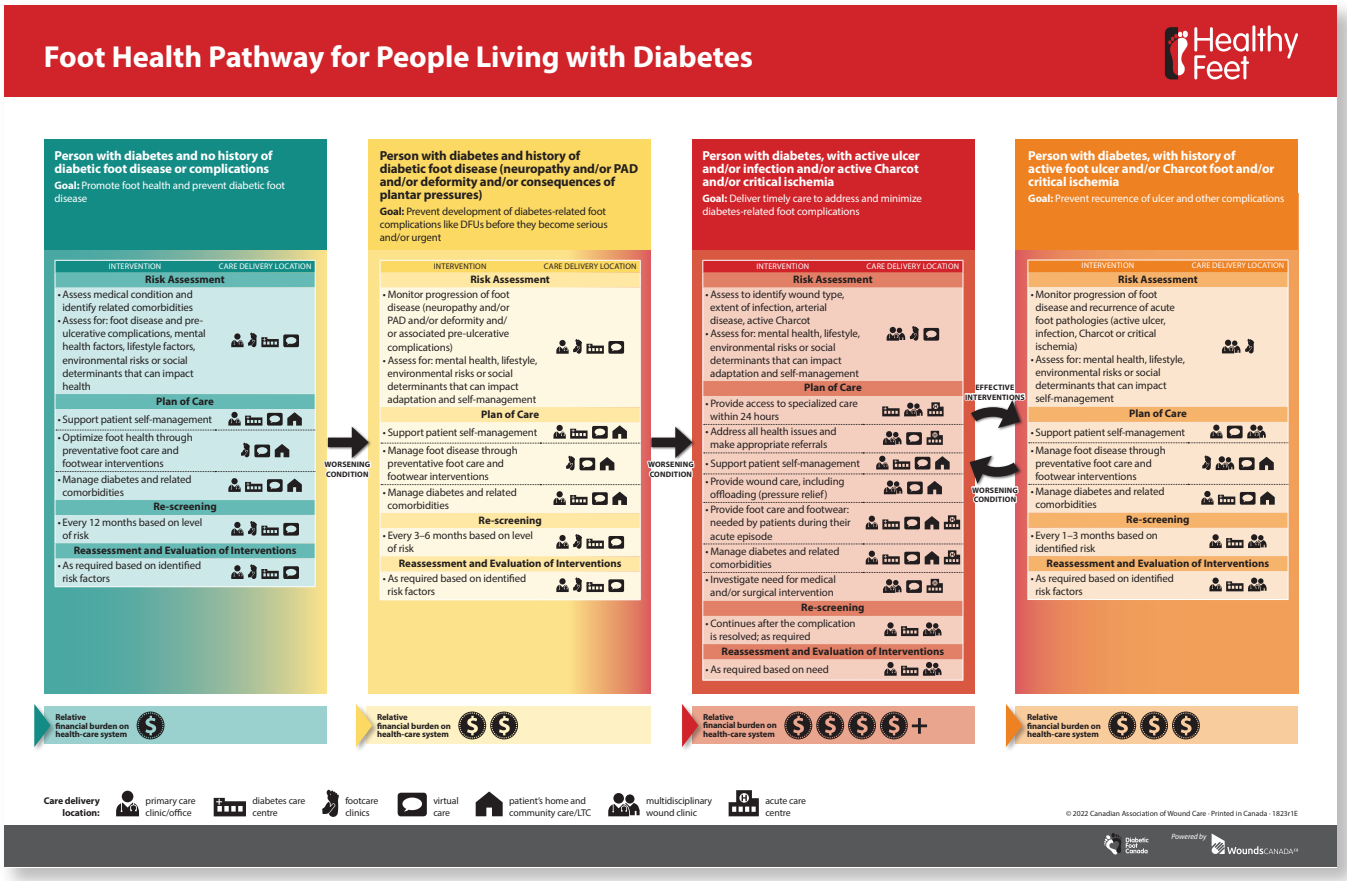
Wounds Canada has been developing care pathways that outline a risk-based approach focused on patient outcomes, experiences and value-based care consistent with population health principles. The aim of this approach is to support skin and general health by focusing on early interventions that prevent wounds and/or wound-related complications.

To date, two pathways have been completed: Foot Health Pathway for People Living with Diabetes (Figure 1) and Pathway for Preventing and Managing Vascular Wounds (Figure 2). The coloured domains are organized to assist in identifying an individual's specific risk and then recommend an appropriate care plan, using a holistic approach, complete with follow-up requirements. The green domain identifies interventions for patients at no or very low risk, yellow for patients at low risk, red for patients experiencing an acute wound-related episode, and orange for patients who are at a post-acute episode stage, such as

Learn More

To learn more about the pathways, please read "A Foot Health Pathway for People Living with Diabetes: Integrating a Population Health Approach"[6] and "Saving Limbs and Lives: Building Out an Ontario Lower-Limb Preservation Strategy,"[7] both in *Limb Preservation in Canada*, 2022, Vol 3, No 1.

