Assessment and Management of Foot Ulcers for People with Diabetes: Second edition of RNAO’s clinical practice guideline


Article points
1. The Registered Nurses’ Association of Ontario’s (RNAO) Clinical Practice Guideline related to care for persons with diabetes and foot complications follows a rigorous, scientific approach to guideline development.
2. This guideline provides clinical and other critical recommendations, to support nurses and the interprofessional healthcare team provide care to persons with diabetes and an established diagnosis of foot ulcer(s).
3. RNAO further emphasizes uptake and implementation of its guidelines through a systematic methodology including a Toolkit incorporating an implementation framework and a set of individual, organizational and system level strategies.

Key words
- Clinical practice guideline
- Diabetic foot ulcer
- Evidence-based practice

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The Registered Nurses’ Association of Ontario’s (RNAO) second edition of the Assessment and Management of Foot Ulcers for People with Diabetes Clinical Practice Guideline provides evidence-based recommendations for assessing and managing persons with diabetes who have an established diagnosis of foot ulcer(s). To support optimal uptake and implementation of its rigorously developed guidelines, RNAO provides resources to facilitate application in practice and educational settings, as well as a range of creative strategies at the individual, organization, and system levels.

The Registered Nurses’ Association of Ontario (RNAO) is the professional voice of Registered Nurses in Ontario, Canada. The Association’s mandate is to speak out for nursing and speak out for health. RNAO’s mission is to pursue healthy public policy and promote the full participation of registered nurses in shaping and delivering health services now and in the future. For RNAO and for nurses all over the world, health is a resource for everyday living and health care a universal human right. RNAO strives to cultivate knowledge-based nursing practices, promote quality of work life, and promises excellence in professional development services.

The RNAO’s Nursing Best Practice Guideline (BPG)* Program was launched in November of 1999 (Grinspun et al, 2001–2) and has, to date, produced 38 clinical and nine healthy work environment guidelines (Grinspun, 2011), a toolkit to support the implementation of the guidelines in practice settings (RNAO, 2012), and another toolkit to facilitate application to curriculum and education (RNAO, 2005). RNAO also offers a myriad of educational programs across Canada and internationally. The uptake of the published guidelines is supported using a multipronged approach that includes strategies to support uptake at the individual, organizational and systems levels.

RNAO follows a rigorous, scientific approach to guideline development based on a systematic review, use of an expert panel, grading of the evidence, involvement of external stakeholder reviewers, and a 5-year review and revision process (Grinspun, 2013). All BPGs include clinically focused recommendations, which are central to best practice, as well as educational, organizational and policy recommendations that are critical to the successful uptake of guidelines through provision of the necessary infrastructure.

RNAO’s (2013a) second edition of the Assessment and Management of Foot Ulcers for People with Diabetes Clinical Practice Guideline (CPG) was published this year and is available online at: www.RNAO.ca/bpg The purpose of the Diabetic Foot Ulcer CPG is to address the question of how to assess and manage people with diabetes who have an established diagnosis of foot ulcer(s). The guideline provides evidence-based recommendations for nurses and other members of the interprofessional team who provide care in all healthcare settings to people 15 years of age and older with type 1 or 2 diabetes and who have foot ulcers.

*RNAO’s Best Practice Guidelines (BPG) or Clinical Practice Guidelines (CPG) are referred to as BPGs. In this article the acronym BPG is used when referring specifically to RNAO’s Program of Guidelines and CPG is used to refer to RNAO’s Guideline on care of persons with diabetes and foot complications and guidelines in general.
Background on the CPG related to care for persons with diabetes and foot complications

Current statistics demonstrate that diabetes is a serious and complex life-long condition that affects 6.3% of the world’s population and 2.7 million Canadians (Lipscomb and Hux, 2007; Canadian Diabetes Association, 2010; Bakker et al, 2012). Serious health consequences may arise from diabetes, such as diabetic foot ulceration and amputation, both of which are a result of major complications including peripheral arterial disease (PAD) and neuropathy. PAD is a circulatory problem in which narrowed arteries reduce blood flow in the lower levels, and neuropathy occurs when the nerves of the peripheral nervous system are damaged. The Canadian Association of Wound Care (CAWC; 2013) has reported that 15% of Canadians with diabetes will develop a diabetic foot ulcer in their lifetime; in Ontario, 50% of lower-limb amputations are directly related to diabetes.

