



Wound Sleuth x2: Test Your Knowledge

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Research 101: Wound Assessment Tools

Patient Info: Treating Minor Cuts and Scrapes

Spring Conference Highlights

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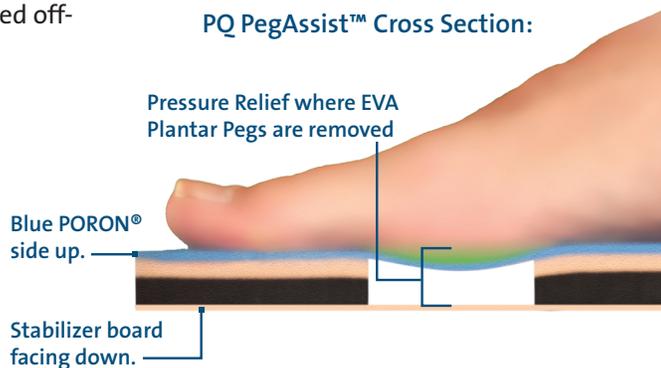
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Wounds Canada (www.woundscanada.ca) is a non-profit organization of health-care professionals, industry participants, patients and caregivers dedicated to the advancement of wound prevention and care in Canada.

Wounds Canada was formed in 1995 as the Canadian Association of Wound Care. The association's efforts are focused on four key areas: education, research, advocacy and awareness, and partnerships.

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It's free!





News in Wound Care

Wounds Canada News

Wounds Canada Winnipeg Conference

The Wounds Canada Spring 2018 Conference, in Winnipeg, Manitoba, was held from May 11 to 12. Please see Wounds Canada Spring Conference Highlights on page 10 for summaries of selected sessions.



Hayley Wickenheiser

Wound Leaders Summit, Winnipeg

On May 10, 2018, the day before the opening of the spring conference, Wounds Canada hosted a breakfast summit for the Winnipeg Regional Health Authority (WRHA). The summit brought together key opinion leaders, practitioners and other stakeholders to identify gaps that may be preventing optimal patient outcomes within the region, and to discuss ways to address these gaps. To read more about the summit, please visit page 18.



View Posters from the Spring Conference

Catch up on the latest in wound research by reading the posters presented at our spring conference this past May. Congratulations to the Best Poster winners, who presented the following topics:

- New Venous Leg Ulcers: Achieve Wound Closure in an Average of 3 Weeks with an Innovative

- Muscle Pump Activator Device, by Connie Harris
- Psychosocial and Spiritual Issues Related to Living with a Diabetic Foot Ulcer: A Review of the Literature, by Janet Kuhnke
- Wound Dressing Selection (WoundS) App: A Clinical Decision-Making Tool for Family Medicine Residents, by Jane McSwiggan, Gayle Halas, Joanne Parker, Marcia Friesen and Wen Zhong



To download the posters, visit www.WoundsCanada.ca/posters.

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Are you tight on time? Are you rarely at your desk or at home? Grab some learning anytime, anywhere! In as little as 35 minutes you can update your knowledge by viewing five recorded conference sessions by industry professionals sharing advances in technology and treatments. Topics include chronic wounds, diabetic foot, biofilms, chronic venous insufficiency and pressure injuries. Find out more at www.WoundsCanada.ca/webcasts.

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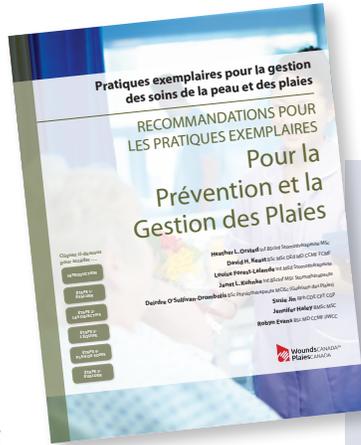
Read the Best Practice Recommendations, *en français!*

Wounds Canada is in the process of translating each of our newly updated Best Practice Recommendations (BPR) papers into French. The

following two papers are available [here](#):

- *La peau: anatomie, physiologie et cicatrisation des plaies* (Skin: Anatomy, Physiology and Wound Healing)
- *Pratiques exemplaires: La prévention et la gestion des plaies* (Best Practice Recommendations for the Prevention and Management of Wounds)

Other papers will be added as the translations are completed.



Introducing the Wounds Canada Institute

Wounds Canada has just launched its brand-new **Wounds Canada Institute**. The institute offers programs to health-care professionals looking for convenient, cost-effective education in the areas of skin health and wound management.

Programs on a variety of wound types are now available. Students can access online modules, skills labs and webinars, and often a combination of all three.

Earlier this year, Wounds Canada presented the skills lab portions of two of its programs in London, Ontario—Focus on the Prevention and Management of Venous Leg Ulcers: Knowledge and Skills; and Holistic Approach to Diabetic



London 2018

Fall Conference

NOV. 8-11, 2018
LONDON, ON

Looking Ahead: 2018 Fall Conference, London, Ontario

Secure your spot at the largest wound-related conference in Canada. Wounds Canada's fall conference will be in London, Ontario, November 8–11, 2018. Join wound experts and your colleagues for this exclusive learning and networking opportunity.

Session topics include diabetic

foot, pressure, arterial, venous, acute and malignant wounds; key aspects of local wound care; advanced therapies . . . and more.

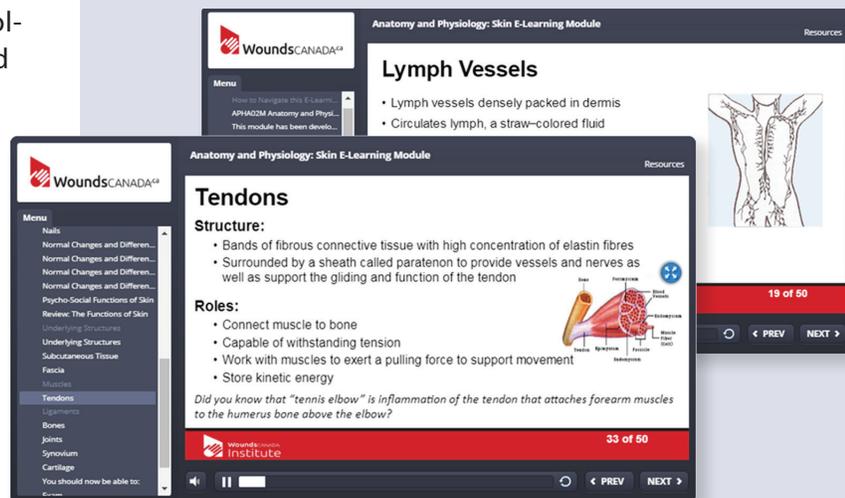
To see the agenda, click [here](#). Click [here](#) to register.

Share Your Research through Digital and Oral Posters

Wounds Canada invites abstract submissions for digital and oral poster presentations for our upcoming fall conference.

Your abstract topic may refer to anything related to the promotion of skin health and/or the prevention, assessment and management of various types of wounds. We want to hear about activities or projects related to skin and wounds in areas such as research, education, health policy and clinical practice. The deadline for submissions is August 12, 2018.

To see the abstract submission guidelines, click [here](#).

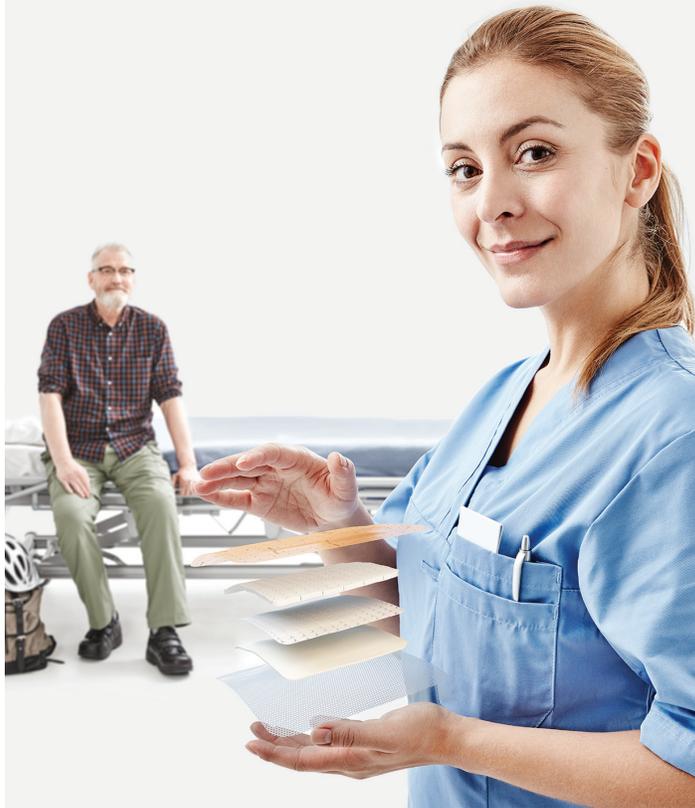


Foot Offloading: Knowledge and Skills—along with a debridement workshop. Additional skills labs will be offered in conjunction with the fall conference in London, but the online module components of any program can be started any-time.

To learn about these and other programs offered by the institute, and to start planning your professional development, head over to page 8 for more information.

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Corporate News



News from Our Industry Partners

Wound Healing Courses at Cardiff University

An estimated 1 to 2% of the population in developed countries will experience a chronic wound during their lifetime.¹ In addition, the increase in older individuals—as well as the upsurge in the prevalence of diabetes—is likely to add to the burden that wounds place on society. Currently, undergraduate medical and health-care training does not fully prepare graduates to deal with this vast subject. Cardiff University runs several wound healing courses that help fill this gap.

The Wound Healing courses at Cardiff University have led the field of wound healing-related postgraduate education since 1996. Students can study from stand-alone Wound Healing Foundation Modules up to MSc level (Wound Healing and Tissue Repair MSc).

Contact the team for more information:
pgtmedadmissions@cardiff.ac.uk.

Reference

1. Gottrup F. A specialized wound-healing center concept: Importance of a multidisciplinary department structure and surgical treatment facilities in the treatment of chronic wounds. *Am J Surg.* 2004;187(5):S38–S43.

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1. Tucker AT et al. Int J Angiol. 2010 Spring;19 (1): e31-e37
2. Williams KJ et al. Phlebology. 2015 Jun; 30 (5): 365-72
3. Jawad H et al. 2014 Journal Vasc Surg. Vol 2: 160-65
4. Williams KJ et al. Poster. Vascular Society Annual Scientific Meeting, Glasgow November 2014
5. Warwick D et al. Int J Angiol. 2015 April; 34 (2): 158-65

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Introducing the Wounds Canada Institute

By Katie Bassett, BMus, and Crystal McCallum, RN, MCISc

Wounds Canada is pleased to announce the launch of the Wounds Canada Institute (WCI), where health professionals at all levels and in all disciplines have access to flexible, interprofessional education that supports their learning needs and professional growth in the areas of skin health and wound management.

The WCI delivers programs in the form of online courses, webinars, hands-on skills labs and other

live educational events. The wide range of content and different formats of the programs enable students to engage in the type of education best suited to their levels of expertise, interests, available time and resources.

The Faculty

All WCI programs have been developed, reviewed and delivered by Canada's top skin and wound experts. Our faculty provide an interprofessional, holistic approach to skin health and wound management, helping learners optimize patient outcomes and experiences and make the best use of limited health-care system resources.

To find out more about our faculty and team of content developers, visit www.WoundsCanadaInstitute.ca.



Quick Facts

- ✓ To register, visit us online at www.woundscanada.ca/WCI-register.
- ✓ The programs offered by the WCI generally take between 3 and 12 hours to complete, depending on the program chosen.
- ✓ Programs cost between \$50 and \$285, plus applicable taxes.
- ✓ Students have 24 months from the time of registration to complete a program.
- ✓ Students will receive a certificate upon successful completion of the program and evaluation.
- ✓ Group discounts are available.

The Programs

WCI programs are aimed at various students' learning needs, ensuring content is appropriate to each group.

For nurses and allied health professionals, the WCI currently offers the following skin and wound management programs:

- Best Practice Approach to Skin Health and Wound Management
- Focus on the Prevention and Management of Diabetic Foot Ulcers: Knowledge
- Focus on the Prevention and Management of Diabetic Foot Ulcers: Knowledge and Skills
- Holistic Approach to Diabetic Foot Offloading: Knowledge and Skills
- Focus on the Prevention and Management of Venous Leg Ulcers: Knowledge
- Focus on the Prevention and Management of Venous Leg Ulcers: Knowledge and Skills
- Focus on the Prevention and Management of Pressure Injuries: Knowledge
- Focus on the Prevention and Management of Surgical Wound Complications: Knowledge

Primary care practitioners/prescribers can register for any of these one-day live events:

- Skin and Wound Care for Primary Care Practitioners
- Advances in the Management of Diabetic Foot Complications for Primary Care Practitioners
 - Peripheral Arterial Disease for Primary Care Practitioners

Our Skin and Wound Care for Unregulated Care Providers program is a half-day live event aimed at personal support workers (personal care aides) that covers the basics of skin health and wound prevention.

Additional skin and wound management programs are currently in development and will be offered soon.



What Does a WCI Program Offer?

Each WCI program consists of different components, whether online, in person or a combination of the two. For example, the Focus on the Prevention and Management of Venous Leg Ulcers: Knowledge and Skills program includes the following components (Figure 1), which take approximately 12 hours in total to complete:

Learn More

For more information about the Wound Care Institute, visit:
www.WoundsCanadaInstitute.ca.



- Introduction to Best Practice in the Prevention and Management of Venous Leg Ulcers
- Introduction to Applying Best Practice for the Prevention and Management of Venous Leg Ulcers
- Skills Lab for Venous Leg Ulcers
- Webinar A for Venous Leg Ulcers

Program A105MNS:

Focus on the Prevention and Management of Venous Leg Ulcers: Knowledge and Skills

Introduction to Best Practice in the Prevention and Management of Venous Leg Ulcers
BPVA01M



Introduction to Applying Best Practice for the Prevention and Management of Venous Leg Ulcers
BPVB01M



Skills Lab for Venous Leg Ulcers
BPVC01S



Webinar A for Venous Leg Ulcers
BPVC01W

Figure 1: A WCI program

Why Should You Enroll?

The WCI offers flexible, dynamic educational programs designed to enable health-care providers at all levels of skill and interest to further themselves both personally and professionally. By enrolling in the WCI, you can play an integral part in delivering evidence-informed care, optimizing outcomes and improving the quality of life for your patients. 

Wounds Canada Spring Conference Highlights

Wounds Canada held its spring conference in Winnipeg, Manitoba, May 11 to 12. A team of local volunteers attended sessions and created the highlights and summaries below.



Session 5: Diabetic Foot Management

Presenters: Gary Sibbald, Marianne Viau, François Harton, Pat MacDonald

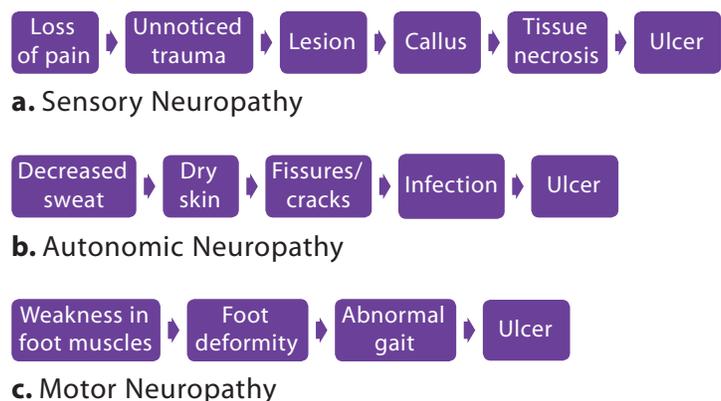
Topics: Diabetic Foot Neuropathy: Presentation and Mechanisms; Orthopedic Footwear; Foot Care for People with Diabetes

By Sarah Brown, BSc, RN, MN, IIWCC

More than 592 million people in the world have diabetes, and most are living in developing countries. The most important predictor for foot ulceration is neuropathy. Neuropathy is a complex interplay of factors that lead to foot ulceration.

These factors include sensory neuropathy, autonomic neuropathy and motor neuropathy (see Figures 1 a.–c.). People with both neuropathy and peripheral arterial disease are at high risk for developing a foot ulcer.

Figure 1: Factors Leading to Ulceration





create problems with bunions, claw and hammer toes, calluses, corns and circulation. It is important to discuss risk factors with the patient to ensure they examine their feet regularly, get an annual check-up from their health-care provider, access professional nail and skin care for their feet, prevent injury to their feet and know when to seek medical attention.

Session 6: Pressure Injuries

Presenters: Pamela Houghton, Kris Langlois, Kelly Petryk, Tracy Thiele, Christie Tuttosi, Kim Baessler, Amy Campbell

Topics: Pressure Injuries: More Than Just Skin Deep?; Never Events: Preventing Pressure Injuries from the View of the Manitoba Provincial Pressure Injury Working Group; Introduction to Therapeutic Surfaces; Pressure Injuries and Nutrition

By Rhonda Heintz, RN, BN, CRN, IIWCC

The ultimate goal for persons with diabetes who are at risk for foot complications is preventing amputation. This goal requires a team approach. Early detection of diabetic risk factors and ulcers is critical. Early detection includes using an assessment tool such as Inlow's 60-Second Diabetic Foot Screen. This screening includes a physical examination of the foot: looking at the skin for calluses, fungus, ulcers or history of ulcers, previous amputation; assessing the nails and feet for deformity; looking at the patient's footwear; checking for pulses, temperature of feet, range of motion of feet; and using a monofilament to check sensation of the feet.

Offloading of pressure points and redistribution of weight are the primary objectives of a Canadian Certified Pedorthist (CPP). The CPP fills prescriptions for custom footwear and orthotics, provides footwear modifications, assesses gait biomechanics and lower-limb range of motion, provides education for the person with diabetes and communicates with other health-care providers. Properly fitted footwear can help prevent an amputation. Inappropriate footwear can

Pressure injuries (PIs) have a huge impact on spinal cord injured (SCI) patients. The Rick Hansen Institute "Man in Motion" program raised \$291 million in funding for SCI, which was put toward the following:

- co-ordinating efforts for PI care
- helping change practice
- finding active research programs
- improving quality of life for SCI patients with PIs
- developing a Canadian clinical practice guideline (CPG) for PIs in patients with SCI

In Canada, the strategy was to standardize terminology and information collection practices, and to illustrate the burden of PIs. SCI alliance-advocates lobbied to keep issues in the forefront



and were able to obtain millions of dollars in funding.