Figure 1: Foot Health Pathway for People Living with Diabetes



Click here for a full-size version. A version of the pathway with an explanation can be found here: https://www.woundscanada.ca/docman/public/1828-diabetic-foot-complications-b-ltr-1823e-final/file.

those living with a healed wound who may be at risk for recurrence.

While based on international best practice standards, these pathways can be adapted to fit the needs and resources of any health jurisdiction, provided the general principles are met. As a tool for communicating to individuals, families, health providers, administrators, policy makers and funders, the pathways highlight the importance of risk screening followed by secondary and tertiary prevention using an integrated team approach that promotes skin health and prevents wounds and wound complications, including infections, slow or non-healing wounds, amputations, disability and death.

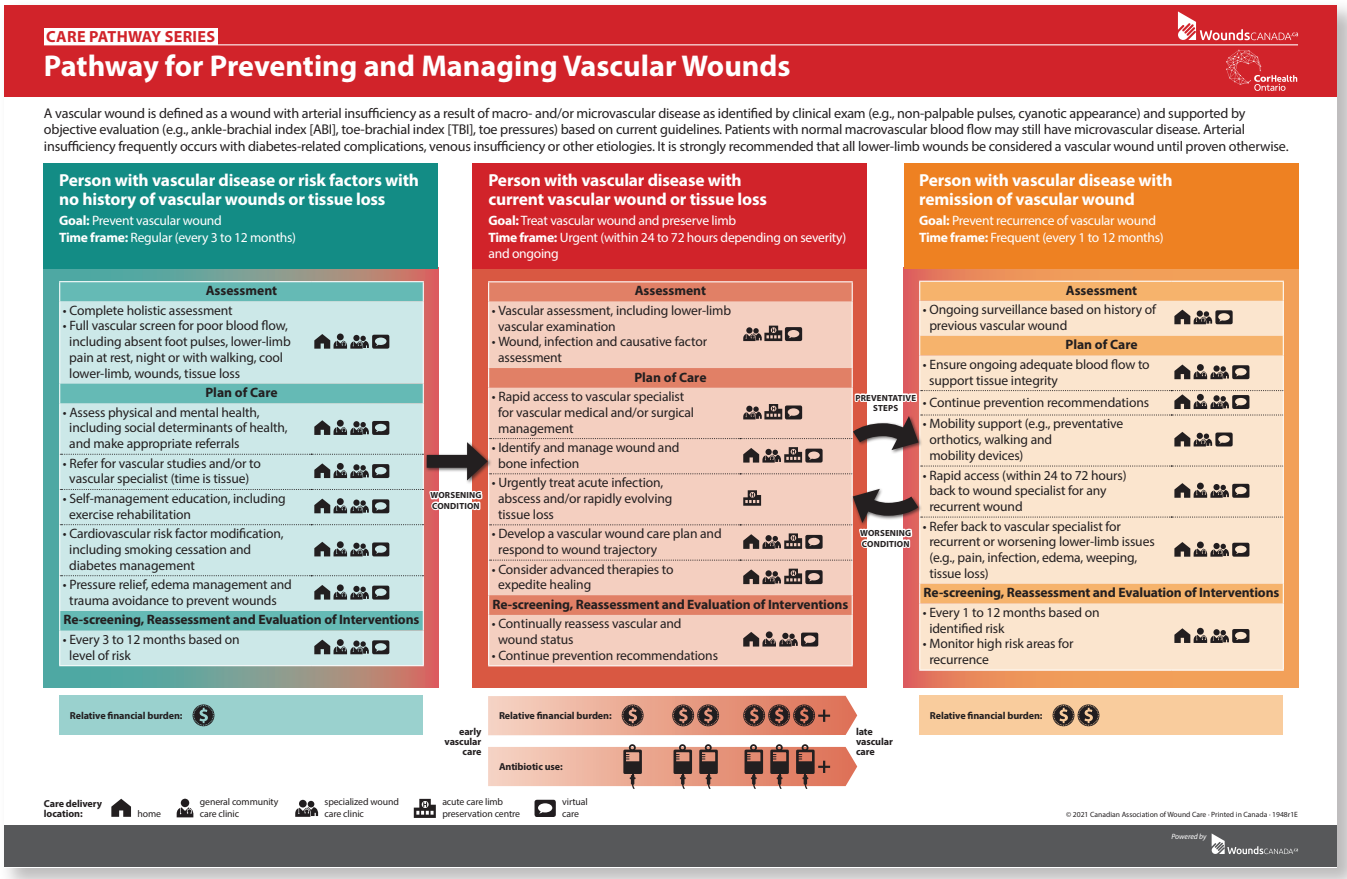
What follows are examples of the impact that the type and timing of decisions can have on outcomes for patients. These are "what if" scenarios and contrast the effect of early and appropriate interventions with late and/or inappropriate interventions. The results are striking.