Diabetic foot infections require medical attention ranging from minor intervention, including debridement and antibiotics, to more significant interventions, which may involve resection or amputation (Lipsky et al, 2012). The RNAO CPG promotes a systematic, team approach from healthcare professionals in the care of persons with diabetic foot ulcers, which is supported by the literature (Bakker et al, 2012). Nurses can facilitate and positively influence wound healing outcomes by promoting collaboration and participating in assessment and treatment within inter-professional healthcare teams.

The Pathway to Diabetic Foot Ulcers served as the framework for the guideline and directed the approach to developing practice, education and policy recommendations (Bowker and Pfeifer, 2001). The Pathway highlights the path of diabetes including the complications of PAD and neuropathy, which can result in foot ulcers leading to possible infection and ultimately amputation, if untreated. The CAWC suggests that the progression of diabetes-related complications such as these may be prevented by appropriate and effective foot wear, and foot and nail care. These and other recommendations for early intervention are addressed in the RNAO CPG.

RNAO guideline development methodology

There are several phases involved in the RNAO guideline development methodology. Central to the process is a systematic review of the literature conducted involving the expertise of RNAO’s Research Associates and information specialists, with the expert guideline development panel intricately involved in the search, screening and review of the evidence. After the phases of screening, quality appraisal and data extraction, the panel identifies and agrees on the practice, education and organization and policy recommendations. These recommendations and supporting evidence become part of the draft CPG, which is sent out for external stakeholder review. Following review and revision based on feedback received, the guideline proceeds through to publication.

For the RNAO diabetic foot ulcer CPG the expert panel was carefully selected from a range of healthcare disciplines including nurses, physicians, and others, all of whom brought expertise related to care of persons with diabetes and foot complications. From a stakeholder perspective, many different experts from various disciplines and locations in Canada and across North America were involved in the process of reviewing the draft guideline and recommendations.

Four major research questions were addressed in the systematic review of the evidence for this guideline:
1. What are the most effective methods for the assessment of foot ulcer in clients with diabetes?
2. What are the most effective interventions to manage foot ulcers and prevent re-ulceration in clients with diabetes?
3. What healthcare professional education and training is required to ensure the provision of effective diabetic foot ulcer care?
4. How do healthcare organizations support and promote optimal assessment and management of foot ulcers in clients with diabetes?

Specific elements of the search strategy are outlined in the guideline, which is available on the RNAO website (www.RNAO.ca).

Guideline recommendations

The guideline’s 19 practice recommendations are grouped to reflect assessment (8), planning
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**Practice recommendations**

Two key strategies to prevent further complications for people with diabetic foot ulcers are to treat the cause of the ulcer and to address patient-centred concerns. In the case of diabetes, major causes of ulceration are vascular insufficiency, infection and pressure. These may be best treated by managing patients’ comorbidities related to diabetes as well as other comorbidities, and assessing risk based on their health status. Patient-centred concerns can be addressed by providing individualized patient education, engaging the patient and their family in goal-setting and care planning, and exploring potential barriers to adherence.

Treatment strategies for local wound care may involve debridement, infection or inflammation control, and moisture balance. If the interventions are in place and the patient is not progressing, then alternative treatment may be recommended such as the use of biological agents and adjunctive therapies (RNAO, 2013b).

Some of the practice recommendations refer to other RNAO evidence-based resources, such as the Facilitating Client Centred Learning guideline (2012), and Client Centred Care guideline, originally published in 2002 with a second edition published in 2006.

The specific recommendations from *Assessment and Management of Foot Ulcers for People with Diabetes* (RNAO, 2013a) are as follows.

**Practice recommendations**

**Assessment**

1.0 Obtain a comprehensive health history and perform physical examination of affected limb(s).
1.1 Identify the location and classification of foot ulcer(s) and measure length, width and depth of wound bed.
1.2 Assess bed of foot ulcer(s) for exudate, odour, condition of peri-ulcer skin and pain.
1.3 Assess affected limb(s) for vascular supply and facilitate appropriate diagnostic testing, as indicated.
1.4 Assess foot ulcer(s) for infection using clinical assessment techniques, based on signs and symptoms, and facilitate appropriate diagnostic testing, if indicated.
1.5 Assess affected limb(s) for sensory, autonomic and motor changes.
1.6 Assess affected limb(s) for elevated foot pressure, structural deformities, ability to exercise, gait abnormality and ill-fitting footwear and offloading devices.
1.7 Document characteristics of foot ulcer(s), after each assessment including location, classification and any abnormal findings.