In Winnipeg, an annual PI study is conducted each November that includes all hospitals, long-term care facilities and 2,500 patients, each of which is assessed for pressure injuries. Long-term care, home care and palliative programs are included in the study, but each type of facility has a slightly different method for collecting data. In recent years, rural areas have been included in this study, making it a provincial initiative.

The goals of this study are as follows:

- to standardize definitions and data collection to align with national databases
- to report to the public
- to identify prevention strategies

Some of the issues uncovered through these studies include limited staff and other resources, and varied levels of discipline across care sites.

A provincial pressure injury measurement working group, based in Manitoba, worked in virtual teams to meet, discuss and collaborate to come up with a provincial education tool kit to meet accreditation standards and collect data. The resulting tool kit included education resources and data collection forms for prevalence and incidence that did automatic calculations with regional support.

On-site teams were developed, and trials were run at one long-term care facility and one acute care facility with the goal of expanding the program to three acute care and three personal care homes by November 2018. So far, the most significant positive outcome of this program is that it has brought skin care and prevention—including staff education—to the forefront.

Support surfaces and nutrition are two factors that can have a huge impact on the management of pressure injuries.

Standard mattresses do not treat or prevent pressure injuries. To ensure patients are using the appropriate surfaces, clinicians need to:

- understand support surface specifications
- use a risk assessment tool
- perform a thorough assessment

It is important to understand the terminology used to describe support surfaces. These are some of the common terms used when describing support surfaces:

- *Reactive*: constant low pressure
- *Active*: alternating air
- *Pressure redistribution surface*: decreases the force of pressure
- *Immersion*: spreads out the pressure, but can decrease a patient's bed mobility
- *Envelopment*: used to describe a reactive surface that conforms to the curves of the body (e.g., a gel mattress)
- *Microclimate*: manages the skin temperature and humidity
- *High specification foam*: three layers of open cell foam, through which gases can pass

An appropriately chosen advanced support surface can decrease forces of pressure and shear, and can impact microclimate.

Patient assessment should consider transferring methods, body type, goal of care (prevention or treatment), smoking status (smoke can clog powered mattresses), number of hours spent in the bed and whether the patient will tolerate the noise of a mattress pump. Clinicians should use an active support surface for high-risk patients but will still need to turn the patient on these surfaces. Clinicians must work toward heel injury prevention no matter which surface the patient is on. Note: Clinicians must always treat the cause of the pressure injury by offloading: the mattress is not going to resolve it.

Nutrition screening and assessment should occur on admission, when there is a change in the patient's condition and/or when no healing



is occurring. One useful tool is the Canadian Nutrition Screening Tool, which consists of two yes/no questions: “have you lost weight in the last six months,” and “are you eating less than usual in the last week?” If the patient answers “yes” to both questions, the clinician should consult a dietitian.

Risk factors for developing pressure injuries can be assessed using a tool such as the Braden Scale for Predicting Pressure Sore Risk or Pressure Ulcer Risk Score (PURS). Nutritional risk factors include the following:

- unintentional weight loss (5% in one month or 10% in the past six months)
- protracted wound healing
- inability to eat independently
- malnutrition

Nutrition for preventing and treating PIs needs to consider calorie intake compared with body weight, fluid intake, vitamin and mineral intake, protein intake and glycemic control. Med Pass is a provision of 60 ml three times per day and a 2 kcal liquid formula that provides additional calories and protein for the malnourished patient or for a patient with a pressure injury. Current literature states there is no need for vitamin C or zinc unless there is a deficiency. Clinicians should be careful not to over-supplement with zinc.

Session 7: Venous Leg Ulcers

Presenters: Robyn Evans, Janet Kuhnke, Jane McSwiggan

Topics: Differentiating Lower Leg Ulcers; Managing Venous Leg Ulcers

By Lori McKenzie, RN, IIWCC

This presentation focused on how to differentiate a venous leg ulcer from other skin conditions wound care clinicians encounter in their practices.

The presenters began with an explanation of the pathophysiology that contributes to the development of a venous leg ulcer, including venous reflux, and the importance of an effective calf-muscle pump (also known as the second heart). Other factors include venous obstruction (such as a blood clot) and genetic conditions.



Using a case study approach, signs and symptoms of venous disease and their negative effects on the patient were discussed. As always, the person with a venous leg ulcer, or at risk for developing one, should guide the plan of care. The care plan is created after completing a thorough history and only once the results of appropriate assessments are reviewed.

The discussion around treatment options, education topics and any patient concerns highlighted the importance of involving several different allied health professionals to provide comprehensive care.

The presentation concluded with this practice pearl: the care of the person with a venous leg ulcer must focus on ways to empower the patient through mutual trust and respect.

Session 9: Diabetic Foot Complications

Presenters: François Harton, John Embil, Mariam Botros, Jane McSwiggan

Topics: Charcot Foot: What to Look for and What to Do; Identification and Treatment of Diabetic Foot Infections; Risk Stratification and Guiding the Management of the Diabetic Foot

By Kristine Schellenberg RN, MN, GNC(c), IIWCC

Charcot Foot: What to Look For and What to Do

The earlier Charcot is identified, the better the outcome for the person. Patients with Charcot foot complications should be non-weight bearing



until the temperature of the affected limb is within 2 degrees Celsius of the other limb. Charcot is often misdiagnosed, but it should be used as the diagnosis until proven otherwise. Acute clinical signs and symptoms of Charcot foot complications include erythema, increased temperature, pain despite lack of sensation, and the foot feeling like a “bag of bones.”

Identification and Treatment of Diabetic Foot Infection

This session reviewed the basics of infection and its diagnosis in the diabetic foot. Health-care professionals should formulate an approach to the infected and non-infected diabetic foot that considers the clinical and lab data and acknowledges the intrinsic pitfalls of diagnosing infection in this patient population. Clinical findings, rather than microbiology alone, should be used to diagnose and classify infection. Clinicians should have a high index of suspicion with regard to osteomyelitis. In these cases, a plain radiograph rather than more sophisticated studies should be used.

Risk Stratification and Guiding the Management of the Diabetic Foot

Clinicians should ensure a comprehensive assessment that includes a thorough history, screening and lab tests. When dealing with diabetic foot complications, offloading is critical. Since recurrence is common with diabetic foot compli-

cations, ongoing patient education is required. Clinicians should share information with their patients continuously, and in a variety of formats. When dealing with diabetic foot complications, consider primary prevention, timely access for treatment of pathologies, and secondary prevention. Never forget the contralateral limb!

Session 10: Malignant Wounds

Presenters: Gary Sibbald, Tamara Wells, Amy Campbell

Topics: Intro to Melanoma and Soft Tissue Sarcoma; The Palliative Management of Malignant Wounds; Malignant Fungating Wounds: Key Psychosocial Issues; Malignant Wounds and Nutrition

By Shannon Thomas, RN, MN, IIWCC

This session focused on evaluating sarcomas for etiology, clinical presentations and treatment; identifying risk factors for melanoma; recognizing malignant melanoma; and differentiating common pigmented lesions from melanoma.

During the session, participants gained an appreciation for how the palliative lens, along with a better understanding of the complexity and individuality of malignant wound management, guides planning for the management of malignant wounds.

The speakers reviewed the treatment of malignant fungating wounds (MFW), discussed hermeneutic phenomenology and its importance in answering the “why” question, explored qualitative literature on psychosocial issues of MFWs and explored ways to improve the patient-centred concerns during the management of MFWs.

The presenters discussed how decision making is influenced by the principles of palliative care, recognized the nutritional considerations in malignant wound management related to patient needs and the context of their illness, and identified communication strategies for exploring nutrition with patients and families (such as ask-tell-ask).

Key practice tips from this session include the following:

- ABCDE is key to early detection of malignant melanoma.
- Sun precautions should be followed, such as applying SPF 30–60 +A, avoiding excessive exposure between 11 a.m. and 4 p.m., and wearing a 3-inch brim hat and protective clothing.
- Consistent and ongoing communication is key to success.
- Successful malignant wound management includes strong communication, consideration of patient-centred concerns, symptom management, consideration of psychosocial aspects and standardized documentation.
- Practising proactive communication with patients and their family is vital.

Session 11: Advanced Therapies

Presenters: Pamela Houghton, Shahriar Sharokhi, Daryl Dyck, Maria Froese, Ivan Garcia, Cara Windle

Topics: Implementing Advanced Therapies into Practice; Implementation of an E-Stim Protocol for Wounds in Winnipeg

By Dorothea Wicklund, RN, BN, CACE, CVAA(c), IIWCC

This session discussed skin substitutes and their role in burn care and wound management. There are various types of skin substitutes, all of which are meant to mimic the function of the skin and to promote new tissue growth.

Dr. Shahrokhi outlined types of grafts, costs, risks and benefits and appropriate uses. Photos of various burns and wounds and the healing achieved with skin grafting provided good evidence of the success of these therapies.

Dr. Houghton discussed other types of physical therapies that are used to promote wound healing, including light, sound, electricity, laser, TENS, ultrasound and ultraviolet light. When deciding which therapies to use, she suggested, levels of available evidence should assist in the decision-making process. Dr. Houghton asserted that the use of e-stimulation is well supported by evidence.

The session wrapped up with Daryl Dick, Maria Froese, Ivan Garcia and Cara Windle, who outlined

two case studies in which e-stimulation was used to promote wound healing.

Session 15: Burn Management

Presenters: Sarvesh Logsetty, Shahriar Shahrokhi, Nancy Coutris

Topics: Management of Burns; The Role of Nutrition in Burn Care

By Sarah Brown, BSc, RN, MN, IIWCC

Burns are classified into four broad categories: superficial, superficial partial-thickness, deep partial-thickness and full-thickness. Most burns are a mixture of different burn types and are dynamic, meaning that the burn will progress in the first 48 to 72 hours. Any person with a burn that takes longer than two weeks to heal (or mostly heal) should be referred to a burn unit.

Treatment for burns can include any number of different dressings, but there is no ideal dressing. Full-thickness burns need an antimicrobial dressing. Dressings should be non-adherent to decrease pain. Blisters can be left for one week if there is no break in them, unless the blister impedes function or there is pus or blood in the blister, which increases the risk of infection. Use of the full range of motion should be attempted right away.

Burns result in extensive nutrient losses and rapid tissue breakdown, and cause a hypermetabolic state for the person with the burn. The aim of nutritional support is to promote wound



healing. A healthy, average-size male may require 2,550 kcal and 108 g protein/day, but with a 30% burn, that person would require 3,000 kcal and 190 g protein/day. A burn covering more than 20% of the skin requires a feeding tube, as the patient will not be able to take in the total number of calories and protein required for healing by eating alone. The Subjective Global Assessment tool can be used to determine malnutrition and is used as a baseline assessment. Nutritional status should then be reassessed every two weeks, as a person's classification may change.

Session 16: Surgical Wounds

Presenters: Valerie Winberg, Connie Harris

Topics: Strategies to Prevent Surgical Site Infections (SSI); Classifications of SSI and SSI Management; Successful Management of Surgical Wounds

By Rhonda Heinz, RNBN, CRN, IIWCC

A surgical site infection (SSI) is an infection of the skin or underlying soft tissues at a surgical site within 30 days of a surgical procedure. These infected wounds become evident after patient discharge and are likely underreported. Most available data are based on in-hospital monitoring between one and seven days post-operation.

The most accurate way to detect an SSI is through direct nurse or surgeon observation. Most monitoring, however, is done retrospectively, through chart reports. When post-discharge surveillance is done, the rate of SSIs is as high as 84%. Currently, there is no standard methodology for post-discharge surveillance.

SSIs affect 2.5% of all Canadian surgical procedures, costing health-care systems money and increasing length of stay, intensive-care unit admissions and readmissions.

There is a global need to address changes to SSI definitions, to strengthen and validate SSI data quality and to conduct robust SSI economic and burden studies.

SSIs are classified as being one of the following: a superficial incisional infection, a deep incisional

infection or an organ space infection. Factors that affect risk of SSIs and rate of healing can be classified as

- non-modifiable risk factors: age and gender
- modifiable risk factors: presence of diabetes, smoking status, past surgical history, surgical site and procedure complexity

To minimize the risk of developing an SSI, clinicians can consider the pre-operative body wash, the timing of the IV, and can work to minimize tissue damage in the operating room, keep the patient warm and prevent access of micro-organisms post-operatively through dressing selection and use. When dealing with SSIs, it is important to know your scope of practice: the surgeon is legally responsible for this wound until it heals.

When assessing for SSIs, it is vital that the health-care provider use validated patient assessment tools and inspect the site for stitch abscess, fluid collection, dehiscence, infection, sinus tracts and fistulas. Documentation of the wound and the assessment should include qualitative and quantitative data. Goals should be set with the patient and focus on improving their health and healing the wound. Caring for SSIs is a team effort,



so the patient and family members and/or caregivers must be included. The patient needs to know the team members and the role each plays in carrying out the plan of care. To care for SSIs, clinicians should establish and implement a plan of care that corrects causes and/or co-factors that affect the skin's integrity, optimize the local wound environment and select appropriate dressings and/or advanced therapies.

Surgical wound management should include irrigation with 7 to 15 PSI. When using this treatment, clinicians should remember the following:

- Never force the solution into a tunnel or undermined area, and ensure they are getting the same amount out as they are putting in.
- Consider using pour solutions on healing wounds without debris or infections, as these give less than 8 PSI and protect granulating tissue.
- If using tap water, consider the quality of the water, the severity of the wounds and the patient's overall condition (including any comorbidities).

A 2006 Cochrane review on dressing selection did not promote one specific type of dressing over another, but it did state that foams, alginates and hydrocolloids are superior to gauze in pain reduction, patient satisfaction and decreased nursing time.

Specific care considerations should be based on the type of wound (e.g., C-section, hernia repair [mesh], incision and drainage, vascular, skin graft). Clinicians should never initiate packing to hips or new arthroplasty incisions without the orthopedic surgeon's order, and should consider using pouching for fistulas or highly exuding wounds.

Clinicians should frequently evaluate outcomes, asking, "Have the goals of care been met?" It is important to reassess the patient and the wound environment to ensure the best quality of care.

Awareness of the risks of SSIs will help health-care providers implement effective prevention strategies. Patient and caregiver education is important in meeting goals of care.



Session 24: Debridement

Presenters: Connie Harris, Sarvesh Logsetty

Topics: Continuum of Debridement Methods; Surgical Sharp Wound Debridement; Conservative Sharp Wound Debridement

By Dorothea Wicklund, RN, BN, CACE, CVAA(c), IIWCC

Dr. Sarvesh Logsetty began the session with a review of surgical sharp debridement methods. He discussed the advantages and disadvantages of surgical debridement, reviewed the various methods, including use of a curette, scalpel, electrocautery and hydrodissection, and described the risks and benefits of each method.

Connie Harris discussed debridement methods, the use of which begins with first determining the healability of the wound. This entails a thorough review of all comorbidities and correcting what is correctable so that debridement can be successful. She identified the reasons to debride and the conditions where debridement is not helpful, including non-healable wounds and certain inflammatory conditions. Debridement methods, including autolytic, mechanical, biologic, hydro-surgical, enzymatic, ultrasonic and surgical, were reviewed.

Connie Harris went on to discuss conservative sharp wound debridement and referred participants to The Canadian Association for Enterostomal Therapy (CAET) Conservative Sharp Wound Debridement (CSWD) Evidence-Based Recommendations, which were developed to advance clinical nursing practice to improve the provision of care to patients through the development of an open-source guide. These recommendations provide a comprehensive overview of CSWD and can guide practitioners in developing the skills required to safely practise CSWD. 

Wound Care in the Winnipeg Regional Health Authority:

Does Our Current Model Support Optimal Patient Outcomes?

There is consensus in the literature that optimal outcomes in wound care are achieved through accurate, holistic and specific assessments that identify the cause and treat the associated comorbidities likely to adversely affect healing. One of the challenges in wound prevention and management is that in practice, most health-care systems are not built on models that fully support this approach.

On May 10, 2018, in Winnipeg, Manitoba, Wounds Canada hosted a breakfast summit for the Winnipeg Regional Health Authority (WRHA), which brought together key opinion leaders, practitioners and other stakeholders in a facilitated panel discussion and forum to identify gaps that may be preventing optimal patient outcomes

within the region and to discuss a way forward in addressing them.

The summit was kicked off with introductions by Donna Romaniuk, Chief Nursing Officer, Victoria Hospital in Winnipeg.

Through the use of a SWOT (Strengths, Weaknesses, Opportunities and Threats) analysis and discussion, six panelists identified barriers and facilitators to optimal patient outcomes relating to wound prevention and management. The panelists represented a range of disciplines and areas of expertise within the region:

- Lisa Diamond-Burchuk, Occupational Therapist, Instructor, Department of Occupational Therapy, University of Manitoba, OT Consultant to Northern Connections Medical Clinic
- Maria Froese, Physiotherapist, Health Sciences

Centre and Deer Lodge Centre, Electrical Stimulation Consultant

- David Haligowski, Family Physician
- Brenda Hotson, Registered Dietitian, Regional Clinical Nutrition Manager for Acute Care and Health Sciences Centre Site Director for Clinical Nutrition
- Tammie-Lee Rogowski, RN Clinical Team Manager, Interlake-Eastern Regional Health Authority
- Tracy Thiele RPN, Manager of Nursing Initiatives, WRHA

Following presentations by each of the panelists, audience members shared with the group additional suggestions, comments, relevant anecdotes and evidence. Moderator Terri Irwin, Director, Quality Standards at Health Quality Ontario, guided the meeting and expertly summarized the group's suggestions for areas for improvement that can be incorporated into an action plan for the region.

