

Title	Guideline: The Assessment of People with Diabetic/Neuropathic Foot Ulcers
Background ¹⁻¹³	<ul style="list-style-type: none"> • One in three Canadians has diabetes or prediabetes • Foot complications are major complications that can occur with diabetes • 15-25% of Canadians with diabetes will develop a foot ulcer in their lifetime • 50% of all lower limb amputations in Ontario are directly related to diabetes • 85% of all lower leg amputations are the result of a non-healing diabetic foot ulcer, while 15% of DFUs end in amputation • Following lower limb amputation patients have a 5 year mortality rate of approximately 50% • Risk factors associated with the development of diabetic foot ulcers include peripheral neuropathy, previous ulcer or amputation, microvascular complications, increased levels of glycated hemoglobin (A1C) and onychomycosis. • Loss of sensation to the 10g Semmes-Weinstein monofilament at the plantar surface of the foot is a significant independent predictor of future foot ulcer and lower extremity amputation. • Types of neuropathy: <ul style="list-style-type: none"> ○ Sensory – loss of protective sensation. Renders people vulnerable to physical, chemical and thermal trauma ○ Autonomic – associated with dry skin, which can result in fissures, cracking and callus development. May also present as a bounding pulse ○ Motor – results in foot deformities and abnormal pressures over bony prominences • Most Diabetic foot ulcers occur at areas of increased pressure. 90% of plantar DFUs are directly attributed to pressure • Peripheral arterial disease is present in up to 50% of people with a DFU, which complicates wound healing and contributes to amputation • The majority of DFUs are neuro-ischemic, i.e. they are caused by a combination of neuropathy and ischemia
Indications	This guideline is intended to be used by front line registered health care providers, to guide their assessment of individuals admitted/presenting with a foot ulcer, and who have been diagnosed with diabetes and/or foot neuropathy.
Guideline	<ol style="list-style-type: none"> 1. Upon discovery of a wound on the foot of a person with diabetes and/or foot neuropathy or upon admission of a person with such a wound to your health care facility/service, conduct a history and focused physical assessment following your organizations documentation policies and standard operating procedures. If you do not have standardized documentation, please refer to the SWRWCP Initial Wound Assessment form found here: https://swrwoundcareprogram.ca/Uploads/Documents/HCPR%20-%20Initial%20Wound%20Assessment%20Form.pdf 2. Important information to collect: <ol style="list-style-type: none"> a. Health/medical history (and the persons understanding of these) b. Nutritional status – separate tools such as the Nestle Mini Nutritional Assessment (MNA©) are recommended – individual permission must be obtained by each organization wishing to use the MNA© c. Wound history (current and previous wounds)

	<ul style="list-style-type: none"> d. Wound related pain and quality of life (pain can be an indicator of infection) e. Extrinsic, intrinsic, and iatrogenic factors affecting wound healing f. Concordance concerns <p>3. Complete the SWRWCP Interdisciplinary Diabetic/Neuropathic Foot Assessment Form (Found here: https://swrwoundcareprogram.ca/Uploads/Documents/H CPR%20-%20DFU%20Assessment%20Form.pdf) or review the form if one has been previously completed, to determine the person's diabetes diagnosis and management history, diabetes related complications (if the person has been diagnosed with diabetes), history of previous ulcer/amputation, end stage renal disease and/or barefoot walking, and to systematically physically assess the persons:</p> <ul style="list-style-type: none"> a. Feet and toenails for bony/structural deformities/prominences, range of motion of foot joints, signs of neuropathy, and signs of infection. NOTE: The Primary health care provider may wish to consider x-rays and/or pressure mapping to determine the extent of plantar pressures and those forces on the foot and/or to rule out Charcot foot (if suspected). Neuropathy can be assessed using the following techniques: <ul style="list-style-type: none"> i. Symptoms, i.e. tingling, pain, etc. ii. Pressure perception, i.e. Semmes-Weinstein monofilament testing iii. Vibration perception, i.e. 128Hz tuning fork testing iv. Discrimination, i.e. pin prick testing on the dorsal aspect of the person's feet v. Tactile sensation, i.e. lightly touching cotton wool to the dorsal aspect of the person's feet vi. Reflexes, i.e. Achilles tendon reflexes b. Gait c. Inside and outside of footwear/orthotics and socks (worn when at home and when outside), for functional appropriateness and to ensure they are not a source of pressure d. Edema, lymphedema, lipedema (if they so present with such issues) e. Signs of venous/arterial disease f. The quality of the persons venous/arterial circulation - pedal pulses and ankle brachial index (ABI) testing, performed by a healthcare profession trained in ABI testing – NOTE: if a person has long-standing diabetes, hypertension or advanced age, the vessels may not be compressible and segmental compression studies or toe pressures may need to be ordered through a diagnostic imaging department in order to accurately determine the status of the person's lower limb circulation – Update the Primary Care Provider with results g. Signs of unusual ulcers, i.e. malignant ulcers <p>4. Conduct a psychosocial assessment to determine the:</p> <ul style="list-style-type: none"> a. Persons understanding of the wound and their risk factors and any history of previous foot education b. Impact of the wound on the person and their body image