The scenarios are based on a single patient newly diagnosed with diabetes, a common occurrence in Canada, as 30% of Canadians are currently living with diabetes or prediabetes.[1] They are designed to provide health-care professionals, policy makers funders and patients and their families with food for thought about how to improve outcomes for such patients.

Let's dive in

Every individual diagnosed with diabetes will have a health trajectory that follows its own unique path—one that depends on their general health, geographic location, income, social networks and personal decision making, among other factors.[2,3] One of the most important of

Figure 2: Pathway for Preventing and Managing Vascular Wounds



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these other factors is the type and timing of support they receive from their health-care provider (HCP) and health system.[4] This is true for all the implications that result from diabetes, including long-term foot health.

The initial and ongoing care patients with diabetes receive from their HCP can make the difference between a lifetime of healthy feet or chronic problems potentially leading to amputation and related premature death.

For those who receive the right types of interventions at the right time, foot health can be maintained, and complications can be prevented, minimized or addressed appropriately.[5]

The thought exercise that follows helps to illustrate how this might work by positing alternative scenarios for a patient diagnosed with diabetes mellitus by a family physician and what the benefits and consequences might be when different decisions are made—or not made. Figure 3 provides an overview of the five scenarios that stem from the same initial case, followed by Figure 4, which provides more detailed information about how the patient fared in each scenario.

References

1. Diabetes Canada. Diabetes in Canada: Backgrounder. Ottawa: Diabetes Canada; 2022. Available at: https://www.diabetes.ca/DiabetesCanadaWebsite/media/Advocacy-and-Policy/Backgrounder/2022_Backgrounder_Canada_English_1.pdf.
2. Peters EJ, Lavery LA, International Working Group on the Diabetic Foot. Effectiveness of the diabetic foot risk classification system of the International Working Group on the Diabetic Foot. Diabetes Care. 2001;24(8):1442–7.
3. Bus S, Lavery L, Monteiro-Soares M, Rasmussen A, Raspovic A, Sacco I, et al. Guidelines on the prevention of foot ulcers in persons with diabetes (IWGDF 2019 update). Diabetes Metab Res Rev. 2020;36(S1)e3269.
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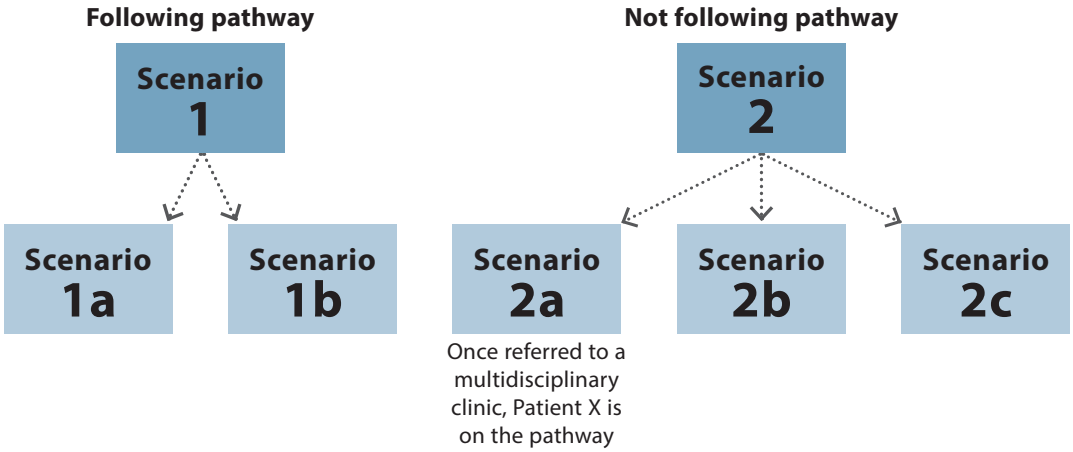
Figure 3: Overview of the Alternative Scenarios
Patient X is diagnosed with diabetes mellitus by family physician.



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5. Botros M, Kuhnke JL, Embil J, Goettl K, Morin C, Parsons L, et al. Best practice recommendations for the prevention and management of diabetic foot ulcers. In Foundations of Best Practice for Skin and Wound Management. A supplement of Wound Care Canada; 2017. 68 pp. Available here.
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Figure 4:
The situation: Patient X is diagnosed with diabetes mellitus by primary care practitioner.