The Current Model

The Regional Wound Care Committee in the Winnipeg Regional Health Authority supports optimal patient care by setting directions for practice in wound care, and ensuring that ongoing quality improvement is in alignment with evidence-based best practice and that inter-professional collaboration becomes the norm. The group has been active in reviewing wound-related policies, gathering local data, standardizing education to build capacity, creating scholarships to build internal capacity and collaborating with other regional committees and organizations, such as fire and paramedic services. An important initiative has been the establishment of a regional co-ordinator position, held by Jane McSwiggan, as the pivot point for many of these programs.

As with any organization, the health authority has a range of activities and initiatives that work well, need improvement, provide opportunities or expose the organization to threats. The panelists provided their SWOT analysis, summarized below, of how well the model within the health authority supports optimal patient outcomes.

Strengths

Overall, the strengths of the current model include the existence of the Regional Wound Care Committee; promotion of best practice, including implementation of best practice guidelines to ensure consistency, the creation and refinement of a wound care policy to ensure it aligns with guidelines and increased development of inter-



professional teams; clinical support for all qualified bedside clinicians to start wound care without a prescriber's order after a thorough wound assessment; and the development and delivery of several levels of wound-related education.

Weaknesses

Unequal access was a common theme. Access to care is not equitable among all residents in the region, for example. The existence of practice silos and lack of communication between teams and within teams results in variation and fragmentation of care. Education is impacted by inequitable access as well, for both clinicians and the public.

A lack of centralized access to wound experts is another related weakness, and referral to multi-



disciplinary clinics is not common.

While the availability of wound experts is considered a strength where it exists, it was pointed out that reliance on them is not ideal either, because individuals may use the advanced wound

clinicians too often, thereby not advancing their own skills and practice. This ultimately results in a slowed ability to increase capacity within the facility, agency or region.

Other areas suggested as targets for improvement included:

- evaluating the application of knowledge into practice
- remedying the lack of knowledge of products along with a corresponding deficit in the awareness of costs, which could potentially be resolved in part by labelling the cost of each product
- increasing the availability or use of technology to support communication within teams and for connecting remote communities and experts
- addressing issues relating to lack of common assessment/care planning tools to support smooth patient transitions

Opportunities

Lisa Diamond-Burchuk, who presented the “Opportunities,” works in a multidisciplinary clinic where medical residents learn about wound care by participating in the work of the clinic. She noted that, unfortunately, this is not the norm, and not all medical residents have this opportunity. Developing more of such clinics will not only provide medical residents with more hands-on wound training, but also create one-stop shops for patients, who will then be able to get the help they need sooner and without having to travel to multiple locations.

Existing primary care practitioners offer another opportunity, as most physicians lack extensive knowledge in wound care. Opportunities lie in tailoring engagement strategies to physicians and providing technology-based education through e-consults with specialists and apps they can use in real time.

The education of health-care aides, who are the eyes and ears for clinicians on the front lines, presents another opportunity to build capacity within the region.

The use of technology could be expanded in all sectors to improve patient outcomes. It is import-

ant to note, however, that inequitable access is a factor here as well, as not all geographical areas have adequate Internet access to make the use of available technology feasible. It was recommended that ensuring at least minimum quality be a provincial, not regional, responsibility.

The creation of resources and care pathways that include standardized assessments provides an opportunity to increase the competence of clinicians across all disciplines and settings.

A shift in focus to health promotion and social determinants of health in remote communities could result in improved risk identification and prevention and earlier intervention.

A key opportunity is the creation of “true” inter-professional practices that includes working to scope of practice for all types of health-care practitioners and access to interprofessional teams, particularly for Indigenous and rural communities.

Threats

Inconsistent application of new policies related to nursing competencies and scope of practice has resulted in gaps that create a threat to optimal patient outcomes. Physicians may feel erosion in their role or feel threatened because of the new culture the policies are intended to create. Nurses and other clinicians may be unsure of or lack confidence in their own competencies and roles, have a perception that physician orders are required and not feel comfortable questioning physicians.

Improved communication among clinicians and acknowledgement of the policies are required to solve these fundamental issues, but the process of breaking down barriers may be slow and will require a collegial approach. Tactics may include the involvement of residents in wound care clinics, attendance by physicians at wound conferences and engaging physicians in ongoing quality improvement initiatives. Non-physicians, too, must be encouraged to speak up.

Summary

While great progress has already been made in the Winnipeg Regional Health Authority through the creation of new policies, the creation of new

resources and the availability of new education programs, quality improvement to ensure optimal patient care is an ongoing process. Every level—individual, regional, provincial and national—has a role to play. Synchronization and sustainability should be guiding principles for all initiatives, to reduce the duplication of effort that is prevalent in a fragmented Canadian health system with limited resources and to ensure long-term benefit to patients and local health-care systems.

Discussions in the summit resulted in the identification of five key priorities for action:

1. Ensure equity and access for all patients—but also providers—in the areas of
 - care
 - education
 - technology
2. Build capacity in wound prevention and management for all health-care providers through
 - establishing courses at several levels
 - adding needed courses, e.g., Wounds Canada Institute is launching the Wounds Canada Institute to provide novice to competent education for all levels for wounds in general and for focused topics
 - including physicians in practice forums
 - making MDs aware of access to the services of the WRHA Education & Research Coordinator—Wound Care
 - ensuring education aligns with different learning needs and styles
3. Reinforce the concept of “team”:
 - Create more interprofessional teams.
 - Ensure that comprehensive wound care services can be provided at a site level so that wound care is not fragmented.
 - Improve awareness of roles and scope of practice of members of the team.
4. Reinforce communication within and among teams:
 - Require wound assessments as a fundamental part of a co-ordinated approach to documentation.
 - Ensure standardization in the areas of accreditation, documentation, use of tools and education.

- Optimize the use of technology.
 - Employ a collegial approach, including investment in policy development and communication regarding practice change.
5. Improve the ability to determine costs of care and whether optimal patient outcomes are being achieved:
- Investigate what data are available now, what is needed, how can it be acquired/captured, e.g., Diabetes Canada has just released a report on cost of amputations: direct health-care costs for amputations in Manitoba = \$35 million.

- Obtain good data before approaching Manitoba Health.

By bringing together people with different perspectives to celebrate successes and address challenges, the summit provided a forum for the creation of priorities to support ongoing quality improvement that will lead to optimal patient outcomes. Wound prevention and management equals good overall care. It is the responsibility of all clinicians to provide this and all systems to support it. 

Comments from Summit Participants

Following the summit, several attendees were asked to provide commentary on their perspectives of the meeting, including

- **what they found most interesting, useful or contrary to their experience or evidence**
- **what impact, if any, the summit will have on their work or that of their organization**
- **advice they may have for the WRHA in light of the topics discussed at the summit**
- **how they see any of the topics discussed applying to other jurisdictions**

Mariam Botros, DCh, DE, CEO

Wounds Canada

Wounds Canada congratulates WRHA on their leadership, which brought together a knowledgeable and passionate group of

health leaders from different sectors and organizations. It was evident from the proceedings that all were committed to improving patient outcomes across the province.

There are certainly strong resources and expertise that exist within the WRHA that can improve care. As is true for all health regions in Canada, however, it was evident that despite the advances in wound care and technology, implementation of best practice remains variable due to barriers that need to be addressed.

In order to remove barriers and improve the use of evidence-based wound care, key approaches that need to be implemented include additional education for health-care providers to improve knowledge and skills, more equitable access to technology and other resources, and systematic measurement of

health outcomes that can support and guide the allocation of resource and services.

The results of the summit, along with programs the WRHA has already implemented, provide a way forward in addressing some of these barriers.

Catherine Harley, RN, eMBA, IIWCC, Executive Director, Nurses Specialized in Wound, Ostomy and Continence Canada (NSWOCC)

Fourteen nurses specialized in Wound, Ostomy and Continence work in the province of Manitoba.

In the presentation given on remote and rural areas, it was apparent that there is work being done to provide equitable patient access to wound care. There is a need to implement a standardized, consistent approach to wound care and to use the same language and assessment tools. This could really make an impact on wound care delivery.

It was interesting to learn that when it comes to wound care education in the rural areas, not every nurse can access the basic wound care program from WRHA due to a lack of technology. Some nurses working in First Nations communities and in rural areas have completed the basic level wound care program, but there is no hands-on clinical teaching or preceptorship and no evaluation process of this education program. There is opportunity to continue to build wound care education and make it accessible to all health-care professionals in rural areas.

The summit provided current information on the status of wound care in Manitoba. This has assisted our organization in better understanding the issues and will be applied to refining our programs to better meet the needs of nurses in Manitoba.

I would reiterate some of the recommendations outlined in the report:

- Building the capacity of wound care providers is essential.
- Standardized education must be accessible to all health-care professionals.
- Technology needs to be accessible to all clinicians in order for them to receive information and stay current.
- Wound care must be equitable—urban to rural.

There is a need for standardization of wound care in each province, and implementing provincial wound and skin care teams can support a standardized approach.

Sharing best practice among provinces and the territories is an important step in improving wound care across Canada.

Terri Irwin, RN, MN, Director, Quality Standards, Health Quality Ontario (HQO)

Like the WRHA, HQO operates under the auspices of a ministry of health (in Ontario). I found it interesting that the issues facing the WRHA in the implementation of evidence-based wound care across the province are similar to those we face in Ontario: availability of skilled practitioners and interprofessional teams, integrated electronic health records and issues around scopes of practice and roles, just to name a few.

Building relationships and communities of practice across provinces is always of benefit. Events such as this leadership summit allow participants to learn from the successes and challenges of others and can help to inform our implementation and improvement efforts.

It is imperative to keep the audience that attended the summit engaged as the WRHA moves toward planning for implementation of the recommendations. There were so many keen voices in the room that it would be a shame to lose the momentum of this group.

I think all the topics discussed apply to all jurisdictions. In particular, the discussion about access to high-quality care in rural and remote communities is something that should be top of mind for all jurisdictions in Canada.

Andrea Kwasnicki, Regional Director, Manitoba/Nunavut, Diabetes Canada

Shortly before the summit, Diabetes Canada released reports on the economic impact of offloading devices for the prevention of amputations in nine provinces, including Manitoba. The report clearly demonstrates a significant cost savings to the Manitoba health-care system should the government provide public coverage of offloading devices, in addition to improved screening, education and foot care.

The summit showcased a SWOT analysis, which included commentary on patient outcomes in foot care in Manitoba. Gaps in processes cause delays in treatment, which can result in complications, including amputation. Despite best efforts, inequity and limited access continue to be problems and were identified as top-priority items to address. A recommendation of “best practices” for prevention focused on improved screening, education, foot care and access to offloading devices. These should be implemented throughout the province in order to reduce amputations. The consensus among stakeholders was striking: the prevention of amputations is both fiscally and morally imperative. Diabetes Canada will continue to advocate for timely and affordable access to health-care teams for treatment and devices in order to prevent lower limb amputations as a result of diabetes complications.

Jane McSwiggan, MSc, OT Reg (MB), IIWCC, Education and Research Coordinator – Wound Care, Winnipeg Regional Health Authority

I was particularly impressed with everything the panelists did to prepare, present and share their personal reflections, and how well they worked as a team. I appreciated their mutual professional respect and confidence in being honest about the challenges and shortcomings in the delivery of wound care. I hope we can continue to build strong teams and strive for excellence in client care.

That said, I was a little disappointed that we did not have more WRHA leaders and physicians attending.

Our leadership team recognizes that notifications of policy updates are not always communicated in an effective way and that changes in practice can be difficult. The region's Wound Care Policy deliberately outlines practice expectations for clinicians as they align with the Regional Wound Care Committee 2017 strategic planning and the recommendations from the summit regarding the building of capacity in wound prevention and management for all health-care providers. It should be emphasized that fundamental to this—and explicitly fostered by best practice in wound care—is a comprehensive wound assessment, which is essential for the effective

management of wounds.

A prescriptive approach to wound care based on the ordering of a dressing is not a dynamic process and ultimately restricts the practice of patient and wound assessments, both of which are required at a dressing change. A wound can change dramatically in a short period of time, necessitating a different approach to treatment based on the assessments. The richness of comprehensive assessments is lost in an orders-based system and precludes critical thinking and interprofessional discussions.

Jim Slater, MLT/ART, BSc, MBA, Chief Operating Officer and Provincial Lead Health Support Services

One of the most striking observations from the summit was everyone's passion and commitment to wound care, not only in Winnipeg, but all of Manitoba. Consistent with the rationale for the creation of Shared Health; however, is that wound care, like Manitoba's health system as a whole, lacks provincial co-ordination and consistency of clinical practice. This is not unique to wound care; we see similar inconsistencies and lack of clinical standards and practices across the health-care spectrum.

In spring 2018, the province created Shared Health, which was given the mandate of improving patient care and providing co-ordinated clinical and business

support to the province's health system by developing Manitoba's first "Clinical and Preventative Services Plan." Shared Health is also responsible for working with stakeholders to identify and establish clinical and operational standards of practice that are consistent across the province.

I was also impressed with the amount of evidence supporting improving wound care to provide direct patient benefits as well as a more efficient and effective health-care system. Perhaps the best example was diabetic foot care and the significantly negative impacts that result in unnecessary amputations.

While wound care has always been a priority, it is clear from this leaders' summit that it needs to be a priority focus for Shared Health among its many health-system innovation and quality improvement projects. Shared Health will have the opportunity to work directly with WRHA and the other SDOs to expand the good work of the Regional Wound Care Committee across the province.

This summit report (current state, strengths, weaknesses, opportunities and threats – SWOT analysis) provides Manitoba (especially Shared Health) and other jurisdictions with an excellent foundation on which to build a province-wide wound care innovation and quality improvement initiative.

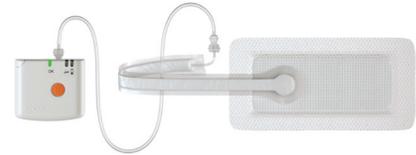
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Ref: *Meta-analysis included 10 RCT & 6 observational studies. Reduction in SSI: 1863 patients (2202 incisions); PICO 5.2%; control group 12.5%; p<0.0001. Mean reduction in hospital length of stay 0.47 days; p<0.0001. Strugala V and Martin R. Meta-analysis of comparative trials evaluating a prophylactic single-use negative pressure wound therapy system for the prevention of surgical site complications. Surgical Infections Vol 18 Number 00 (2017). DOI: 10.1089/sur.2017.156

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Inlow's 60-Second Diabetic Foot Screen Gets a New Look!

By Heather L. Orsted, RN, BN, ET, MSc and Mariam Botros, DCh, DE

Dr. Shane Inlow wrote a two-page article, published in 2004, to help guide clinicians in assessing and planning care for patients with or at risk for diabetic foot ulcers.¹

A few years later, clinicians in Northern Canada indicated that one of their problems was communicating effectively with experts in larger centres about their patients' foot problems. The article by Dr. Inlow came to mind, and Inlow's 60-Second Diabetic Foot Screen was created to give clinicians a common language and process to perform such an assessment.² This tool then underwent a validation study that included interrater and intrarater reliability and predictive validity to determine consistency of risk recog-

nition for development of ulceration independent of specific assessor and practice setting.^{1,3}

Four years later, a growing body of work by the International Working Group on the Diabetic Foot (IWGDF) resulted in a risk-classification tool based on risk factors and their correlation to complications (see Table 1).^{4,5} This

tool is intended to support the development of care-planning recommendations based on the patient's level of risk.

In an effort to improve its usability, the Inlow 60-Second Diabetic Foot Screen has now been augmented to include the IWGDF's risk classification system⁶ and additional clinician information to support related care planning. This resource is also downloadable from [here](#).

The expanded tool, beginning on page 28, involves three simple

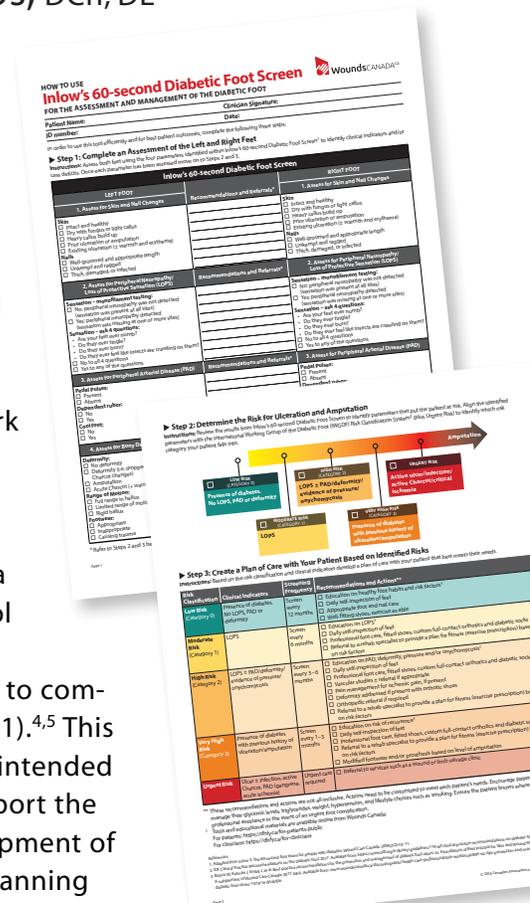


Table 1: Risk and Likelihood of Complications⁴

Modified IWGDF Risk Classification	Likelihood of Developing an ...	
	Ulcer	Amputation
Low Risk (Group 0) • no neuropathy	2%	0.04%
Intermediate Risk (Group 1) • peripheral neuropathy	4.5%	0%
High Risk (Group 2) • peripheral neuropathy, peripheral arterial disease, deformity	3 – 13.8%	0.7 – 3.7%
Very High Risk (Group 3) • ulcer history, previous amputation	31.7 – 32.2%	2.2 – 20.7%

Adapted from Lavery et al., 2008.

steps that allow clinicians to perform assessment and risk stratification, and to create a proposed plan of care based on risk. These additions will support clinicians and administrators in identifying patients at high risk of complications and will provide a guide for them to provide consistent, timely, evidence-based care.

