

Wound Care

C A N A D A

FALL 2021
VOL. 19 NO. 2



THE OFFICIAL PUBLICATION OF WOUNDS CANADA



**Focus on Patients:
Patient Empowerment:
Is it yours to give?
A Family's Story:
Heartache, Helplessness and
Hope for the Future**

BONUS CONTENT!

Highlights from Wounds Canada's Fall Conference:

**Session Summaries and
Presentation Digests**

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Wounds Canada (www.woundscanada.ca) is a non-profit organization of health-care professionals, industry participants, patients and care partners 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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News in Wound Care

National Conference: October 21–24, 2021

Wounds Canada's National Conference, including the day-long French Symposium, was another huge success for Wounds Canada and everyone in the Canadian wound care community. We were proud to offer 31 sessions in English and 11 in French to a total of 1390 delegates. As always, we were happy to see a diverse range of participants from industry and across multiple health-provider roles, including nurses, physicians, wound care specialists and foot specialists. We had a total of 8890 visits to our virtual Exhibit Hall, and were

thrilled to see participants from across Canada join us, along with representation from 15 countries internationally.

Throughout the conference, our community of co-chairs, moderators, and speakers emphasized the importance of recognizing systemic barriers faced by marginalized populations and addressing health-care inequity in the delivery of wound care. Our slate of empathetic and knowledgeable panellists urged us to treat the patient, not just the wound, and

to look closely to see what barriers our patients may be facing. How can we empower patients and encourage their decision-making and autonomy? How can we gain their trust? How can we inspire a system-wide change in our health-care systems?

Our panellists inspired us by introducing our community to new treatments, technology and approaches to improve the quality of life for people living with or at risk for wounds.

We were pleased to have the opportunity to present 36 posters highlighting new and exciting research in our Poster Hall.

Our fully virtual conference platform provided innovative ways for participants to network in the lounge, win prizes through a trivia quiz and other fun challenges, and review the latest technology and products in the Exhibit Hall.

We were thrilled to see so many photos of participants (and their dogs!) in our virtual photo booth.

The enthusiasm and dedication of the wound care community was palpable throughout the event. Dialogue was sparked and connections were made in the panel discussions and sessions (those Q&A chat boxes were on fire!), virtual networking lounge and on social media (#EndWounds #ProtectSkin #WoundsCanada2021).

Thanks to our conference co-chairs Idevana Costa, Ranjani Somayaji, Maryse Beaumier and Jérôme Patry for their leadership and inspiration.

We'd also like to thank the members of the Scientific Planning Committee and the accreditation team for making this a successful and informative event:

- Greg Archibald
- Maryse Beaumier
- Julien Bernatchez
- Yoan Blondeau
- Mariam Botros
- Idevania Costa
- Corey Heerschap
- Louise Forest-Lalande
- Crystal McCallum
- Deirdre O'Sullivan-Drombolis
- Elizabeth Parfitt
- François Paquet
- Jérôme Patry
- Isabelle Reeves
- Ranjani Somayaji
- Suzanne Stewart
- Maria Weatherbee



Fall 2021

Virtual
Conference

Poster Abstract Reviewers		Poster Judges	
Crystal McCallum, <i>Team Lead</i>	Rebecca Dyck	Deborah Mings	Laura Teague, <i>Team Lead</i>
Nicola Bartley	Sébastien Hains	Sukaina Muhammad	Maryse Beaumier
Maryse Beaumier	Jolene Heil	Christine Murphy	Megan Brittain
Stephanie Berger	Marc Jeschke	Deirdre O'Sullivan-	Stephanie Chadwick
Megan Brittain	Nicholas Joachimides	Drombolis	Susan Chandler
Jillian Brooke	Shauna Kadavil	Anthony Papp	Jolene Heil
Magali Brousseau-Foley	Kimberly Lacey	Kelly Sair	Marc Jeschke
Karen Bruton	Kimberly LeBlanc	Omar Selim	Suzanne Lu
Stephanie Chadwick	Susanne Lu	Ruth Thompson	Deirdre O'Sullivan-
Susan Chandler	Jane McSwiggan	Eliot To	Drombolis
Sunita Coelho	Marie-Philippe Mercier	Marlene Varga	Kelly Sair
			Omar Selim
			Marlene Varga

Thank you to the poster abstract reviewers, poster judges and team leads for their expertise and hard work, and to education co-ordinator Tobi Mark for the huge effort in logistical support related to the academic programming.