**Planning**

2.0 Determine the potential of the foot ulcer(s) to heal and ensure interventions to optimize healing have been explored.
2.1 Develop a plan of care incorporating goals mutually agreed upon by the client and healthcare professionals to manage diabetic foot ulcers.
2.2 Collaborate with the client or family and interprofessional team to explore other treatment options if healing has not occurred at the expected rate.
2.3 Collaborate with the client, family and the interprofessional team to establish mutually agreed upon goals to improve quality of life if factors affecting poor healing have been addressed and complete wound closure is unlikely.

**Implementation**

3.0 Implement a plan of care to mitigate risk factors that can influence wound healing.
3.1 Provide wound care consisting of debridement, infection control and moisture balance where appropriate.
3.2 Redistribute pressure applied to foot ulcer(s) by the use of offloading devices.
3.3 Provide health education to optimize diabetes management, foot ulcer and ulcer care.
3.4 Facilitate client-centred learning based on individual needs to prevent or reduce complications.

**Evaluation**

4.0 Monitor the progress of wound healing on an ongoing basis using a consistent tool, and evaluate the percentage of wound closure at 4 weeks.
4.1 Reassess for additional correctable factors if
healing does not occur at the expected rate.

**Educational recommendations**

5.0 Healthcare professionals participate in continuing education opportunities to enhance specific knowledge and skills to competently assess and manage clients with diabetic foot ulcers, based on the RNAO Guideline.

5.1 Educational institutions incorporate the RNAO Guideline into basic registered nurse, registered practical nurse, doctor of medicine and interprofessional curricula to promote a culture of evidence-based practice.

**Organizational and policy recommendations**

6.0 Use a systematic approach to implement the RNAO Guideline and provide resources and organizational and administrative supports to facilitate clinician uptake.

6.1 Develop policies that acknowledge and designate human, material and fiscal resources to support the interprofessional team in diabetic foot ulcer management.

6.2 Establish and support an interprofessional, interagency team comprised of knowledgeable and interested persons to address and monitor quality improvement in the management of diabetic foot ulcers.

6.3 Develop processes to facilitate the referral of clients with diabetic foot ulcers to local diabetes resources and healthcare professionals.

6.4 Advocate for strategies and ongoing funding to assist clients in obtaining appropriate pressure redistribution devices during and after ulcer closure.

**Guideline Implementation**

RNAO emphasizes a rigorous guideline development process as well as a very robust support system for the uptake and implementation of its guidelines. Over the 14 years of its signature Best Practice Guideline Program, RNAO has learned that initial and sustained guideline implementation at the point of care is multifaceted, challenging and inspiring. To advance optimal implementation the Association has developed various resources, including the RNAO Toolkit: Implementation of Best Practice Guidelines (2012). The Toolkit provides an evidence-informed methodology for the planned, systematic implementation, and evaluation of CPGs and their sustained use in practice.

In addition to the Toolkit, RNAO has developed a wide range of creative strategies to support guideline implementation, one of which is RNAO’s Best Practice Champions Network® (Ploeg et al, 2010). The Network engages Champions across all settings in learning/teaching about evidence-based practice and the process of knowledge transfer. At the organizational level, through the Best Practice Spotlight Organization® (BPSO), designation, healthcare organizations partner with RNAO to implement multiple best practice guidelines across their settings. RNAO introduces them to, and supports them through, a process whereby their organizations develop a methodology for guideline implementation, sustained use and evaluation. Another strategy is focused on knowledge transfer in an in-depth way, through a series of Learning Institutes, which are week-long residential learning events where teams of nurses and other healthcare professionals work together with expert faculty to learn the process of guideline implementation in a general or more content specific area (e.g. wound care, chronic disease management). Each of these strategies can be applied inter-professionally to aid in guideline uptake and implementation.

In addition, RNAO has developed specific order sets for each CPG, which include the practice recommendations with the strongest evidence that have been converted into specific actionable statements (RNAO, 2013a). The order sets have been coded against the international standard nursing language of ICNP, developed by the International Council of Nurses and SNOMED-CT, the standardized language for all healthcare professionals to support technology-enabled evidence-based practice. The Assessment and Management of Foot Ulcers for People with Diabetes CPG (RNAO, 2013a), as well as many of the implementation resources described above, can be accessed free of charge from the RNAO website at: www.RNAO.ca/bpg/guidelines
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Registered Nurses’ Association of Ontario (2013a) Assessment and Management of Foot Ulcers for People with Diabetes (2nd edn). RNAO, Toronto

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