Note: This updated version was built on the validated parameters of the original Inlow tool. Minor changes have been made to align it more closely with the **International Working Group on the Diabetic Foot's risk classification system.**

Over the next year, the revised tool will undergo extensive revalidation in multiple sites across Canada. 🇨🇦

References

1. Inlow S. The 60-second foot exam for people with diabetes. *Wound Care Canada*. 2004;2(2):10–11.
2. Orsted HL. Development of the Inlow 60-Second Diabetic Foot Screen: A practice-ready bedside tool to guide assessment and care. *Wound Care Canada* 2009;7(2):40–42.
3. Murphy CA, Laforet K, Da Rosa P, et al. Reliability and predictive validity of Inlow's 60-Second Diabetic Foot Screen tool. *Adv Skin Wound Care*. 2012;25(6):261–6.
4. Lavery L, Peters E, Williams JR, et al. Reevaluating the way we classify the diabetic foot: Restructuring the diabetic foot risk classification system of the International Working Group on the Diabetic Foot. *Diabetes Care*. 2008;31(1):154–56.
5. Edgar JG, Peters EJ, Lavery LA. Effectiveness of the diabetic foot risk classification system of the International Working Group on the Diabetic Foot. *Diabetes Care*. 2001;24(8):1442.

Available from: IDF Clinical Practice Recommendations on the Diabetic Foot 2017: www.idf.org/e-library/guidelines/119-idf-clinical-practice-recommendations-on-diabetic-foot-2017.html.

6. International Diabetes Federation. Clinical Practice Recommendation on the Diabetic Foot: A guide for health care professionals. International Diabetes Federation, 2017.

The Inlow 60-Second Diabetic Foot Screen supports enhanced documentation, improves patient care and encourages timely referrals to prevent ulcer recurrence and avoid unnecessary amputations.



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Inlow's 60-second Diabetic Foot Screen



FOR THE ASSESSMENT AND MANAGEMENT OF THE DIABETIC FOOT

Patient Name:

Clinician Signature:

ID number:

Date:

In order to use this tool efficiently and for best patient outcomes, complete the following three steps:

► Step 1: Complete an Assessment of the Left and Right Feet

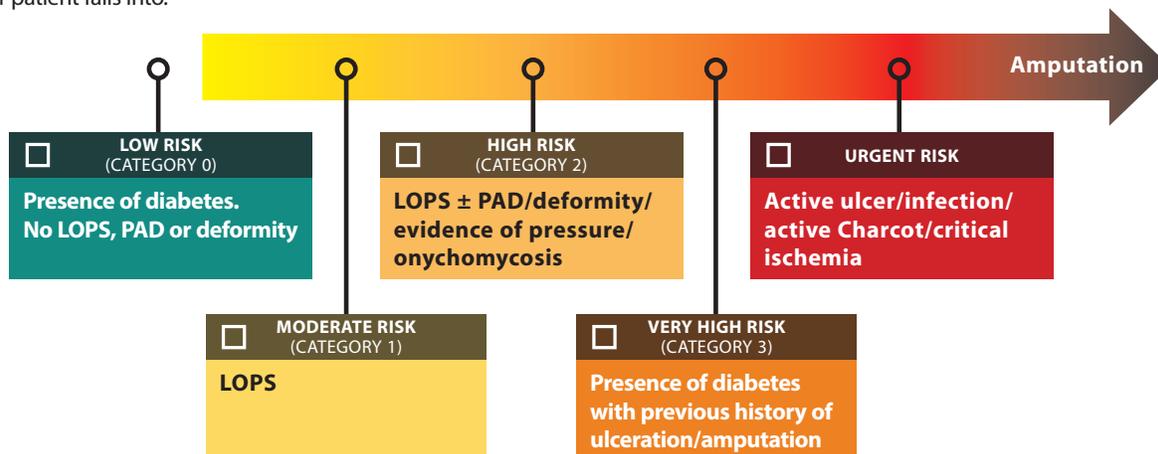
Instructions: Assess both feet using the four parameters identified within Inlow's 60-second Diabetic Foot Screen¹ to identify clinical indicators and/or care deficits. Once each parameter has been assessed move on to Steps 2 and 3.

Inlow's 60-second Diabetic Foot Screen		
LEFT FOOT		RIGHT FOOT
1. Assess for Skin and Nail Changes	Recommendations and Referrals*	1. Assess for Skin and Nail Changes
Skin <input type="checkbox"/> Intact and healthy <input type="checkbox"/> Dry with fungus or light callus <input type="checkbox"/> Heavy callus build up <input type="checkbox"/> Prior ulceration or amputation <input type="checkbox"/> Existing ulceration (± warmth and erythema) Nails <input type="checkbox"/> Well-groomed and appropriate length <input type="checkbox"/> Unkempt and ragged <input type="checkbox"/> Thick, damaged, or infected		Skin <input type="checkbox"/> Intact and healthy <input type="checkbox"/> Dry with fungus or light callus <input type="checkbox"/> Heavy callus build up <input type="checkbox"/> Prior ulceration or amputation <input type="checkbox"/> Existing ulceration (± warmth and erythema) Nails <input type="checkbox"/> Well-groomed and appropriate length <input type="checkbox"/> Unkempt and ragged <input type="checkbox"/> Thick, damaged, or infected
2. Assess for Peripheral Neuropathy/ Loss of Protective Sensation (LOPS)	Recommendations and Referrals*	2. Assess for Peripheral Neuropathy/ Loss of Protective Sensation (LOPS)
Sensation – monofilament testing: <input type="checkbox"/> No: peripheral neuropathy was not detected (sensation was present at all sites) <input type="checkbox"/> Yes: peripheral neuropathy detected (sensation was missing at one or more sites) Sensation – ask 4 questions: • Are your feet ever numb? • Do they ever tingle? • Do they ever burn? • Do they ever feel like insects are crawling on them? <input type="checkbox"/> No to all 4 questions <input type="checkbox"/> Yes to any of the questions		Sensation – monofilament testing: <input type="checkbox"/> No: peripheral neuropathy was not detected (sensation was present at all sites) <input type="checkbox"/> Yes: peripheral neuropathy detected (sensation was missing at one or more sites) Sensation – ask 4 questions: • Are your feet ever numb? • Do they ever tingle? • Do they ever burn? • Do they ever feel like insects are crawling on them? <input type="checkbox"/> No to all 4 questions <input type="checkbox"/> Yes to any of the questions
3. Assess for Peripheral Arterial Disease (PAD)	Recommendations and Referrals*	3. Assess for Peripheral Arterial Disease (PAD)
Pedal Pulses: <input type="checkbox"/> Present <input type="checkbox"/> Absent Dependent rubor: <input type="checkbox"/> No <input type="checkbox"/> Yes Cool foot: <input type="checkbox"/> No <input type="checkbox"/> Yes		Pedal Pulses: <input type="checkbox"/> Present <input type="checkbox"/> Absent Dependent rubor: <input type="checkbox"/> No <input type="checkbox"/> Yes Cool foot: <input type="checkbox"/> No <input type="checkbox"/> Yes
4. Assess for Bony Deformity (and Footwear)	Recommendations and Referrals*	4. Assess for Bony Deformity (and Footwear)
Deformity: <input type="checkbox"/> No deformity <input type="checkbox"/> Deformity (i.e. dropped MTH or bunion, chronic Charcot changes) <input type="checkbox"/> Amputation <input type="checkbox"/> Acute Charcot (+ warmth and erythema) Range of Motion: <input type="checkbox"/> Full range in hallux <input type="checkbox"/> Limited range of motion in hallux <input type="checkbox"/> Rigid hallux Footwear: <input type="checkbox"/> Appropriate <input type="checkbox"/> Inappropriate <input type="checkbox"/> Causing trauma		Deformity: <input type="checkbox"/> No deformity <input type="checkbox"/> Deformity (i.e. dropped MTH or bunion, chronic Charcot changes) <input type="checkbox"/> Amputation <input type="checkbox"/> Acute Charcot (+ warmth and erythema) Range of Motion: <input type="checkbox"/> Full range in hallux <input type="checkbox"/> Limited range of motion in hallux <input type="checkbox"/> Rigid hallux Footwear: <input type="checkbox"/> Appropriate <input type="checkbox"/> Inappropriate <input type="checkbox"/> Causing trauma

* Refer to Steps 2 and 3 before completing this area.

► Step 2: Determine the Risk for Ulceration and Amputation

Instructions: Review the results from Inlow's 60-second Diabetic Foot Screen to identify parameters that put the patient at risk. Align the identified parameters with the International Working Group of the Diabetic Foot (IWGDF) Risk Classification System² (plus Urgent Risk) to identify which risk category your patient falls into.



► Step 3: Create a Plan of Care with Your Patient Based on Identified Risks

Instructions: Based on the risk classification and clinical indicators develop a plan of care with your patient that best meets their needs.

Risk Classification	Clinical Indicators	Screening Frequency	Recommendations and Actions**
Low Risk (Category 0)	Presence of diabetes. No LOPS, PAD or deformity	Screen every 12 months	<input type="checkbox"/> Education on healthy foot habits and risk factors [†] <input type="checkbox"/> Daily self-inspection of feet <input type="checkbox"/> Appropriate foot and nail care <input type="checkbox"/> Well-fitting shoes, exercise as able
Moderate Risk (Category 1)	LOPS	Screen every 6 months	<input type="checkbox"/> Education on LOPS [†] <input type="checkbox"/> Daily self-inspection of feet <input type="checkbox"/> Professional foot care, fitted shoes, custom full-contact orthotics and diabetic socks <input type="checkbox"/> Referral to a rehab specialist to provide a plan for fitness (exercise prescription) based on risk factors
High Risk (Category 2)	LOPS ± PAD/deformity/ evidence of pressure/ onychomycosis	Screen every 3–6 months	<input type="checkbox"/> Education on PAD, deformity, pressure and/or onychomycosis [†] <input type="checkbox"/> Daily self-inspection of feet <input type="checkbox"/> Professional foot care, fitted shoes, custom full-contact orthotics and diabetic socks <input type="checkbox"/> Vascular studies ± referral if appropriate <input type="checkbox"/> Pain management for ischemic pain, if present <input type="checkbox"/> Deformity addressed if present with orthotic shoes <input type="checkbox"/> Orthopedic referral if required <input type="checkbox"/> Referral to a rehab specialist to provide a plan for fitness (exercise prescription) based on risk factors
Very High Risk (Category 3)	Presence of diabetes with previous history of ulceration/amputation	Screen every 1–3 months	<input type="checkbox"/> Education on risk of recurrence [†] <input type="checkbox"/> Daily self-inspection of feet <input type="checkbox"/> Professional foot care, fitted shoes, custom full-contact orthotics and diabetic socks <input type="checkbox"/> Referral to a rehab specialist to provide a plan for fitness (exercise prescription) based on risk factors <input type="checkbox"/> Modified footwear and/or prosthesis based on level of amputation
Urgent Risk	Ulcer ± infection, active Charcot, PAD (gangrene, acute ischemia)	Urgent care required	<input type="checkbox"/> Referral to services such as a wound or limb salvage clinic

** These recommendations and actions are not all-inclusive. Actions need to be customized to meet each patient's needs. Encourage patients to manage their glycemic levels, triglycerides, weight, hypertension, and lifestyle choices such as smoking. Ensure the patient knows where to access professional assistance in the event of an urgent foot complication.

[†] Tools and educational materials are available online from Wounds Canada:

For patients: <https://dhfy.ca/for-patients-public>

For clinicians: <https://dhfy.ca/for-clinicians>

References:

- Adapted from Inlow S. The 60-second foot exam for people with diabetes. Wound Care Canada. 2004;2(2):10–11.
- IDF Clinical Practice Recommendations on the Diabetic Foot 2017. Available from: <https://www.idf.org/e-library/guidelines/119-idf-clinical-practice-recommendations-on-diabetic-foot-2017.html>
- Botros M, Kuhnke J, Embil J, 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 p. Available from: www.woundscanada.ca/docman/public/health-care-professional/bpr-workshop/895-wc-bpr-prevention-and-management-of-diabetic-foot-ulcers-1573r1e-final/file.



How to Treat Minor Cuts and Scrapes: Fact versus Fiction

By Shane Inlow, MD, and Heather L. Orsted, RN, BN, ET, MSc

Minor cuts and scrapes on healthy individuals should heal most of the time, despite what you do. By comparison, persons who are compromised with chronic diseases such as diabetes, trauma such as spinal cord injury, or the frail elderly need every advantage possible to heal a wound. But sometimes the commonly used adhesive strips for minor wounds are just not enough to support healing. So where does that leave us?

Many of the current principles of wound care can apply to minor cuts and scrapes, and new and improved interactive dressings often result in improved healing times, less risk of infection and less scarring.

Fact Versus Fiction

Let's explore some basic principles and treatment strategies.

1. First, Stop the Bleeding

Fiction: Nature will always clot the wound.

Fact: Direct pressure works best, and assists nature, to stop the blood flow and allow a clot to form.

Yes, most wounds will form a clot and stop bleeding, but some wounds may need assistance to slow the bleeding and allow clotting to occur. By applying direct pressure to the wound site (using a piece of gauze), you can stop bleeding and support clot formation.

2. Cleanse the Wound

Fiction: Sterilize the wound with an antiseptic.

Fact: Flush and cleanse the wound of all debris using a non-irritating substance, like a commercial wound cleanser or clean tap water.

First, wash your hands. Use either a commercial wound cleanser or tap water to clean the wound. Ensure that the fluid you are using flushes the wound and is strong enough to loosen dirt and other foreign bodies but not so strong that it further damages the already damaged tissue. If you can't get a commercial wound cleaner, hold the wound under warm running tap water. Ensure your tap water is drinkable before using it on a wound.



3. Remove Dirt and Dead Skin

Fiction: Never touch the wound.

Fact: Cleaning the wound will help prevent infections and remove other barriers to healing.

If some of the dirt and debris remain after you have cleansed the wound, don't panic. Clean tweezers can be used to pick out small pieces of rock or glass or anything else that doesn't belong. To clean your tweezers before use, wash and rinse them thoroughly with soap and water. After use, wash them again thoroughly.

4. Bandage the Wound

Fiction: Let the air get at the wound to keep it dry.

Fact: Keeping the wound moist has many advantages.

Many wound bandages (dressings) on the market are referred to as "interactive" because they not only cover the wound but also promote healing. These dressings often seal (or occlude) the wound from the outside world, protecting it from injury and infection. These dressings help in the following ways:

- Interactive dressings prevent the wound from

drying out. By keeping the wound moist, they support an active wound-healing environment.

- A moist wound also reduces the chances that a crust or scab will form. If a scab forms and is ripped or picked off, the wound is re-injured and has to start healing all over again. The scab will also interfere with the healing as the body tries to dissolve the scab instead of healing the wound.
- Research has shown that moist wound healing is also associated with reduced infection rates. However, note that some interactive dressings that seal the wound should not be used in the presence of infection (see Signs and Symptoms of Infection on page 33).
- Specific dressing types can also regulate the level of moisture in a wound. Some dressings help keep the wound moist, some add moisture, while others absorb moisture drainage from the wound if there is too much.
- The right level and type of moisture can also help the body clean the wound of dead tissue in a process called "autolytic debridement." This is

Wound Dressing Categories

Interactive Dressing Category	Characteristics			Don't Use If . . .	Brand Name(s) (ask your pharmacist)
	Occlusive	Moisture	Waterproof		
Transparent adhesive film	Yes	Use if wound is moist.	Yes	There is lots of wound drainage or the wound is infected.	
Wound gel	Semi	Use if wound is dry.	No	There is lots of wound drainage.	
Hydrocolloid wafer	Yes	Use if there is moderate drainage.	Yes	The wound is infected.	
Foam	Some are and some are not.	Use if there is a lot of moisture.	Some are and some are not	The wound is dry.	
Antimicrobial	Some are and some are not.	It varies depending on the dressing.	Some are and some are not	It is not prescribed by health-care professional.	

where the body's own enzymes break down dead tissue.

The bottom line is that, for most wounds, letting a scab form and airing out the wound are the wrong things to do. Both interfere with the body's ability to heal the wound.

If all is well, most dressings can be left on for five days (no peeking!). If the wound hasn't improved when you look at it after five days, or if at any time you notice any of the signs or symptoms of complications outlined on page 33, see a health-care professional.

How to Choose the Appropriate Interactive Dressings

Speak to your pharmacist about the types of dressings available for purchase and, on the wound dressings categories form (above), fill in the blank column on the right with the brand name.

Medicine Cabinet Supplies to Treat Cuts and Scrapes

- ◆ bag of 4-inch x 4-inch gauze
- ◆ tweezers
- ◆ wound cleanser
- ◆ interactive dressings
 - transparent adherent film dressings
 - gel dressings
 - hydrocolloid dressings
 - foam dressings
 - antimicrobial dressings
- ◆ medical tape
- ◆ 3-inch roll of self-adherent wrap to secure dressings in locations like fingers/toes, knees and elbows



When to Get Help

While most minor cuts can be treated at home, some require prompt medical attention. You should go to your doctor, clinic or local emergency room if the following occurs:

- The bleeding is heavy and/or can't be stopped.
- The wound is deep—that is, you can't see the bottom.
- There is a foreign object or debris in the wound that can't be flushed out.
- There is a lot of dead tissue in the wound.
- There is any loss of function—for example, you are unable to walk due to a foot injury, or you can't bend your finger.
- The wound was caused by an animal or a human bite.
- The wound is in or close to the eye.
- It is a puncture wound on the abdomen.
- The abrasion has removed a large area of skin.
- There are noticeable signs of infection (see below).

Signs and Symptoms of Infection

Infection is the hidden danger for any wound—no matter how minor. In fact, even under ideal conditions, 5% of simple hand wounds, for example, become infected, and antibiotics may be needed.¹ Seek medical assistance if you notice any of these warning signs:

- increasing pain or tenderness on or around the wound
- increasing redness and/or swelling
- a “warm” feeling at the wound site
- pus or thick, greenish wound fluid
- red streaks under the skin around the wound
- fever
- unpleasant odour

Summary

Cuts and scrapes are part of everyone's life. With a few simple steps, you can minimize the risk of infection and keep healing on track. 🩹

Reference

1. Roodsari GS, Zahedi F, Zehtabchi S. The risk of wound infection after simple hand laceration. *World J of Emerg Med.* 2015;6(1):44–47.