Pressure Injury Symposium: November 18, 2021

New this year is our **Pressure Injury Symposium**, held on November 18, 2021. This one-day symposium had an outstanding line-up of international and national experts on topics such as:

- Living with a Pressure Injury: The Patient's Voice
- Community Care of Pressure Injuries
- Contentious Topics in Pressure Injury Care
- A Sustainable System of Care: Lessons Learned

Research

Research is a key pillar of the Wounds Canada strategy, informing the work of our other areas of focus:

Missed out on an online event?

If you were unable to attend any of our events this year, there is still time to register for access to recordings of the sessions. Head over to our conference platform to sign up today!

education, advocacy and awareness. The Wounds Canada approach to research is to ensure that it also establishes collaborative research networks in the areas of skin and wound care. The collaborative project with Cape Breton University on the impact of COVID on the delivery of wound care, which has been underway for some time, has published preliminary results and will be wrapping up soon.

Projects begun in 2021 include:

The Diabetic Footcare Facebook Group Study

Wounds Canada collaborated with researchers from Queen's University to conduct a research study exploring the feasibility of using social media to engage persons with diabetes in preventing foot ulcers.

Participants randomized to the experimental group were invited to join a virtual community through a private Facebook group. These participants received ongoing education based on incorporating core components of Wounds Canada's Diabetes, Healthy Feet and You program. A trained peer leader, also living with diabetes, co-moderated the Facebook group alongside the principal investigator to help participants problem solve and identify realistic goals.

This study has now concluded, and we invite people living with diabetes to join the open Facebook group to access many resources and to serve as a support network to help prevent diabetic foot ulcers. For more information, email info@woundscanada.ca.



Collaboration with Cape Breton U and SCI Ontario

This research aims to determine how the delivery of care to individuals living with pressure injuries and/or with spinal cord injury has changed during the pandemic. We will survey participants (three times over 12 months) about how they have adapted to changes to access, prevention, assessment, treatment and management in relation to their skin and wound care needs. The study aims to provide practical evidence to Wounds Canada and Spinal Cord Injury Ontario as it continues to support clinicians through educational activities and the delivery of informational resources.

Patients' Voices, Stories and Journeys of Navigating Social Life while Having and Managing Complex Wounds: A Knowledge Mobilization Project

"Patients' Voices, Stories and Journeys" project is a collaborative project between Lakehead University and Wounds Canada focused on gathering and disseminating individuals' and families' video stories about balancing everyday life while living with complex wounds. See page 34 for a full description of this important research project.

Advocacy and Awareness

Government Outreach

At Wound Canada, we are continually advocating for a better future for people living with or at risk of wounds. We do this in multiple ways. We:

- Ask governments across Canada to make wound prevention and management a priority
- Bring awareness to decision makers about the burden of wounds in Canada and how they might improve access to care and reduce costs
- Encourage the provinces to provide funding to support access to our **SHARP** program for their health-care professionals
- Inform governments about and encourage them to distribute our free resources, such as our extremely popular **Care at Home** series

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Wounds Canada Programs for Unregulated Care Providers

In the *Programs for Unregulated Care Providers* students will explore common conditions, including pressure injuries, diabetic peripheral neuropathy, moisture-associated skin damage and venous leg edema, as well as learn about factors that increase a person's risk of skin damage and methods to reduce risk and treat minor wounds should they occur.

These programs are designed for unregulated care providers, such as personal support workers, health-care aides, home support workers, personal care attendants, and even family members looking after vulnerable loved ones.



Addressing the Full Spectrum of Skin Health with the SHARP Program

Crystal McCallum, Wounds Canada's Director of Education, developed and launched the *SHARP (Skin Health Advocate and Resource Professional) Super Program #1* in collaboration with phys-

ician lead Robyn Evans after identifying gaps in the educational opportunities for health-care professionals. The program includes 23 interactive modules, eight synchronous webinars, two robust outcome measures and access to a discussion forum with the program faculty. The full spectrum of skin health is addressed through topics such as skin anatomy and physiology, the Wound

Prevention and Management Cycle, local wound care and the prevention and management of common wound types. The ultimate goal of SHARP, according to McCallum, is "in the long run, to have more clinicians who are experts on the front lines of wound care."