Scenario 1

Key Decision Point:
Primary care practitioner works with patient to create a plan of care that includes:
- Diabetes management, focus on achieving diabetes targets, lifestyle modifications
- Regular follow-ups
- Referral to diabetes education centre to learn self-management strategies
- Foot screening, risk stratification and referrals as needed
- Annual follow-up for foot health monitoring to catch early signs of complications and implement interventions if needed (yellow domain)

1 YEAR

- Situation is unchanged

5 YEARS

- Situation is unchanged

Scenario 1a

Key Decision Point:
Ongoing evaluation indicates plan is working: plan continues

10 YEARS

- Situation unchanged

Consequence cascade:
- Patient X stays relatively healthy
- Good quality of life
- Continues with regular visits to primary care with regular foot screening and preventative foot care
- Normal lifespan

The Bottom Line:
- No undue additional burden on the health system

- Neuropathy is detected

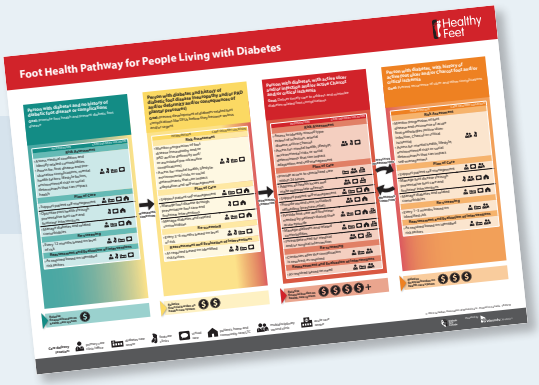
Scenario 1b

Key Decision Point:
- Increase frequency of screening to every 3 to 6 months
- Modify footwear recommendations

Consequence cascade:
- Patient X stays relatively healthy
- Continues with frequent visits to primary care practitioner and foot care specialists for duration of life
- Normal lifespan

The Bottom Line:
- Minor additional burden on the health system`

Notes:
- The colours in the infographic align with the colours of the pathway.
- Similar scenarios could be generated for the vascular pathway as well.



Scenario 2

Key Decision Point:

Primary care practitioner:
- Prescribes medication for blood glucose management and focuses on diabetes targets
- Schedules a follow-up for 6 months
- Does not refer for education or foot care
- Does not schedule regular foot-health monitoring

6 MONTHS

- Follow-up with primary care practitioner for blood glucose management and diabetes targets
- Told to get a glucometer and use it three times per day; blood glucose levels continue to rise

3 YEARS

Scenario 2a

- Comes back with foot ulcer; unaware because of lack of sensation (only discovered because of blood on the floor)

Key Decision Point:

Primary care practitioner:
- Refers patient to a multidisciplinary wound clinic (which puts Patient X back on the pathway)
- Wound is closed in three months
- Patient is monitored for recurrence and receives ongoing education in self-management for his diabetes and foot health

Consequence cascade:
- No ulcer recurrence
- Reasonably good QoL

The Bottom Line:
- Some additional burden on the health system but situation is under control

$$$

Scenario 2b

- Comes back with foot ulcer; unaware because of lack of sensation (only discovered because of blood on the floor)

Key Decision Point:

Primary care practitioner refers patient to home care for wound management

3.5 YEARS

- Wound has not healed; home care is ongoing

4.5 YEARS

- Wound has not healed; foot is now red and swollen so patient goes to emergency department

Key Decision Point:

Emergency personnel send patient home with antibiotics; but it's unrecognized Charcot; ulcer persists

5.5 YEARS

- Patient has visited emergency department twice more because the foot is not improving; receives more antibiotics; now acute Charcot with non-reversible changes

7.5 YEARS

- Eventually diagnosed correctly and patient has ongoing specialist appointments and care

Consequence cascade:
- Immobilized in a cast for two years
- Loses job
- Becomes deconditioned
- Poor mobility and poor social life
- Loses home

The Bottom Line:
- Heavy personal toll
- Heavy burden on the health system

$$$$+

Scenario 2c

- Comes back with foot ulcer; unaware because of lack of sensation (only discovered because of blood on the floor)

Key Decision Point:

Primary care practitioner refers patient to home care for wound management

3.5 YEARS

- Wound has not healed; home care is ongoing

4.5 YEARS

- Wound has not healed; toe is now black; patient goes to emergency department

Key Decision Point:

Emergency personnel refer patient to orthopedist for amputation; he is in hospital for 3 days

5.5 YEARS

- Another amputation, this time above the knee to manage necrosis; in hospital and rehab for 60 days, then referred to home care for 4 months

8.5 YEARS

- Patient dies

Consequence cascade:
- Loses job
- Poor QoL
- Loss of life to patient and loss of family member and friend

The Bottom Line:
- Loss of life
- Heavy burden on the health system

$$$$+

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