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The Potential of Advanced Hydrothermic Wound Therapy:

A Traditional Review of Wound Temperature and Hydrotherapy

By Corey Heerschap, MScCH (WPC), BScN, RN, CETN(C), IIWCC

Hydrotherapy and warmth have been used in wound healing since ancient times.¹ As wound healing technology develops, both mediums have advanced, yet the combination of these treatments has yet to be explored. This article reviews current literature on both hydrotherapy and heat in wound healing and discusses the potential clinical benefits of combining these treatments.

Hydrotherapy

Whirlpool therapy, one of the oldest forms of hydrotherapy, was at one time a common form of wound treatment, delivered through submersion of the wound for 10 to 20 minutes at temperatures between 33.3°C and 35.6°C.² Whirlpool therapy has been used to remove necrotic tissue and wound debris, increase circulation at the wound site, reduce pain and accelerate healing.² Mounting evidence, however, has described risk of wound maceration, tissue damage due

to water pressure and increased risk of *Pseudomonas aeruginosa* development. In addition, a lack of high-quality evidence has moved whirlpool therapy from a common treatment to an outdated practice.² Tao, Butler and Luttrell,² and Sussman¹ note there is a shortage of randomized controlled trials on whirlpool treatments for wound healing. To date, there have been two randomized controlled trials conducted that have shown a positive correlation between whirlpool therapy and increased wound healing.¹

New Technology

More recently, there has been an introduction of new hydrotherapy-based wound treatments such as the combination of negative pressure and fluid instillation therapy. This technology allows for a cycle of fluid instillation that dwells at the wound site for a set period, followed by negative pressure wound therapy.³ Initial case series research has shown favorable results in 98% of cases where normal saline was instilled for a dwell time of 10 minutes.⁴ In these instan-



ces, new granulation tissue was described as beefy red and moist, and allowed for effective surgical closure through skin grafting, primary suturing or a surgical flap.⁴

Wounds in which healing was previously stalled, some of which had been using traditional negative pressure therapy, were found to develop granulation tissue with this new technology.⁴ Lessing, James and Ingram⁵ found that including a five-minute saline dwell time between 2.5-hour episodes of negative pressure wound therapy increased tissue granulation by 40%, 44% and 57% respectively as compared to dynamic, continuous and intermittent negative pressure therapy. Although these findings consider the combination of a saline dwell and nega-

tive pressure wound therapy, the question is how great an impact would the saline alone have had with a greater dwell time and without the aspect of negative pressure? As Gupta, et al.³ have noted, at this time there is no consistent or widely accepted practice regarding dwell time for the instillation of fluids into a wound.

Instillation therapy allows many of the benefits of whirlpool therapy, such as softening of tissue and loosening of debris. It can accomplish this without the risks of high levels of pressure, and without a basin of fluid, which is associated with a higher risk of infection. As the instilled fluid dwells only on the wound bed, the periwound area is protected, decreasing the risk of maceration.

Interestingly, however, almost a decade ago, Sussman noted that future research should focus on determining the optimum fluid temperature to best promote wound healing.⁶ Yet, even with the advancements in not only hydrotherapy but all wound care treatments, there is a scarcity of literature that addresses the issue of warmth and wound healing.

Heat

Heat is lost nearly three times faster at the area of moist skin, such as a wound, compared to intact skin.⁷ A wound device has been developed that provides non-contact heat to the wound site at 38°C.⁸ Three randomized controlled trials have evaluated the normothermic wound ther-



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apy dressing and found wounds healed significantly faster with heat than with standard moist wound healing.⁸⁻¹⁰ Santili, Valusek and Robinson¹¹ made a connection between this heat-based wound dressing and a significant decrease in pain on venous leg ulcers. However, it was noted that the underlying mechanism for this decrease in pain was not clear.¹¹

The body has a sophisticated system for thermal regulation. Core body temperature for humans ranges between 36°C and 38°C.¹² In contrast, the skin can vary significantly in temperature, averaging between 28°C and 34°C depending on the time of day and exposure.¹² To determine the mean body temperature, or the mass weighted temperature of body tissues, Lenhardt and Sessler¹³ discuss what they have determined to be an accurate and precise calculation first proposed by Burton in 1935. The mean body temperature can be calculated using the equation $MBT = 0.64 \cdot T_{Core} + 0.36 \cdot T_{Skin}$.¹³ If this calculation was used with the lowest core temperature of

36°C and nude skin temperature of 28°C, this would provide an estimated mean body temperature of 33.12°C. McGuiness, Vella and Harrison¹⁴ found that average wound beds, when covered with a variety of dressings, were slightly lower than 33°C. This leads one to question if our current advanced dressings are maintaining enough heat at the

site of the wound for optimal healing to occur.

Note that vasodilation occurs at two-tenths of a degree higher than 37°C of core body temperature.¹² Skin temperature reacts in much the same way. With a skin temperature higher than the core body temperature, local heating activates an increase in local sweating or vasodilation.¹² Regulating the wound temper-

ature may also allow for regulation of vasodilation and the inflammatory response. Gibson, Cullen, Legerstee, Harding and Shultz¹⁵ discuss that, in order to correct delayed wound healing caused by an imbalance of inflammatory-based cytokines and free radicals, a reduction in inflammation and protease activity while promoting a moist wound environment is required.

MacFie, Melling and Leaper,¹⁶ in a review of wound-warming therapies, concluded that there is a real possibility such technologies can lead to improved patient outcomes, shorter hospital stays and decreased costs. Localized wound warming was found to increase tissue perfusion and oxygenation while also decreasing infection rates.¹⁶

... there is a need to explore the potential benefits to wound healing of the combination of hydrotherapy and heat, referred to here as advanced hydrothermic wound therapy

Wound-warming therapies were also noted to improve collagen synthesis; however, further research is necessary to confirm these findings.¹⁶

The Role of Dressings

Lionelli and Lawrence¹⁷ have provided criteria for what makes a wound dressing desirable, including the following: protecting the wound, absorbing

exudate, preventing heat and fluid loss, removing dead space, limiting trauma on removal, being attractive visually, as well as creating a warm, moist, occluded environment, and minimizing pain. Given these criteria, there is a need to explore the potential benefits to wound healing of the combination of hydrotherapy and heat, referred to here as advanced hydrothermic wound therapy.

Advanced hydrothermic wound therapy would act in a similar fashion to a blister, the cover dressing acting as the body's skin to maintain instilled fluid at normothermic temperatures while providing an enclosed moist region at the area of damaged tissue.

Vasodilation and vasoconstriction play an important role in the inflammatory process. For example, vasodilation leads to increased capillary pressure, allowing plasma protein molecules to pass into the wound tissues as well as assist in bringing inflammatory cells from the circulatory system into the wound bed.¹⁸ The ability to regulate this aspect of the inflammatory process using temperature regulation directly at the wound site through a hydrotherapy medium may bring a completely new toolset to wound care clinicians. Temperature regulation may also allow for a true normothermic wound-healing environment to be calculated using the mean body temperature equation discussed previously.

Given the vast number of

wound-cover dressings on the market, there is a need for future research to focus on which materials are best able to regulate wound temperature. Future studies should assess the impact of a true normothermic wound environment based on mean body temperature, as well as the potential clinical benefits of advanced hydrothermic wound therapy.

Conclusion

Research regarding hydrotherapy and heat in wound healing remains scarce, yet there remains great potential in combining these two wound-healing mediums. As wound healing becomes more advanced and technology develops, it is important not to lose sight of the significant number of factors that affect wound healing. This review brings to light the potential impact that an advancement such as advanced hydrothermic wound therapy, or the combination of hydrotherapy and heat may have on wound healing. The potential for this scarcely explored aspect of wound healing—to provide a moist wound-healing environment while also regulating temperature—may have significant practice implications. 

Corey Heerschap is a wound/ostomy clinical nurse specialist in the Interprofessional Practice Department at the Royal Victoria Regional Health Centre in Barrie, Ontario.

Key Points

- ✓ There remains a scarcity of literature that focuses on either hydrotherapy or temperature and their effects on wound healing, although they continue to be used in modern wound-healing technologies.
- ✓ The purpose of this article is to provide an overview of current literature on hydrotherapy and temperature effects on wound healing and to discuss the potential combination of hydrotherapy and heat in wound technology, termed advanced hydrothermic wound therapy.
- ✓ There is great potential in the combination of hydrotherapy and heat in wound healing, demonstrating the importance of further research.
- ✓ Future research should review the temperature management capabilities of current wound dressings as well as the effects of a true normothermic wound environment on wound healing based on mean body temperature.

References

1. Sussman C. Hydrotherapy. In: Sussman C, Bates-Jensen B, editors. A Collaborative Practice Manual for Health Professionals. 4th ed. Philadelphia, PA: Lippincott Williams & Wilkins; 2012. p. 727–50.
2. Tao H, Butler JP, Luttrell T. The role of whirlpool in wound care. *J Am Coll Clin Wound Spec.* 2012;4(1):7–12.
3. Gupta S, Gabriel A, Lantis J, et al. Clinical recommendations and practice guide for negative pressure

- wound therapy with instillation. *Int Wound J.* 2016;13(2):159–74.
4. Brinkert D, Ali M, Naud M, Maire N, Trial C, Teot L. Negative pressure wound therapy with saline instillation: 131 patient case series. *Int Wound J.* 2013;10(suppl. 1):56–60.
 5. Lessing MC, James RB, Ingram SC. Comparison of the effects of different negative pressure wound therapy modes—continuous, noncontinuous, and with instillation—on porcine excisional wounds. *Eplasty.* 2013;13:e51.
 6. Sussman C. Whirlpool. In: Sussman C, Bates-Jensen B, editors. *A Collaborative Practice Manual for Health Professionals.* 3rd ed. Philadelphia: Lippincott Williams & Wilkins; 2007. p. 644–64.
 7. Maglinger PE, Sessler DI, Lenhardt R. Cutaneous heat loss with three surgical drapes, one impervious to moisture. *Anesth Analg.* 2005;100(3):738–42.
 8. Kloth LC, Berman JE, Nett M, et al. A randomized controlled clinical trial to evaluate the effects of noncontact normothermic wound therapy on chronic full-thickness pressure ulcers. *Adv Skin Wound Care.* 2002;15:270–76.
 9. McCulloch J, Knight CA. Noncontact normothermic wound therapy and offloading in the treatment of neuropathic foot ulcers in patients with diabetes. *Ostomy Wound Manage.* 2002;48(3):38–44.
 10. Whitney JD, Salvadalena G, Higa L, et al. Treatment of pressure ulcers with noncontact normothermic wound therapy: Healing and warming effects. *J Wound Ostomy Continence Nurs.* 2001;28:244–52.
 11. Santilli SM, Valusek PA, Robinson C. Use of a noncontact radiant heat bandage for the treatment of chronic venous stasis ulcers. *Adv Wound Care.* 1999;12:89–93.
 12. Arens E, Zhang H. The skin's role in human thermoregulation and comfort. In: Pan N, Gibson P, editors. *Thermal and Moisture Transport in Fibrous Materials.* Cambridge, England: Woodhead Publishing Limited; 2006. p. 560–602.
 13. Lenhardt R, Sessler DI. Estimation of mean-body temperature from mean-skin and core temperature. *Anesthesiology.* 2006;105(6):1117–21.
 14. McGuinness W, Vella E, Harrison D. Influence of dressing changes on wound temperature. *J Wound Care.* 2004;13(9):383–85.
 15. Gibson D, Cullen B, Legerstee R, et al. MMPs made easy. *Wounds International.* 2009;1(1). Available from: www.woundsinternational.com.
 16. MacFie CC, Melling AC, Leaper DJ. Effects of warming on healing. *J Wound Care.* 2005;14(3):133–36.
 17. Lionelli GT, Lawrence WT. Wound dressings. *Surg Clin N Am.* 2003;83:617–38.
 18. Sussman C, Bates-Jensen, BM. Skin and soft tissue anatomy and wound healing physiology. In: Sussman C, Bates-Jensen BM, eds. *A Collaborative Practice Manual for Health Professionals.* 4th ed. Philadelphia, PA: Lippincott Williams & Wilkins; 2012. p. 38.



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Wound Sleuth

By R. Gary Sibbald, BSc, MD, MEd, DSc (Hon), FRCPC (Med)(Derm), FAAD, MAPWCA, JM, and Patricia M. Coutts, RN, IIWCC

“Odd-Looking” Areas on the Shin

This 38-year-old female with type 1 diabetes developed yellow-tinged plaques on bilateral pretibial areas about 10 years ago. She also has a history of retinopathy, neuropathy and gastroparesis. Her HbA1c currently is 7.3 to 8.1. At present she is using an insulin pump. She developed ulceration in July 2014 and has had multiple episodes of ulceration over the involved areas since.

Questions for the Reader

Q What is the diagnosis or cause, and how would you investigate this patient?

A The diagnosis of these pretibial plaques is necrobiosis lipoidica (NL). The cause of NL is unknown. It is seen in one in 300 persons with diabetes, but occasionally those without diabetes may be affected. Some individuals develop diabetes later in life.

Necrobiosis lipoidica typically appears over the pretibial areas of the leg, presenting with an atrophic plaque with a yellow

discolouration in the centre of the involved area (Figure 1).

Telangiectasia is a condition characterized by dilation of the capillaries that causes them to appear as small red or purple clusters, often spidery in appearance (Figure 1).

The areas may ulcerate, and when they do they are very painful.

Investigations should include the following:

- HbA1c
- assessment of arterial circulation
- venous duplex Doppler, if venous surgery is being considered

Q What other diagnoses or causes would you consider?

A A skin biopsy will exclude sarcoidosis or squamous cell carcinoma. Both of these are rare, but possible.

Q What are possible management strategies?

A Strategies may include the following:

- avoid contributory behaviour such as smoking and trauma to shins

- control diabetes: optimize diabetic control if applicable (HbA1c in the 7 range)
- consider therapy: intralesional steroids into red active margins
- consider oral medication: aspirin and dipyridamole or pentoxifylline
- consider topical medication: tacrolimus or clobetasol on the red active margin
- consider compression stockings if there is co-existing venous disease



Figure 1

Conclusion

- The patient did not respond to hydroxychloroquine or pentoxifylline. Topical steroids made the problem worse. She found the intralesional steroids very painful.
- Currently she is not smoking. She stopped in August 2014 with her last episode of ulceration.
- Her HbA1c is between 7.3 – 8.1, as previously mentioned. She is followed by an endocrinologist and a diabetes education centre.
- She is wearing compression stockings, 20 to 30 mmHg, to control edema and protect her legs.
- Topically, she is using tacrolimus on the red active margin and a moisturizer on the



Figure 2

- atrophic yellow centre.
- Systemically she is taking aspirin and dipyridamole 25 to 200 bid.
- She has been ulcer free, and the plaque sizes have remained stable with the present regimen (Figure 2).



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North American Pressure Ulcer Summit: Tackling an Underreported Issue

By Janet L. Kuhnke RN, BA, BScN, MS, ET, Doctorate in Psychology(c)

The Association for the Advancement of Wound Care (AAWC) held their first annual Pressure Ulcer Summit in Atlanta, Georgia, February 9 to 10, 2018. The summit focused on the importance of prevention and harm reduction. Sessions examined the scientific evidence related to the underlying pathophysiology of pressure-induced tissue damage and the resulting effects. This topic is important for clinicians, researchers and educators. Pressure ulcers/injuries may be underreported because often they are not accurately assessed by caregivers as pressure ulcers and therefore not coded as such in health-care auditing and reporting systems.¹

Pressure ulcers are one of the most common conditions in all care settings, and the summit brought together key speakers to address this widespread problem. Overall, the speakers emphasized the need for partnerships in the clinical, research and education arenas, and the importance of bringing researchers together to address the immediate need to collect and report the prevalence of pressure ulcers/injuries worldwide.

Initial presentations and discussions focused on the biomechanical issues related to assessment, treatment and management of pressure ulcers/injuries. Researchers presented the mechanisms underlying and contributing to pressure-induced tissue damage in at-risk populations. Using case-

based presentations, speakers discussed the issues related to adipose, muscle, and the movement and displacement of tissue with movement, sitting and positioning. Case examples from the spinal-cord-injured and older adult populations illustrated the individuality of tissue changes.

Technology—the role it plays, now and in the future—was a thread that ran through the summit. Technological devices that can detect changes in biophysical measurement of the skin and tissue can aid in identifying tissue damage. These devices may help staff in clinical practice describe pressure tissue damage. There was also a detailed discussion on the use of advanced scanning imagery to support decision-making related to positioning of patients (e.g., location of muscle and subcutaneous layers after surgery). Understanding where the tissue and structures lie may be necessary to effectively prescribe equipment.

Key researchers delivered an interactive presentation, and discussion focused on the development of the Pressure Ulcer (Description) Tool (PUDT). Through interactive technology, summit participants gave the presenters and researcher group their feedback and critique of terminology being used in this developing tool. The goal of the PUDT is to aid caregivers in describing pressure ulcers/injuries and to separate these injuries from other skin changes. The tool is now undergoing

content validity and reliability testing, and the research group will share their results in upcoming publications.

Janet L. Kuhnke represented Wounds Canada as co-moderator, with Kara Couch, of a session titled "Prevention Interventions." In this session, a physician and physiotherapy team emphasized the importance of the following:

- team communication
- engaging the patient and family in effective education
- prescribing the most appropriate equipment to meet each patient's needs

There was a healthy and engaging discussion about the term *pressure injury*. Perspectives shared included that the word *injury* is not a medical term; that *injury* implies harm and potential litigation; and that overall, the change to the term *pressure injury* is not simple. This passionate discussion engaged participants from across the United States, and the AAWC will continue to keep wound-care clinicians apprised of developments related to this topic.

Another theme that ran through the summit was the importance of health-data collection issues related to pressure ulcers/injuries. Some of the topic discussions related to educating and re-educating staff on proper staging; resolving documentation issues in charting; and having medical-record coders understand changes to coding related to pressure ulcers/injuries. For researchers, there is a heightened emphasis on the need to access existing large medical databases to conduct research and to report accurately on the state of pressure ulcers/injuries across the U.S. and around the world.