Care at Home Book

The feedback we received on turning our *Foundations of Best Practice for Skin and Wound Management* and *BPR Briefs* into eBooks has been extremely positive, so we decided to give another favourite resource—the Care at Home series—the same treatment. Soon, all our valued Care at Home resources will be available in two easy-to-read documents (one each in English and French). Look for it soon in our *eBoutique!*

Social Media Awareness Campaigns

In November we joined the global community on World Diabetes Day (November 14) to raise awareness about preventable lower limb amputations due to diabetes and celebrated Stop Pressure Injury Day (November 19) by launching a social media campaign and highlighting Wounds Canada's Pressure Injury Symposium.

Scholarships and Grants

Congratulations to all our educational *scholarship* and research *grant* winners for 2021. The scholarships and grants were provided by our charity arm (Wounds Canada Foundation). Wounds Canada board member Irmajean Bajnok announced the recipients at the closing ceremony of our #WoundsCanada2021 National Conference.

Congratulations to:

- Holly Calliou, BScN, Home Care Coordinator at Enoch Cree Nation: Indigenous Health-care Professional Scholarship
- Sacha-Gay Forbes, an RN(NP) from Saskatoon: Morty Eisenberg Scholarship
- Peter Tsang, a chiropodist at South Riverdale Community Health Centre in Toronto: Advanced Education Scholarship
- Barbara Hill, who operates a footcare clinic in Grenville, Quebec: Unregulated Care Provider Scholarship

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- Sharon Gabison: Wounds Canada Open Grant
- Virginie Blanchette: Pamela E Houghton Grant

To help us continue this important work, please consider donating to the [Wounds Canada Foundation](#). Through your generous donation, we will be able to continue to bring awareness of wounds to the forefront of health care and patient self-management.

Leadership Program

New in 2021, Wounds Canada's [Leadership Initiative](#) was designed to bring together leaders from across Canada to explore what it means to exercise leadership within the field of wound care. This experiential learning journey is a unique opportunity for wound care leaders to learn from and with one another. Participants—including wound care practitioners, administrators, scholars, patients and community advocates—meet to reflect on and share stories from their own lived experience while

bridging research and practice through the review and application of current literature.

This innovative program uses a hybrid learning model consisting of synchronous virtual gatherings and asynchronous virtual discussion board forums. Through these mediums, participants are immersed in a learning community in which new insights, understanding and applications surrounding leadership in today's landscape are co-created.

Through this initiative we aim to inspire:

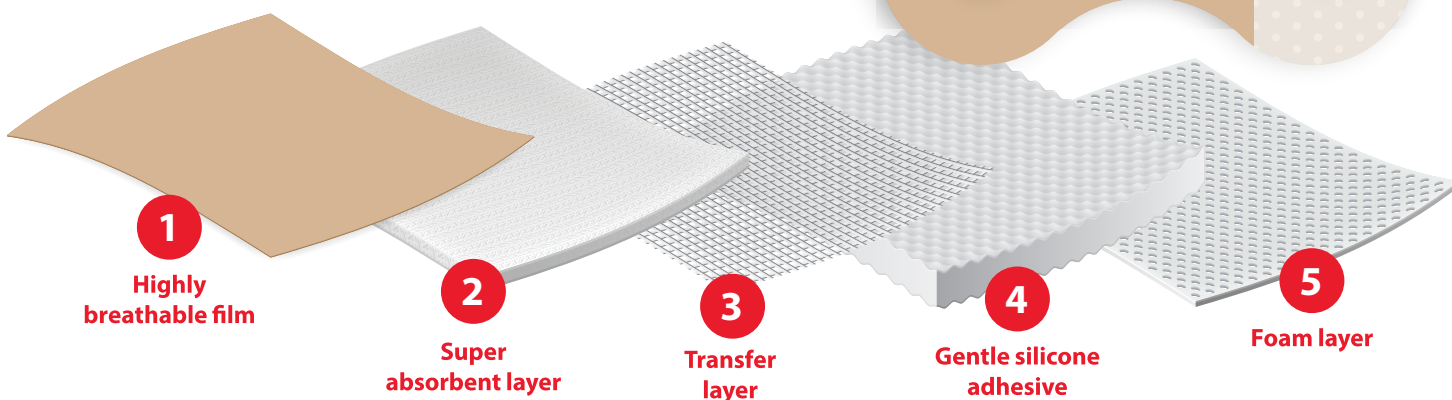
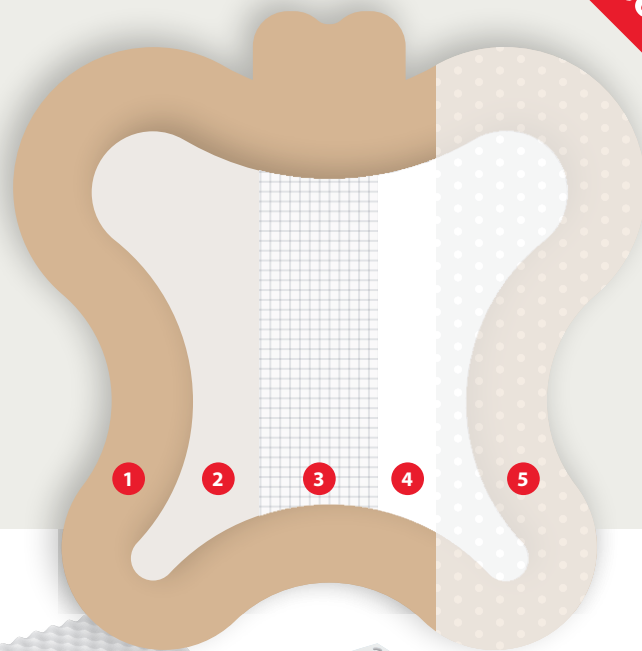
- Personal growth through reflection, dialogue and shared leadership
- Connection to a learning community and network of support through synchronous and asynchronous engagement
- Systematic change as new models of leadership are co-created and applied across wound care