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	<ul style="list-style-type: none"> c. Financial concerns and availability of support systems to address such concerns d. Impact of the persons environment, physical/medical/psychosocial factors, and end-of-life goals on their care, as applicable e. Access to healthcare f. Person's preferences for treatment and motivation to comprehend and adhere to the plan of care <ol style="list-style-type: none"> 5. Classify the wound into a risk category to coordinate care, using the Diabetes Foot Ulcer Risk Stratification and Referral Algorithm "FURST tool" (Found here: https://swrwoundcareprogram.ca/DiabeticFootUlcer) 6. Complete a validated wound assessment tool (such as the PUSH Tool 3.0 Found here: https://swrwoundcareprogram.ca/Uploads/Documents/hcpr%20-%20push%20tool.pdf). It is important to track wound progression over time using a validated tool so that treatment plan effectiveness can be evaluated. This should be done weekly at a minimum. NOTE: Wound measurements (length and width) should be recorded on admission and at least weekly, with a calculation performed weekly to determine the percentage reduction in wound size, normal healing is a reduction of 30-40% every 3-4 weeks. 7. Assess the wound for signs/symptoms of infection according to the IWGDF Clinical classification of infection (Found here: https://iwgdfguidelines.org/wp-content/uploads/2019/05/05-IWGDF-infection-guideline-2019.pdf). NOTE: wounds that probe to bone are suggestive of a deep foot infection, i.e. osteomyelitis, and should be referred to the family physician/primary care nurse practitioner immediately for assessment. NOTE: visible evidence of infection may be muted or non-existent due to compromised arterial blood flow. Changes in sensation, temperature, and pain are red flags and warrant further assessment by a Primary Health Care Provider. 8. Assess the wounds moisture balance and the appropriateness of the current dressing using the "Guideline: The Assessment and Management of Moisture in Acute and Chronic Wounds" 9. Assess the wound to determine if debridement interventions are warranted. See "Guideline and Procedures: Wound Debridement (excluding conservative sharp debridement)" and "Guideline: Conservative Sharp Wound Debridement". NOTE: Follow your organization policies and standard operating procedures as well as your College's Standards before completing care below the dermis 10. Classify the person's diabetic foot ulcer using the "IWGDF Guideline on the classification of diabetic foot ulcers" Found here: https://iwgdfguidelines.org/wp-content/uploads/2019/05/07-IWGDF-classification-guideline-2019.pdf 11. Determine the healability of the persons diabetic/neuropathic foot ulcer based on your holistic assessment, the quality of the blood flow in the lower limb, the persons/caregivers willingness to participate in and adhere to the plan of care, and based on the results of use of the "Determining Healability Tool" (Found here: https://swrwoundcareprogram.ca/Uploads/ContentDocuments/HCPR%20-%20Healability%20Tool.pdf). Choose the most appropriate wound healing goal: <ul style="list-style-type: none"> a. Healable b. Not Healing ("Maintenance") c. Non-healable/palliative
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	12. Once you have completed a thorough assessment of the person and their foot ulceration and determined their 'healability', proceed to implement appropriate interventions as outlined in "Guideline: The Management of People with Diabetic/Neuropathic Foot Ulcers".
References	<ol style="list-style-type: none"> Schaper, N.C., et al. 2019. IWGDF Practical Guidelines on the prevention and management of diabetic foot disease. Available at: https://iwgdfguidelines.org/wp-content/uploads/2019/05/01-IWGDF-practical-guidelines-2019.pdf Botros, M. et al., 2019. The best practice recommendations for the prevention and management of diabetic foot ulcers. Available at: https://www.woundscanada.ca/docman/public/health-care-professional/bpr-workshop/895-wc-bpr-prevention-and-management-of-diabetic-foot-ulcers-1573r1e-final/file Institute for Clinical Evaluative Sciences. Diabetes In Ontario: An ICES Practice Atlas [Online]. Available: http://www.diabetes.ca/Files/DM%20Homepg.pdf. Sibbald RG, Queen D. Demonstration project for community patients with lower leg and foot ulcers. Wound Care Canada. 2007;5(1). Public Health Agency of Canada. National diabetes fact sheets [Online]. Available: http://www.phac-aspc.gc.ca/ccdpc-cpcmc/ndss-snsd/english/facts_figures-eng.php. Abbott C, Carrington H, Ash S, et al. The North-West diabetes foot care study: Incidence of, and risk factors for, new diabetic foot ulceration in a community-based patient cohort. Diabetic Medicine. 2002;19(5):377-384. Embil, J.M., et al. 2019. Foot Care: Diabetes Canada Clinical Practice Guidelines Expert Committee. Available at: http://guidelines.diabetes.ca/browse/chapter32 Apelqvist J, Larsson J, Agardh C. Long-term prognosis for diabetic patients with foot ulcers. Journal of Internal Medicine. 2003;233(6):485-491. Bloomgarden TZ. American Diabetes Association 60th scientific sessions, 2000: The diabetic foot. Diabetes Care. 2001;24(5):946-951. Armstrong D, Lavery LA, Harkless LB. Validation of a diabetic wound classification system: The contribution of depth, infection and ischemia to risk of amputation. Diabetes Care. 1998;21(5):855-859. Robbins JM, Strauss G, Aron D, et al. Mortality rates and diabetic foot ulcers: Is it time to communicate mortality risk to patients with diabetic foot ulcers? J Am Podiatr Med Assoc. 2008;98(6):489-493. Orsted H, Searles G, Trowell H, et al. Recommendations for the prevention, diagnosis and treatment of diabetic foot ulcers: Best practice updated. Wound Care Canada. 2006;4(1):R39-51. Snyder RJ, Cardinal M, Dauphinee DM, et al. A post-hoc analysis of reduction in diabetic foot ulcer size at 4 weeks as a predictor of healing by 12 weeks. Ostomy Wound Management. 2010;56(3):44-50. Bolton L. Chronic wounds and delayed healing risk. Wounds. 2010;22(6):8-12.