Researchers were encouraged to pursue this important issue, as more research is needed to fully understand the state of pressure ulcers/injuries in all care settings. 🏠

Reference

1. Smith IL, Nixon J, Brown S, Wilson L, Coleman S. Pressure ulcer and wounds reporting in the NHS hospital in England. Part 1: Audit of monitoring systems. *J Tissue Viability*. 2016;25(1):3–15.



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The E-Stim Collaboration Project: A National Pressure Ulcer Implementation Program

By Pamela Houghton, PT, PhD

Electrical Stimulation therapy (E-Stim) is an advanced wound therapy that involves applying low levels of electrical current to the wound and surrounding tissues. Numerous clinical trials led by researchers around the world have tested the effects of E-Stim on healing and found E-Stim can increase the rate of wound healing and promote closure of several types of wounds. In particular, Houghton and colleagues showed in a pragmatic controlled clinical trial that E-Stim applied by community care providers to people

with spinal cord injuries (SCI) and pressure ulcers produced significantly better outcomes compared to those continuing standard wound care programs.¹ Expected outcomes after E-Stim included 51% wound surface area reduction and complete wound closure in 103 + 92 days in 69% of enrolled patients.¹ Consult these references for a comprehensive review of clinical research about E-Stim used to treat various types of chronic wounds.^{2,3}

Not surprisingly, many best practice guidelines recommend E-Stim as an advanced therapy that should be provided

to patients with slow-to-heal wounds.⁴⁻⁶ According to the recently updated Registered Nurses' Association of Ontario (RNAO) Best Practice Guidelines regarding pressure injuries, clinicians should "Provide electrical stimulation (when available) as an adjunct to best practice wound care in order to speed healing and promote closure of stalled but healable Stage 2, 3, and 4 pressure injuries."⁷ The recommendation was assigned a strength of evidence of Level 1a, the highest level, and was the only recommendation regarding advanced therapies assigned that level. Despite this evidence



and numerous best practice guidelines regarding E-Stim, it is seldom used in clinical practice, and patients seeking this advanced therapy are unable to access it.

The E-Stim Collaboration Project

In March 2015 a large group of researchers, clinicians and health-care organizations (see Figure 1) came together to work collaboratively on a three-year research project funded by the Rick Hansen Institute (Grant No. G2015-34). This multifaceted project was designed to implement pro-

cesses and practice changes that would promote timely access to E-Stim and associated best practices that are known to improve healing outcomes. It was decided to focus on providing E-Stim to community-dwelling individuals living with SCI who have developed pressure ulcers, since pressure ulcers are known to occur far too frequently in and have devastating effects for these people.⁸ We chose to develop and field-test practice changes in the South West Local Health Integration Network (SW-LHIN), in London, Ontario, with a view to subsequently disseminate

lessons learned to other organizations across Canada that are interested in implementing an E-Stim National Implementation Program.

Together this group used a unique “knowledge-to-action” clinical research design that allowed us to tap into the lived experience of people with pressure ulcers.^{9,10} By using established knowledge mobilization principles, we could also appreciate the challenging roles that health-care providers fulfill when delivering wound-care services to a growing number of people in our community. Integral to this research was

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a multi-step system (Plan-Do-Study-Act [PDSA] cycle) in which feedback from end users was used to modify processes and practices that encourage the uptake of E-Stim and embed this advanced therapy into everyday wound-care practice.¹¹

Implementation

Initial stages of implementation involved engaging key stakeholders in the region with broad representation across all health sectors: different health-care providers, including both unregulated and regulated professionals, people with lived experience, equipment vendors and health-care administrators. With the help of a facilitation team, we completed a local environmental scan to determine several barriers and facilitators to E-Stim implementation.¹² Not surprisingly, interventions that would facilitate E-Stim implementation included programs that would increase E-Stim awareness and knowledge to build caregivers' competency with this treatment, provide resources that would make E-Stim equipment and supplies readily available and create clear processes to select appropriate patients, and order and set up E-Stim treatments in the community. Out of these preliminary discussions we also developed a model of care that involved an interprofessional specialized SCI and wound-care team, located at the local regional rehabilitation centre, called the Pressure Injury

Consultation Service (PICS).¹² An adaptation team created a process map that outlined specific steps and connections needed to provide E-Stim in a patient's home within the SW-LHIN home and community care system (formerly known as SW-CCAC).¹³

Establishing Clear Lines of Communication

Through these pre-implementation activities, it became apparent that clear lines of communication had to be established to facilitate ongoing discussions among 1) patients, family members and their care providers, 2) clinicians at the rehabilitation centre and those working in primary care and the community and 3) the numerous community-based clinicians and providers involved with delivering pressure ulcer care in a patient's home.

After reviewing existing communication systems available in this region, a secure, customized electronic platform called CHAYA was developed that provided a place for care providers and patients to communicate using voice or text formats. This web-based system also allowed the patients and members of their care team to track E-Stim use and other clinical outcomes, and to access assessment forms and other useful resources for the patients and providers seeking more information regarding SCI rehabilitation, pressure injury assessment and management, and E-Stim therapy.

The Educational Component

During the implementation phase of the project, the E-Stim Collaboration Team provided information in poster or presentation format to more than 400 people in the SW-LHIN region, including clinicians, administrators and patients. An intensive online E-Stim education program supplemented with a hands-on skills workshop was created and delivered to 87 clinicians who were seeking advanced knowledge, skills and judgement about E-Stim. This education program resulted in the creation of "the E-Stim provider pool" of 22 clinicians working across the SW-LHIN region who can accept referrals for E-Stim and identify appropriate recipients, design customized E-Stim treatments that best suit the patient's situation, modify E-Stim protocols based on provider and patient feedback, and measure healing outcomes.

Assessment and Planning

Through the efforts of many, we provided a comprehensive assessment and integrated pressure ulcer care plan for 30 individuals with pressure ulcers. Seventy-eight per cent of included participants had a spinal cord injury and an average age of 53 years. Most pressure ulcers were quite severe (Stage 4, NPUAP 2007) and had been present for at least two years. Only 53% (n=16) of participants were provided with E-Stim treatments of



Figure 1: The National Implementation Committee. November 12, 2017. Photo by Rob Low.

their pressure ulcers, since our assessment revealed significant practical and/or health-related barriers to healing, including nine cases of osteomyelitis and four people attending ER or requiring hospital admission for serious health issues. These experiences indicated that we needed to identify people for advanced therapies like E-Stim much earlier and soon after the pressure ulcer occurs. Other research groups have conducted extensive retrospective analyses of clients in their service who have and have not received E-Stim, and found wounds present for fewer than six months were much more likely to achieve complete wound closure after E-Stim treatment.¹⁴ Another key finding from this implementation project was a lack of appreciation of the serious complications that can result when pressure ulcers remain open for several months or years. While many health-care providers and patients appreciated the need to contain health-care costs, few realized that early intervention with evidence-based

advanced therapies is more cost-effective.¹⁵ A complete analysis of themes and a summary of lessons learned from the local field test of best practice implementation project is currently being prepared for peer-reviewed publication.

A National Scope

During the final phase of the project, the E-Stim collaboration team disseminated the implementation program to other sites across Canada. We were pleased to find 10 additional sites located in five different provinces that had local champions willing to engage in knowledge mobilization activities and promote the uptake of E-Stim into standard wound-care practices. The National Implementation Committee was formed and linked via several virtual meetings and two face-to-face meetings to learn from the SW-LHIN project, share their own experiences and work together to develop strategies to address emerging and

anticipated challenges. Several of the 31-member implementation committee had positions as knowledge brokers in their organization and had substantial experience embedding changes in related areas of practice.

At the annual meeting of the group (Figure 1), held in Niagara Falls, Ontario, in November 2017, a strategic planning exercise was undertaken. Key messages from the group included a keen interest to continue to meet as a National Implementation Group and to meet face-to-face at least once per year. Reasons to continue group activities included sharing knowledge and resources, creating a united voice, fuelling motivation and actualization, developing common policies and practice templates, and measuring common outcomes and collating data from multiple sites. All 31 participants wanted access to the online educational program and resources produced out of this project and wanted hands-on skills E-Stim workshops available in their region.

Future Priorities

During the planning meeting, committee members completed an online survey to set the priorities for future work. There was strong consensus to do the following: apply for future funding to support the E-Stim Collaboration Project and related research, continue to meet face-to-face as well as virtually, initiate an advocacy and awareness campaign for E-Stim therapy, develop partnerships with industry that ensure continuous supply of user-friendly E-Stim equipment, expand E-Stim availability beyond pressure ulcers and the SCI population, continue research that promotes sustained practice change using valid knowledge implementation strategies, and foster collaboration with other national

organizations working in the field (Nurses Specializing in Wound, Ostomy and Continence Canada [NSWOCC], Wounds Canada, MEDEC).

Conclusion

Formal activities of the research project funded by Rick Hansen Institute concluded in January 2018. Two continuing outputs resulting directly from the E-Stim Collaboration Project include a website (www.estim4wounds.ca) that provides open access to the resources and information about E-Stim generated from the project. In addition, a community of practice was formed that brings together more than 67 providers and consumers who are interested in sharing and discussing topics related to the safe and effective

application of E-Stim for wounds.

For more information about E-Stim, to register as an E-Stim provider, request a course on E-Stim near you or join the community of practice or national implementation committee, visit www.estim4wounds.ca.

References

1. Houghton P, Campbell KE, Fraser C, et al. Electrical stimulation therapy increases healing of pressure ulcers in community dwelling people with spinal cord injury. *Arch Phys Med Rehabil.* 2010;91(5):669–78.
2. Houghton PE. Electrical stimulation for wound treatment: A review of reviews. *Chronic Wound Care Management and Research.* 2017;4:25–44.
3. Houghton PE. Clinical trials involving biphasic pulsed current, microcurrent, and/or low intensity direct current: A review. *Adv Wound Care.* 2014;3(2):166–83.



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Reference: Armstrong DG, Wrobel J, Robbins JM. Are diabetes-related wounds and amputations worse than cancer? *Int Wound J.* 2007;4(4):286–7. 5.

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4. National Pressure Ulcer Advisory Panel, European Pressure Ulcer Advisory Panel and Pan Pacific Pressure Injury Alliance. Prevention and Treatment of Pressure Ulcers: Clinical Practice Guideline. Emily Haesler, editor. Osborne Park, Western Australia: Cambridge Media. 2014. Available from: www.internationalguideline.com/static/pdfs/NPUAP-EPUAP-PPPIA-PUGuideline-MethodAddendum-2014.pdf.
5. Canadian Best Practice Guidelines for the prevention, assessment and treatment of pressure ulcers in people with spinal cord injury: Consensus statements, practice recommendations and clinical resource guide. Mississauga: Katika Integrated Comm. 2013 Mar. Available from: http://onf.org/system/attachments/168/original/Pressure_Ulcers_Best_Practice_Guideline_Final_web4.pdf.
6. Registered Nurses' Association of Ontario (RNAO). Assessment and management of foot ulcers for people with diabetes. 2nd ed. In: International Affairs & Best Practice Guidelines. 2013 Mar. Available from: http://rnao.ca/sites/rnao-ca/files/Assessment_and_Management_of_Foot_Ulcers_for_People_with_Diabetes_Second_Edition1.pdf.
7. Registered Nurses' Association of Ontario (RNAO). Assessment and management of pressure injuries for the interprofessional team. 3rd ed. In: International Affairs & Best Practice Guidelines. 2016 May. Available from: http://rnao.ca/sites/rnao-ca/files/Pressure_Injuries_BPG.pdf.
8. Lala D, Dumont FS, LeBlond J, et al. The impact of pressure ulcers on individuals living with a spinal cord injury. Arch Phys Med Rehabil. 2014;95(12):2312-19.
9. Graham I, Logan J, Harrison M, et al. Lost in knowledge translation: Time for a map? J Contin Educ Health Prof. 2006;26:13-24.
10. NIRN. Implementation drivers: Assessing best practices. 2015. Available from: <http://implementation.fpg.unc.edu/sites/implementation.fpg.unc.edu/files/NIRN-ImplementationDriversAssessingBestPractices.pdf>.
11. Fixsen DL, Blase KA, Naoom SF, et al. Core implementation components. Res Soc Work Pract. 2009;19:531-40.
12. Lala D, Houghton PE, Kras-Dupuis A, et al. Developing a model of care for healing pressure ulcers with electrical stimulation therapy in persons with spinal cord injury. Top Spinal Cord Inj Rehabil. 2016;22(4):277-87.
13. Lala D, Houghton PE, Holyoke P, et al. Using a modified ADAPTE process to enable effective implementation of electrical stimulation therapy for treating pressure ulcers in persons with spinal cord injury. Rehabilitation Process and Outcome. 2017;6:1-8.
14. Zhou K, Schenk R, Brogan M. The wound healing trajectory and predictors with combined electrical stimulation and conventional care: One outpatient wound care clinic's perspective. Eur J Clin Invest. 2016;46(12):1017-23.
15. Mittmann N, Chan BC, Craven BC, et al. Evaluation of the cost-effectiveness of electrical stimulation therapy for pressure ulcers in spinal cord injury. Arch Phys Med Rehabil. 2011;92:866-72.

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1. Armstrong DG, Lavery LA, Kimbriel HR, et al. Activity patterns of patients with diabetic foot ulceration. Diabetes Care 2003;26:2595-7

The Hôtel Dieu de Lévis Chronic Wound Care Clinic: A Success Story in Quebec

This interview with Dr. Richard Belley, physician at the CISSS Chaudière Appalaches Chronic Wound Care Clinic (Hôtel Dieu de Lévis building), was conducted by Maryse Beaumier, professor at the Department of Nursing, University of Quebec at Trois-Rivières.



The practice of wound care has had an interesting evolution in Quebec. Initially, little recognized, it was performed only by passionate physicians such as those at the Hôtel Dieu de Lévis chronic wound care clinic. In 2003, the College of Physicians of Quebec and the College of Nurses of Quebec agreed to reserve an activity for wound care nurses.^{1,2} The autonomy allowed upon completion of this activity depends of course on the knowledge, skills and expertise of the nurse, the complexity of the clinical situation, the nurse's ability to provide specific medications and products according to a prescription, and nursing rules in effect in the institution. In 2014, this activity was expanded to occupational therapists and physiotherapy professionals,³ acknowledging that the etiology of a chronic and complex wound is multifactorial and its treatment requires an interprofessional approach.

As early as 2001, physicians at the Hôtel Dieu de Lévis chronic wound care clinic understood the importance of teamwork to the care of chronic wounds. They have been forward-thinking in this area, and have been able to meet the population's needs for wound treatment since well before the government agreements that made this activity possible. It is therefore not surprising that this clinic received the 2017 Health Profession Award for their organization of services. Here is what Dr. Richard Belley has to tell us about the facility and this well-deserved award.

Maryse Beaumier >> The Hôtel Dieu de Lévis chronic wound care clinic won the 2017 Health Profession Award. Can you tell us more about this honour?

Richard Belley >> The Groupe Santé d'Ensemble IQ, composed of the Health Profession, ProfessionHealth.ca, *Pharmaceutical News*, *Medical News* and *NursingInfo*, has been organizing the Health Profession Awards for several years. These awards are intended to promote the values of teamwork and communication among health professionals in Quebec. The awards are given to nurses, physicians, pharmacists or interprofessional teams whose practice stands out and deserves to be recognized. This year, our team was given the award in the Interprofessional-Physicians Collaboration category. We are extremely proud, because this award embodies our team's hard work in this clinic over the past 15 years.

MB >> Tell us about the clinic's development.

RB >> The clinic was created in 2001 in parallel with the development of our hyperbaric chamber. One of the indications for hyperbaric treatments was chronic wounds. On-site physicians soon realized that patients with complex wounds were being referred to hyperbaric medicine, a second-line treatment, but that basic wound care was often not performed according to best practices. For example, a patient with a diabetic foot ulcer could be referred to us for hyperbaric chamber treatments, while the offloading, vascular or infectious aspects would not be addressed. With this observation, the idea emerged of creating a clinic for complex wounds.

Initially, we had only one bed and no nursing staff. Three years later, and after multiple meetings with the hospital's administration, three beds for outpatient consultations were granted to us, as well as an enterostomal therapy nurse and a wound care nurse. In 2010, the budget to hire a second specialized nurse was allocated. The culmination of this development came in 2014, with the construction of a new building that houses the hyperbaric medicine complex (with Canada's largest state-of-the-art hyperbaric chamber) and the Hôtel Dieu de Lévis chronic wound care clinic. Now, with four physicians and two nurses dedicated to wound care and enterostomal therapy, the Complex Wound Clinic of the Integrated Health and Social



Services Centre in Chaudière–Appalaches offers its services primarily to patients in the Chaudière–Appalaches region and throughout eastern Quebec, according to best practices.

MB >> The realization of a project like your clinic requires financing for development, operation and hiring of competent employees. How did you succeed?

RB >> That is an excellent point, and I can say, to this day, that my colleagues Dr. François Paquet, Dr. Mario Côté and I worked hard to achieve our goals in the early years, most often on a voluntary basis. There were several meetings with the administrators of the institution to convince them of the need for the chronic wound clinic, and we had meetings with government authorities, technical and engineering teams for the

design plans for the new complex, the administrators of the institution's foundation, the Faculty of Medicine at Laval University, and more. At the same time, we were managers and administrators, though none of us had business administration training. Although the presence of physicians at certain engineering and architectural meetings for the clinic was initially disputed, our involvement in the decision-making process was eventually accepted. Our passionate, determined, empathetic and, above all, collaborative, non-confrontational attitude was the key to success. We knew, and still believe, that the development of major projects in our health-care system required direct collaboration among physicians, professionals and managers. We have successfully transformed

the wound care clinic into a unique university teaching environment, especially for medical residents at Laval University. Complex wounds training was for many years part of a mandatory internship for plastic surgery residents of the Faculty of Medicine of Laval University. Thus, three young plastic surgeons were recruited for our establishment. These surgeons, with whom we work closely for many patients, only improve the quality of our care and services for wound-affected patients.