To learn more about this initiative, please contact Heather Ibbetson, Project Co-ordinator at heather.ibbetson@woundscanada.ca. 🇨🇦

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References:

1. Padula WV. Effectiveness and Value of Prophylactic 5-Layer Foam Sacral Dressings to Prevent Hospital-Acquired Pressure Injuries in Acute Care Hospitals: An Observational Cohort Study. *J Wound Ostomy Continence Nurs.* 2017;44(5):413-419.
2. Data on file. Cardinal Health, 2021.

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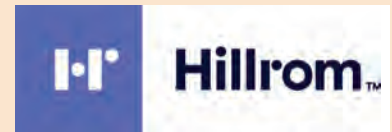
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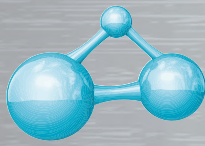
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It's About the Whole Patient, Not the Hole in the Patient

The central focus of a patient's care should be the patient themselves—their general health, experience, abilities, resources, environments, social networks and more. At baseline, plans of care must take all of these into account if they are to be successful. Wounds Canada's Best Practice Recommendation documents (BPRs) are built on the fundamental principle that wound care is, first and foremost, whole patient care. The BPRs emphasize, as illustrated by the Wound Prevention and Management Cycle, the requirement to incorporate holistic, patient-centred aspects of care that focus on each individual patient's needs. This approach does more than improve the chances for patient "buy-in" to any care plan. It helps to ensure any care plan can be carried out once the patient is at home, work, school or carrying on with their lives.

This holistic approach is a basic tenet of the Wounds Canada philosophy and is supported by the organization in multiple ways:

- **Education:** Conference session topics and structure, resources (including the articles in this issue listed in the box), Wounds Canada Institute programs, a patient and caregiver symposium scheduled for 2022
- **Research:** Particularly with new projects (e.g., article listed in box)

- **Advocacy:** Partnering with patients and family members to advocate to decision makers, enabling us to show the true impact of being at risk of developing or living with a wound
- **Public Awareness:** Expanding significantly to grow the community via social media campaigns, resources aimed at all our audiences and allowing patients to tell their stories via videos, articles and testimonials
- **Direct Engagement:** The make-up of our leadership program and various committees – includes patients and care partners to gain important perspectives and provide a means to be an active part of the community

Wounds Canada's aim is to support a vision of health for all Canadians. We do this by showcasing patient and family journeys; providing clinicians with opportunities for learning about the importance of the patient perspective; creating supportive resources and making them available to all; advocating on behalf of the entire wound community; increasing the awareness of all Canadians about wounds, their impact, and how to prevent and manage them; and working to make wounds a health-care priority across the country. Together, using this approach, we can improve the lives of all Canadians with wounds or at risk for wounds.