MB >> What role have national wound care organizations played in the development of the clinic?

RB >> A large role, in my opinion. For me, Wounds Canada (formerly the Canadian Association of Wound Care) has been a catalyst to our passion for chronic wound care. In the early 2000s, there was no well-established organization in Quebec dedicated to the advancement of the care and prevention of chronic wounds. My medical colleagues and I turned to Wounds Canada, and also to the International Interprofessional Wound Care Course (IIWCC), a course on best practices at the University of Toronto. In fact, our wound care physicians have all taken this training, which has provided us with the basics of chronic wound care as well as a network of experts in the field, which is still useful today. Dr. Mario Côté and I found Wounds Canada so important that we personally invested time in this organization as board

members for a few years. Later, in Québec, Le Regroupement Québécois en Soins de Plaies (RQSP) was created.

MB >> Can these organizations provide tangible help in the clinic?

RB >> Yes, certainly, and here is an example. In 2016, changes in governance at the Quebec Ministry of Health and Social Services (MSSS) led to major changes in the distribution of physicians in the province. These changes jeopardized the

hired for at our chronic wound care clinic. Concerted actions often lead to positive results, and again, in a context of interdisciplinary collaboration, help to avoid any larger confrontation. It is important, too, to keep in mind that our actions are always done according to our clinic's mission: focus on the quality of patient care. This is the reason we do our job.

MB >> Today, in 2018, what does the Hôtel Dieu de Lévis wound care clinic look like?

The main challenge is ... to make health decision-makers aware of the importance of these multidisciplinary teams.

viability of the Hôtel Dieu de Lévis chronic wound care clinic. Representatives of Wounds Canada were informed, and an ad hoc committee was constituted. This committee, composed of a representative of Wounds Canada, the RQSP, the Nurses Specialized in Wound, Ostomy and Continence Canada (formerly the Canadian Association for Enterostomal Therapy), a representative of wound research, Maryse Beaumier, and myself, joined forces to draw up a support document. The document was presented at a meeting with the Ministry of Health in Quebec in May 2017. With the support of the hospital administrators, the Regional Department of Medicine, and the Faculty of Medicine at Laval University, a candidate doctor was finally

RB >> The team is made up of four part-time doctors (three family doctors, including one with training in podiatry, and a specialist in emergency medicine), two enterostomal therapy nurses with specialties in chronic wound care, a nurse with a bachelor's degree, an administrative assistant and an attendant. Our wound clinic is part of the emergency department of CISSS Chaudières-Appalaches. It is open five days a week and benefits from a complete technological platform, as well as general, vascular and plastic surgery, infection experts, physiatrists, nuclear medicine physicians, interventional radiologists and dermatologists. We work in a state-of-the-art complex with four individual treatment rooms dedicated to

wound care. The wound care area is located on the same floor as the hyperbaric medicine complex. The Hôtel Dieu de Lévis chronic wound clinic has had more than 20,000 visits in the last five years, 80% of which were outpatient visits and 20% hospitalized patients. We evaluate and treat various kinds of wounds, including diabetic ulcers, venous leg ulcers, pressure injuries, surgical wounds, radionecrosis, traumatic ulcers, burns, and neoplastic and ostomy wounds. Our teleconsultation component has also grown in the last three years with a service agreement with more than 30 centres of Laval University's Réseau Universitaire Intégré de Santé (RUIS). Nearly a thousand teleconsultations have been performed since 2015. Our chronic wound clinic was the

country. Our patients tell us the same thing. When a neuropathic diabetic patient tells me that he has had an appointment within 24 hours for an infected foot ulcer at the chronic wound clinic, and has avoided a visit to the emergency room, it confirms that our care is optimal and that we have achieved our service goals. We built the chronic wound care clinic based on best practices literature from Canadian and international mentors. At the beginning of my practice in wound care, I read a lot about the subject, but I also confirmed our practices by my presence at several national and international conferences in the United States and in Europe. Through participation in these conferences we were able to confirm that our approach was efficient. It is vital to validate what we do at

leave hospital medicine like the care we provide in our clinic. In its health policies, Quebec is lagging behind in recognizing the importance of multidisciplinary teams for the management of chronic wounds, and particularly with regard to the care of diabetic foot ulcers and their sometimes-catastrophic complications such as amputation of the lower leg. The main challenge is therefore to make health decision-makers aware of the importance of these multidisciplinary teams. For us in Lévis, a major challenge is that it is virtually impossible to recruit doctors at the moment because of current policies. A dream that I have, and that I hope will come true before I retire, would be to have centres of excellence for chronic wound management in Quebec. These centres could be affiliated with Quebec universities, and would have the budgets and qualified personnel needed to create a multidisciplinary environment with an adequate technological platform. The creation of centres of excellence in chronic wound care would also be compatible with the development of research, a niche that has not yet been optimized among Quebec researchers in chronic wound care.

MB >> Thank you, Dr. Belley. Your contribution to improving health care is exemplary. Let's hope that your dreams come true, and that such chronic wound care clinics can be created elsewhere in Quebec.

Our passionate, determined, empathetic and, above all, collaborative, non-confrontational attitude was the key to success.

largest supplier of teleconsultations with physicians in the province of Quebec in 2015.

MB >> Would you say that the Hôtel Dieu de Lévis chronic wound clinic is a model for care centres of its kind?

RB >> I think so, although it is always difficult to self-assess, as you risk sounding pretentious. Many Canadian experts in chronic wound care have visited our facility and have said it was one of the most impressive in the

our own location by comparing ourselves with the leaders in our field, and to maintain our knowledge of best practices.

MB >> What challenges do you anticipate that the clinic will face in coming years?

RB >> Health policy in Canada is constantly changing. In Quebec in recent years, primary care has been the priority. Family physicians have a strong incentive to take care of patients in a private office, and are encouraged to

Conclusion

This interview raises several important concerns surrounding wound care, including the importance of having multidisciplinary teams adopt best practices. In Quebec, care for people with diabetic wounds is often fragmented, and best practices are not always followed.^{4,5} The consequences are numerous and might include longer healing times, a decrease in mobility and quality of life, and risk of complications such as infection and amputation.^{6,7} These consequences result in increased costs associated with hospitalization, outpatient visits and surgical procedures.⁸

The example of collaboration shown by the Hôtel Dieu de Lévis chronic wound care clinic should demonstrate to clinicians and

policy makers the success of this model of care for the health of patients with chronic wounds in Quebec—success rewarded by the clinic winning a Health Profession award. 🏆

References

1. OIIQ. Guide d'application de la nouvelle Loi sur les infirmières et les infirmiers et de la Loi modifiant le Code des professions et d'autres dispositions législatives dans le domaine de la santé. 2003. p. 109.
2. OIIQ. Le champ d'exercice et les activités réservées des infirmières, 3e ed. 2016.
3. OEQ, OIIQ, OPPQ. Une action concertée pour optimiser le traitement des plaies chroniques et complexes: Cadre de collaboration interprofessionnelle pour les ergothérapeutes, les infirmières et les professionnels physiothérapeutes. 2014.
4. Fife CE, Carter MJ, Walker D, et al. Diabetic foot ulcer off-loading: The gap between evidence and practice. Data from the US Wound Registry. *Adv Skin Wound Care*. 2014;27(7):310–6.5.
5. Edwards H, Finlayson K, Courtney M, et al. Health service pathways for patients with chronic leg ulcers: Identifying effective pathways for facilitation of evidence based wound care. *BMC Health Services Research*. 2013;13(1):86.
6. Beattie AM, Campbell R, Vedhara K. "What ever I do it's a lost cause." The emotional and behavioural experiences of individuals who are ulcer free living with the threat of developing further diabetic foot ulcers: A qualitative interview study. *Health Expect*. 2014;17(3):429–39.
7. Yazdanpanah L, Nasiri M, Adarvishi S. Literature review on the management of diabetic foot ulcer. *World J Diabetes*. 2015;6(1):37.
8. Hopkins RB, Burke N, Harlock J, et al. Economic burden of illness associated with diabetic foot ulcers in Canada. *BMC Health Services Research*. 2015;15(1):632–49.



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Wound Sleuth

By Jessica Mak, BSc, Pharm (Hons), RPh, Medical Student, University of Toronto; Geeta Yadav, MD, MHS, FRCPC, Women's College Hospital, University of Toronto; and Carol Ott, MD, FRCPC, Women's College Hospital, Baycrest Hospital, University of Toronto

Why hasn't this wound healed over the years?

A 58-year-old male with a seven-year history of non-healing lower leg wounds presented to our wound care centre. As a child, he had been successfully treated with radiation therapy to his lower legs for recurring furuncles. He went on to have no further issues with his legs until a traumatic injury at age 51 led to multiple wounds on his left leg that extended to the bone. At the time of presentation, his current illnesses included type 2 diabetes, hypertension, hypercholesterolemia, hypothyroidism and palmer/plantar psoriasis. These conditions were well controlled with an oral anti-hyperglycemic, valsartan, fenofibrate, rosuvastatin and levothyroxine. For his psoriasis, he had been on acitretin 50 mg daily, taken orally, for the last 17 years.

The patient's left leg wounds were treated with a variety of topical dressings, leg compression and occasional oral anti-

biotics prior to his attending our clinic. Unfortunately, the traumatic injuries sustained on his left leg improved but never fully healed.

Previous Treatment

For his wound care, he had been receiving home-care nursing services twice weekly for seven years. His wounds were considered to be non-healable due to the previous radiation treatments.^{1,2}

Known late effects of radiation may include skin atrophy, dryness, telangiectasia, dyschromia, dyspigmentation, fibrosis and ulcers.³ He presented with discoloration, skin atrophy, dry skin and wounds on the left leg where the radiation had taken place (Figure 1). His legs also showed signs of venous stasis disease, with some edema and varicosities. A biopsy of the wound was performed and confirmed venous stasis and venous stasis dermatitis showing clusters of vessels



Figure 1: Initial presentation of wounds (left anterior shin). Discolouration had been present for years and attributed to the prior radiation. The skin was atrophied with the presence of multiple superficial ulcers.

lined with plump endothelial cells, hemorrhage and hemosiderin pigment deposition. The clinic's treatment continued for two years with topical dressings, leg compression and occasional oral antibiotics, which led to some improvements but not full healing.

Q What are the reasons for non-healing?

The previous radiation damage and venous stasis were likely contributing to the non-healing nature of this wound. However, further evaluation was needed of the factors leading to this wound not healing. After the situation was assessed, the health-care team took a closer look at his medications.

A Acitretin is a medication in the retinoid class that is used for psoriasis. There is literature suggesting possible association between systemic retinoids and poor wound healing.⁴ Studies have suggested that acitretin and other systemic retinoids can slow angiogenesis and epithelization, which are part of the proliferation stage of healing.⁴⁻⁶ At this time, his palmar and plantar psoriasis had been well controlled for years with this oral medication. A consulting dermatologist suggested discontinuation of the oral acitretin and management with topical corticosteroid creams in the event of a psoriatic flare of his hands and feet.

The Outcome

After six weeks he returned to



Figure 2: Anterior shins six months after acitretin discontinuation. Wounds on left anterior shin were now healed.

clinic with healed leg wounds. No further home-care nursing services were required. His psoriasis remains under control with the sporadic use of the clobetasol 0.05% cream to his hands and feet. Six months later (Figure 2), his wounds remained completely closed. The skin changes on his legs secondary to the radiation he had as a child are still present, but now without the presence of wounds.

The long-term use of the acitretin likely contributed as one of multiple reasons the wound

was not healing. The wound healed rapidly after the discontinuation of the acitretin. In patients with chronic non-healing wounds who are on systemic retinoids, it may be beneficial to discontinue treatment.

The social and economic burden of non-healing wounds has profound impact on the sustainability of our health-care system and the welfare of our patients.⁷ This case demonstrates the need to evaluate the patient's past medical history and current medical treatment to look for

factors that could delay wound healing⁸ as well as the need for a multidisciplinary approach for successful healing of stalled wounds. 🩹

Key Lessons

- ✓ Health-care providers must evaluate the patient's past medical history and current medical treatment to look for factors that could delay wound healing.
- ✓ An integrated approach is needed for successful healing of stalled wounds.

References

1. Gu Q, Wang D, Cui C, et al. Effects of radiation on wound healing. *J Environ Pathol Toxicol Oncol*. 1998;17(2):117–23.
2. Haubner F, Ohmann E, Pohl F, et al. Wound healing after radiation therapy: Review of the literature. *Radiat Oncol (London, England)*. 2012;7:162.
3. Hom DHV, Lee C. Irradiated skin and its postsurgical management. In: Hom H, Gosain F, editors. *Essential Tissue Healing of the Face and the Neck*. 2009. North Carolina: People's Medical Publishing House (PMPH USA). p. 224–38.
4. Gunes Bilgili S, Calka O, Akdeniz N, et al. The effects of retinoids on secondary wound healing: Biometrical and histopathological study in rats. *J Dermatolog Treat*. 2013;283–9.
5. Tan S, Tope WD. Effect of acitretin on wound healing in organ transplant recipients. *Derm Surg*. 2004;4(Pt 2):667–73.
6. Ungarelli LF, Hetem CM, Farina Junior JA. Is it safe to operate on patients taking isotretinoin? *Aesthetic Plast Surg*. 2016;40(1):139–48.
7. Sen CK, Gordillo GM, Roy S, Kirsner R, Lambert L, Hunt TK, et al. Human skin wounds: A major and snowballing threat to public health and the economy. *Wound Repair and Regeneration*. 2009;17(6):763–71.
8. Guo S, DiPietro LA. Factors affecting wound healing. *J Dent Res*. 2010;89(3):219–229.

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Research 101 is intended to make research understandable and help busy wound-care clinicians incorporate new knowledge into practice. Only by appraising new research and incorporating the best of it into practice can we ensure the wound-care field continues to move forward and improve the quality of care we provide individuals living with skin conditions.

Research 101: Wound Assessment Tools

By Pamela Houghton, PT, PhD

What Does “Validated” Mean?

A wound assessment tool is a specific part of your assessment that you use to objectively measure what is going on in the wound. Typically, using a wound assessment tool results in a score or numeric value that signifies a clinical change. But what clinical change you measure depends on how the tool was designed and validated. A wound assessment tool is distinct from a form or document that you use to guide your assessment of a patient with a wound. A comprehensive assessment should be an organized approach that includes questions and examinations that collectively help you decide the underlying cause(s) of the wound and wound etiology, the factors contributing to delayed healing and the

patient’s perspective and experience related to the wound. Using information obtained in this initial assessment, you will be able to plan an integrated, interprofessional care plan that assists the patient and helps heal the wound.

What does it mean to say, “This is a validated tool”? It means some research has been con-

So, when you’re told a tool is validated, the question you need to ask is this: “Validated to do what?”

ducted to ensure the tool measures what it is intended to measure. Recognize, however, that



there are many types of validation studies. So, when you're told a tool is validated, the question you need to ask is this: "Validated to do what?"

Three common properties that are tested in validation studies are *reliability*, *validity* and *responsiveness*. Consult a previous review I have written to see formal definitions of each of these clinometric properties of assessment tools.¹

Reliability

Reliability is a property indicating that values you get when using the tool are reproducible. That is, you can rely on getting a similar value when repeating the measure on a wound that has not changed. Two types of reliability include *intra-rater reliability* and *interrater reliability*. If a tool is known to have good intrarater reliability, you can expect that you will get a similar value if you repeat the assessment on the same wound. If a tool has good interrater reliability, you can be sure that a similar value will be obtained if you and your colleague apply the tool to the same wound.

When you are determining the reliability of a wound assessment tool, assessments using the tool are repeated over a short time period (later that day or within a few days) when the wound status has not changed and you expect similar results. Statistical expression of agreement between and within assessors is done using correlation coefficients (i.e., intraclass correlation coefficients [ICC]) with values ranging between 0.0 and 1.0. Values closer to 1.0 indicate better reliability. Some variation in the numbers will always exist. Correlation coefficients of 0.80 or

higher are considered excellent, whereas those less than 0.50 indicate that the tool is not very reliable, or there is poor agreement.² Less agreement (lower ICC values) is expected when comparing values from two assessors (interrater reliability) than those generated by the same assessor (intrarater reliability).

In general, the more clinical judgement is involved in the assessment, the more variability between assessments and lower ICC values will exist. Consistency is key to good reliability when using wound assessment tools.

Therefore, clear instructions and adequate training in applying the tool help standardize the approach of all assessors and minimize any guesswork.

Validity

Validity refers to the accuracy of the assessment tool, and demonstrates that a tool measures what it is intended to measure. There are different types of validity including content, concurrent and predictive validity.¹

Intrarater reliability is the extent to which the same rater obtains a similar rating on subsequent testing with the same instrument, when no change has occurred.

Interrater reliability is the extent to which two or more raters obtain similar ratings when measuring the same thing using the same instrument.

Content validity is the most common type considered when developing an assessment tool. A panel of experts will confirm that the tool contains all the necessary components. To do so, they need to know the intended purpose of the tool and the type(s) of wounds it will be used to assess. The strength of this kind of validation study lies in the breadth and depth of expertise of the members of the panel.

Concurrent validity is a form of criterion-related validation and involves comparing results obtained using the new tool to an established tool commonly used in the field—or the existing “gold standard.” For example: if a tool is designed to detect wound healing (improvement), a reduction in wound surface area is often used as a surrogate gold standard. Correlation coefficients such as Pearson R or Spearman Rho are used to express the extent of the association between values generated by the new tool and those of an established one. Higher values (R between 0.8 to 1.0) demonstrate that a strong association exists between the two tests; in other words, as values derived from using the new tool increase, so do the values generated by the gold standard test.

Content validity is the extent to which an empirical measurement reflects a specific domain of content.

Criterion-related validity is the extent of relationship between the results obtained using a measuring instrument and those obtained by a well-established criterion measure, which is a more accurate measure or gold standard.

Predictive validity is a form of criterion validity in which the measurement instrument is validated against a criterion measure that is obtained in the future.

Predictive validity is quite a distinct form of validity that is not always evaluated on wound assessment tools. A validation study that indicates an assessment tool has predictive validity shows that certain values obtained when using the tool

indicate a greater likelihood that a particular event or outcome will occur in the future. A commonly used tool that allows us to predict future events is the Braden Scale for Predicting Pressure Sore Risk, where values indicate whether patients are highly likely to develop a pressure ulcer.³ The future event that most clinicians wish you could predict is complete healing of the wound.

Responsiveness

This property reflects the ability of a tool to detect a change in wound status. Tools that measure this can help you decide whether the wound is getting better or worse.¹ For a wound assessment tool to be responsive, it should contain only features that are known to change as the wound heals. Another common name for a wound assessment tool that is responsive is an *outcome measure*. Validation studies that show a tool is responsive should involve collecting data from a study group with a defined type(s) of wound and over time (e.g., four to 12 weeks). A wound assessment tool that is responsive should be able to detect a significant difference between scores obtained when the tool is applied to a group of wounds that are healing (improving) and another group that are staying the same over time. Another way to confirm a tool is responsive, or that it can detect change in wound status, is to use a tool in a controlled clinical trial with active and sham treatments and show a significant difference between values derived from each.

Responsiveness, or sensitivity to change, is the ability of a measuring instrument to detect a real change due to treatment effect occurring over time and not due to measurement error.

Unfortunately, it is common in wound care practice to use wound assessment tools that are not very sensitive to changes in wound status (i.e., they have not been shown to be responsive). If you use an assessment tool that is not designed to be responsive, you will not be able to readily detect deterioration or improvements in wound

Resources

Photodigital planimetry to evaluate changes in wound surface area

Wendelken ME, Berg WT, Lichtenstein P, et al. Wounds measured from digital photographs using photodigital planimetry software: validation and rater reliability. *Wounds*. 2011;23(9):267–75.

Acetate tracing to measure wound surface area

Etris MB, Pribble J, LaBrecque J. Evaluation of two wound measurement methods in a multi-center, controlled study. *Ostomy Wound Manage*. 1994;40(7):448.

DESIGN to assess pressure ulcer severity and monitors healing

Sanada H, Moriguchi T, Miyachi Y, et al. Reliability and validity of DESIGN, a tool that classifies pressure ulcer severity and monitors healing. *Journal of Wound Care*. 2004;13(1):13–18.

Leg Ulcer Measurement Tool (LUMT)

Woodbury MG, Keast DH, Campbell KE, et al. Leg Ulcer Measurement Tool (LUMT). Development and Validation. 2nd Annual World Union of Wound Healing Societies, Paris, France. July 8–13, 2004.

Braden Pressure Ulcer Risk Assessment tool

Braden B, Bergstrom N. Clinical utility of the Braden scale for predicting pressure sore risk. *Decubitus*. 1989;2(3):44–46, 50–51.

U of Texas Wound Classification Systems for diabetic foot ulcers

Oyibo SO, Jude EB, Tarawneh I, et al. A comparison of two diabetic foot ulcer classification systems: the Wagner and the University of Texas wound classification systems. *Diabetes Care*. 2001;24(1):84–8.

Percentage area reduction after 4 weeks (PAR-4)

Cardinal M, Eisenbud DE, Phillips T, et al. Early healing rates and wound area measurements are reliable predictors of later complete wound closure. *Wound Rep Reg*. 2008;16:19–22.

status, and you cannot be confident that you will observe when the wound is getting better or worse. It will take a large amount of change in scores on the assessment tool to indicate to you that the wound is changing or to determine if your treatment is working. This will result in delays in re-evaluation or changes to treatment.

A lot of time is spent by busy clinicians completing wound assessment that do not inform clinical decisions about treatments. Clearly, it is important to match the right tool to a particular clinical scenario.

Different Tools, Different Objectives

To determine if a validated tool suits your purposes, the first question to ask is what the tool was designed to do. In general, wound assessment tools serve one of three main purposes. While it would be nice if we had one tool to

satisfy all these objectives, this is seldom possible. Most wound assessment tools are designed with just one of the following purposes in mind:⁴

- to describe or categorize what the wound looks like (e.g., NPUAP, CEAP, Inlow)
- to evaluate whether the wound is improving or deteriorating—whether your treatment plan is working (e.g., wound surface area reduction measured using acetate tracing, DESIGN-R, LUMT)
- to predict whether the wound will change or heal at some point in the future (e.g., percentage wound area reduction in the first four weeks of treatment [PAR-4])

The Bates Jensen Wound Assessment Tool

The Bates Jensen Wound Assessment Tool (BWAT) was designed to fully describe all aspects of a wound and is commonly used in clinical practice across Canada. The BWAT represents a modifica-

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* Based on the physical properties of Hydrofiber® Technology as demonstrated *in-vitro*.^{1,2} 1. Waring MJ, Parsons D. Physico-chemical characterisation of carboxymethylated spun cellulose fibres. *Biomaterials*. 2001;22:903-912. 2. Walker M, Hobot JA, Newman GR, Bowler PG. Scanning electron microscopic examination of bacterial immobilisation in a carboxymethylcellulose (AQUACEL®) and alginate dressings. *Biomaterials*. 2003;24(5):883-890.



tion of the former Pressure Sore Status Tool (PSST) in that it can be used on more than just pressure ulcers. This 14-item tool evaluates all aspects of the wound, including per ulcer skin, granulation tissue and necrotic tissue, using a 1–5 scale and total BWAT score derived from total scores between 14 and 70, with lower scores indicating better wound appearance.⁵

The former PSST was developed with input from a large panel of experts.⁶ Validation studies indicate that in addition to having good content validity, the PSST has excellent intra- and interrater reliability when used by experienced wound-care clinicians.⁷ There are very detailed instructions for using the BWAT, and Harris and colleagues created a pictorial guide to help novice clinicians.⁸ While the BWAT is often used to detect changes in wound status, results have been mixed: significant differences in healing between groups and over time have,^{9,10} and have not^{11–12} been detected using total PSST/BWAT scores. A descriptive tool like the BWAT that is made up of numerous items is not set up to be an outcome measure. Rather, based on how the BWAT was developed and validated, it is best used for initial assessment, as a way to fully describe wound appearance at a point in time.

The Pressure Ulcer Scale for Healing

The Pressure Ulcer Scale for Healing (PUSH) was developed by the NPUAP panel and is available via their [weblink](#).¹³ An assessment with this tool can be completed in five minutes and focuses on three aspects of the wound: the amount of wound

exudate, the proportion of granulation and necrotic tissue in the wound base, and wound size as measured by a ruler placed in head-to-

toe direction. The first version of the PUSH had many more items that described all aspects of wound appearance; however, through pilot test-

The validation studies for the **PUSH** focused on the property of responsiveness, and as such this tool is the best example of a validated outcome measure for detecting wound healing over time.

Examples of Validated Tools Used in Wound Care

National Pressure Ulcer Advisory Panel (NPUAP) Pressure Injury Stages

NPUAP Pressure Injury Staging, 2016. www.npuap.org/resources/educational-and-clinical-resources/npuap-pressure-injury-stages/.

International Working Group on the Diabetic Foot (IWGDF) Risk classification system

Monteiro-Soares M, Boyko EJ, Ribeiro J, et al. Risk stratification systems for diabetic foot ulcers: a systematic review. *Diabetologia*. 2011;54(5):1190–1199.

The Clinical-Etiological-Anatomical-Pathological (CEAP) classification system for people with Chronic Venous Insufficiency (CVI)

Kistner RL, Eklof B, Masuda EM. Diagnosis of chronic venous disease of the lower extremities: The “CEAP” classification. *Mayo Clin Proc*. 1996;7:338–345.

Eklof B, Tutherford RB, Bergan JJ, et al. Revision of the CEAP classification for chronic venous disorders: Consensus statement. *J Vasc Surg*. 2004;40:1248–1252.

ing, during which the PUSH tool was applied to a group of patients’ wounds over time, most items were found to not change as the wound healed, and therefore were eliminated.¹⁴ While the PUSH was originally designed to measure healing of pressure ulcers, it has been shown to effectively detect wound healing in other types of wounds.¹⁵

Photography Wound Assessment Tool

The Photographic Wound Assessment Tool (PWAT) was originally created by taking six components of the PSST that could be evaluated using a two-dimensional wound photograph.¹⁶ It was later revised to have eight items with a total PWAT score of zero indicating a completely healed wound.¹⁷ A validation study involving images taken from more than 300 wounds showed that the latest version of

the PWAT has excellent intra-reliability and good interrater reliability, provided assessors had completed one to two hours of training and followed

The **PWAT** is available online¹⁹ and is ideal if wound-care consultants are using digital images to help frontline clinicians identify changes in wound status and determine if wound treatments are working.

instructions consistently.¹⁷ Excellent agreement also has been shown between PWAT scores derived using digital wound images and those

from bedside assessments.¹⁷ Total PWAT scores have been shown to progressively decrease as the wound heals and have been used in clinical trials to detect changes in wound appearance over time and significant differences between control and active treatment groups.¹⁸

Table 1: Validity of Common Tools

	Content Validity	Reliability	Responsiveness
BWAT	X	X	
PUSH	X		X
PWAT		X	X

X indicates positive results from validation studies.

Conclusion

This article is intended to help clinicians recognize that research studies are designed to validate different aspects of a wound assessment tool. With the right knowledge and training, clinicians will use the right tool for the right purpose in each situation. 📌

References

1. Woodbury MG, Houghton PE, Campbell KE, et al. Pressure ulcer assessment instruments: A critical appraisal. *Ostomy Wound Manag.* 1999;45(5):42–55.
2. Shrout PE, Fleiss JL. Intraclass correlations: Uses in assessing rater reliability. *Psychol Bull.* 1979;86(2):420–8.
3. Braden B, Bergstrom N. Clinical utility of the Braden scale for predicting pressure sore risk. *Decubitus.* 1989;2(3):44–46, 50–51.
4. Kirshner B, Guyatt G. A methodological framework for assessing indices. *J Chron Dis.* 1985;38(1):27–36.
5. Bates-Jensen BM, Sussman C. Chapter 6. Tools to measure wound healing. In: Sussman C, Bates-Jensen BM, editors. *Wound Care: A Collaborative Practice Manual for Physical Therapists and Nurses.* 2nd ed. Philadelphia: Lippincott Williams & Wilkins, Philadelphia; 2001. p. 131–172.
6. Bates-Jensen B. New pressure ulcer status tool. *Decubitus.* 1990;3(3):14–5.
7. Bates-Jensen BM, Vredevoe DL, Brecht ML. Validity and reliability of the pressure sore status tool. *Decubitus.* 1992;5(6):20–8.
8. Harris C, Bates-Jensen B, Parslow N, et al. Bates-Jensen wound assessment tool: Pictorial guide validation project. *J Wound Ostomy Continence Nurs.* 2010;37(3):253–9.
9. Bellingeri A, Falciani F, Traspardini P, et al. Effect of a wound cleansing solution on wound bed preparation and inflammation in chronic wounds: A single-blind RCT. *J Wound Care.* 2016;25(3):160, 162–6, 168.
10. McCallon SK, Frilot C. A retrospective study of the effects of clostridial collagenase ointment and negative pressure wound therapy for the treatment of chronic pressure ulcers. *Wounds.* 2015;27(3):44–53.
11. Houghton P, Campbell KE, Fraser C, et al. Electrical stimulation therapy increases healing of pressure ulcers in community dwelling people with spinal cord injury. *Arch Phys Med Rehabil.* 2010;91(5):669–678.
12. Gardner SE, Frantz RA, Bergquist S, et al. A prospective study of the pressure ulcer scale for healing (PUSH). *J Gerontol A Biol Sci Med Sci.* 2005;60A(1):93–7.
13. PUSH Tool 3.0 (web version). National Pressure Ulcer Advisory Panel. Available from: www.npuap.org/resources/educational-and-clinical-resources/push-tool/push-tool.
14. Thomas DR, Rodeheaver GT, Bartolucci AA, et al. Pressure ulcer scale for healing: Derivation and validation of the PUSH tool. *Adv Skin Wound Care.* 1997;10(5):96–101.
15. Hon J, Lagden K, McLaren AM, et al. A prospective, multi-centre study to validate use of pressure ulcer scale for healing (PUSH©) in patients with diabetic, venous, and pressure ulcers. *Ostomy Wound Manag.* 2010;56(2):26–36.
16. Houghton PE, Kincaid CB, Campbell KE, et al. Photographic assessment of the appearance of chronic pressure and leg ulcers [Original PWAT]. *Ostomy Wound Manag.* 2000;46(4):20–30.
17. Thompson N, Gordey L, Bowles H, et al. Reliability and validity of the revised Photographic Wound Assessment Tool (revPWAT©) on digital images taken of various types of chronic wounds. *Adv Skin Wound Care.* 2013;26:360–74.
18. Murphy C, Houghton P, Brandys T, et al. The effect of 22.5 kHz low-frequency contact ultrasound debridement on lower extremity wound healing for a vascular surgery population: A randomized controlled trial. *Int Wound J.* 2018;15:460–472.
19. Photographic Wound Assessment Tool. 2013. Available from: <http://estim4wounds.ca/wp-content/uploads/2013-Revised-PWAT-drop-down-menu.pdf>.

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Words Matter

How to Write Great Session Summaries and Speaker Biographies

By John Gregory, IIWCC

When speakers present information at conferences, they are asked to supply a summary of their session and a biography highlighting their academic and work-related experience. Summaries appear in the conference syllabus or app to help attendees select the sessions they will attend. This article outlines the elements required for each, and provides tips to improve their quality.

Session Summaries

Summaries generally list the title, learning objectives, summary and references for an individual session. Each organization will have its specific requirements, usually found in the speaker infor-

mation package. If such guidelines aren't provided, you can request them.

Tips for an Excellent Session Summary

- Be prepared to invest time in creating an effective summary.
- Read the instructions provided by the hosting organization so you know what elements to include and what length the summary should be.
- List two to four learning objectives. Read Bloom's taxonomy of learning objectives and use the recommended terms.
- Write abbreviations out in full on first use, followed by the abbreviation in brackets, e.g., Registered Nurses' Association of Ontario (RNAO).



- Use available tools to sharpen the grammar and spelling. Online options include Hemingway Editor and Grammarly. Both are free.
- Pay attention to readability measures (expanded below).
- Ensure punctuation is consistent. Don't overcapitalize. The brain interprets lowercase faster than upper case, so use capital letters judiciously.
- After writing your summary, check it thoroughly for content, grammar and flow: First, read it out loud to yourself, then, read it out loud to someone else, and then ask another person to read it and comment.

Clinical Referencing Styles

Reference styles follow established conventions. If the speaker information package indicates which style to use, make sure you follow it. If no style is indicated, choose a style that is common in your field or one that is used by the association inviting you to speak. Avoid a hodge-podge: references will come from various sources, but your

goal should be to present them in a single style.

The most common reference styles in health care are the following:

- Wounds Canada uses the Vancouver Style, with a single modification: uppercase letter following a colon in an article title.
- The United States National Library of Medicine – Citing Medicine style is used by PubMed/MEDLINE.
- Harvard Referencing: This is an abbreviated author–date parenthesis referencing system.

Use recognized abbreviations of any journal cited: e.g., *Int Wound J* for *International Wound Journal*.

Speaker Biographies

Speakers would do well to invest time in crafting their biographies. For any conference, the standard of biographies submitted varies considerably.



Tips for an Excellent Speaker Biography

The advice for session summaries above generally applies here as well. In addition, consider the following:

- Write in the third person. “Dr. Jones . . . Her research interests . . .”
- Remove superfluous words, e.g., *current*.
- Order information by priority, not chronologically, for those that only read the first couple of sentences. Is the most crucial facet about you which school you graduated from 20 years ago or how you contribute to wound care today?
- Ensure that your qualifications/credentials are referenced correctly. There are conventions regarding what titles should appear before someone’s name and what qualifications should appear following the name.
- There is an apostrophe in *master’s degree*, but you earn, for example, a Master in Nursing.

Readability Tests and Tools for Summaries and Biographies

Rudolf Flesch and J. Peter Kincaid have authored much of the research on readability. Their tests, which are included in Microsoft Word, indicate levels of difficulty in English language comprehension. Other readability tools are available as well.

- Flesch Reading Ease: The higher the score, the easier the content is to read.
- Flesch–Kincaid Grade Level: The score is the U.S. grade

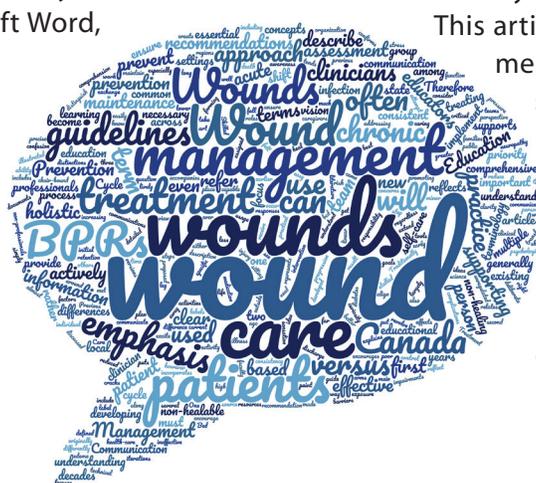
level required to understand the text.

- Hemingway Editor grade readability: Algorithms are built on the parameters of the above researchers and others. It indicates the U.S. grade level required to understand a particular text.
- Grammarly: This invaluable writing app finds and corrects mistakes in all your online written content. I use it on every piece of content I publish.
- Yoast SEO Content Analysis: This is a popular WordPress plugin for websites.

Plain English is language considered comprehensible to grades 8 to 9. Keep editing your summary or biography content until you are down to at least a grade 10 to 11 level. Post-collegiate grade level readability scores are not acceptable even for scientific congresses. They are considered a mark of poor writing. The brain reads plain English faster than it does higher readability grades. As Mark Twain is credited as saying: “Don’t use a five-dollar word when a fifty-cent word will do.”

Note: Not all the tools and scores are consistent. I use many tools for each piece of content.

This article is a grade level 8, which means it is plain English and should be understood by 13- to 15-year-old students. 📖



John Gregory edits the syllabus for the Wounds Canada conference. You can find him on Twitter @gregiej and @opencityinc.

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