Go Deeper

Several articles in this issue have a significant patient focus or provide a patient/family perspective:

- **Patient Stories: What if the family had known more?** (p. 16): a poignant picture of one family's journey through a health-care system
- **Empowerment for Your Patients: Is it yours to give?** (p. 24): a look into a topic that's on everyone's mind—but is it being practised?
- **Patients' Voices, Stories and Journeys of Navigating Social Life while Having and Managing Complex Wounds: A Knowledge Mobilization Project** (p. 34): an overview of an important research project focusing on the experiences of patients and their families as they address health challenges
- **Wounds Sleuths** (pp. 36 and 39): both highlight the need to look deeper, especially with patients who have complex life circumstances that can impact wound development and healing
- **Conference session summaries:**
 - **The Role of Mental Health in Managing Wounds** (p. 44): important aspects to wound management that patients and clinicians alike need to consider
 - **The Continuum of Care: Improving Transitions of Patients with Wounds** (p. 46): how patients are impacted when they move from one care setting to another
 - **Improving Equitable Access to Quality Wound Prevention and Care in Canada** (p. 51): provides several case studies to illustrate the different challenges patients face in obtaining the care they need to be healthy



What if the family had known more?

By Heather Ibbetson, BN BA and Linda Moss

For Linda Moss, the 92.1 FM radio station in Southern Ontario holds a special meaning; it was one of her father's favourite channels. When her dad, Bob Wilson, became hospitalized, she brought a radio to the hospital so he could listen to his station. The radio covered up the loud noises from the medical machines and provided a better healing environment. While driving home from work, she would listen to the radio and know her dad was listening too. Today, listening to the station reminds her of her dad and of the patients and families across Canada who are coping with pressure injuries—and it encourages her to continue the advocacy journey that arose from her love for her dad.

Well-documented practices exist to detect and prevent the development of pressure injuries. Unfortunately, this information is often not passed along to people who could help patients. Frequent turning, appropriate surfaces, a healthy diet and proper skin protection are all important factors. But for fam-

ilies such as Bob Wilson's, these factors often go undiscussed and unaddressed when health professionals are focused only on treating a primary health issue. Bob Wilson's family did not learn about the risks related to pressure injury until it was too late.

Bob Wilson was a devoted father and grandfather. He loved to spend time with his daugh-

ne another. Have long talks and take long
his hugs. He is always there for her when



him to give
Help her
hard times
feel
and safe.

ters, was active in several recreational sports and enjoyed vacationing in Florida. After sustaining a brain injury when falling down the stairs taking out the recycling, Wilson had successful neurosurgery and was then transferred to a second hospital for rehabilitation. For months, his family was notified only about his neurological progress, the primary reason for his hospitalization.

One day, the family noticed a nurse preparing for a dressing change and asked what was going on. They were told that Wilson was beginning to develop a wound, and that it was approximately the size of a toonie. The family was reassured that the health-care team was taking care of it and so focused their attention back on his brain injury. This was a missed opportunity to educate the family about the dangers of pressure injury and have them participate in the care plan.

The family did not hear about the wound again until Wilson was transferred back to the first hospital for a skin flap procedure. After he had been transferred, his family was notified that he was both septic and emaciated. They were called into



Figure 1: Image of Bob Wilson's unstageable pressure injury from the surgeon's phone

a meeting. According to Moss, “the surgeon told us that the surgery was now cancelled and she showed us a picture of the pressure injury she took from her cell phone” (see Figure 1).

Moss and her family felt shock and heartbreak. The family had been grateful early on for the care Wilson received at the second hospital but could not understand why they were not notified about the growing severity of the wound until he had been transferred.

While the health-care team implemented different treatment plans, the wound continued to deteriorate. After a month back at the first hospital, Wilson and his family learned that the ulcer had progressed into bone and bloodstream, causing osteomyelitis. Shortly after, his family learned there was nothing else the health-care team could do aside from palliative care.

“Wounds are a silent killer . . . and as his daughters, we weren’t going to look under the sheets.”

—Linda Moss

Sharing Their Story

Moss and her family decided to speak up after seeing the picture on the surgeon’s phone. They felt like they needed to share Wilson’s story and educate others. Moss and her family continue to hope their story will prevent another family from going through the shock and heartbreak they



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Figure 2: The pressure injury following debridement. The wound had started to improve, but at this point it was too late.

did. They also made the decision to share the photograph of his wound. The photo was highly impactful and went viral online. The devastating reality of the photo has helped others understand the severity of pressure injuries and the importance of acting to ensure something like this never happens again.

For Families

Moss has connected with families across the country who are going through a similar journey. She has created a Facebook social media page called Wound Care Aware to help provide information and support. Participating in these spaces allows families to express their feelings and find support. She has also been an advocate for various committees, public speaking events and webinars, and she recommends that other families become involved too. These activities provide a means to raise awareness and promote self-healing.

Moss encourages families to:

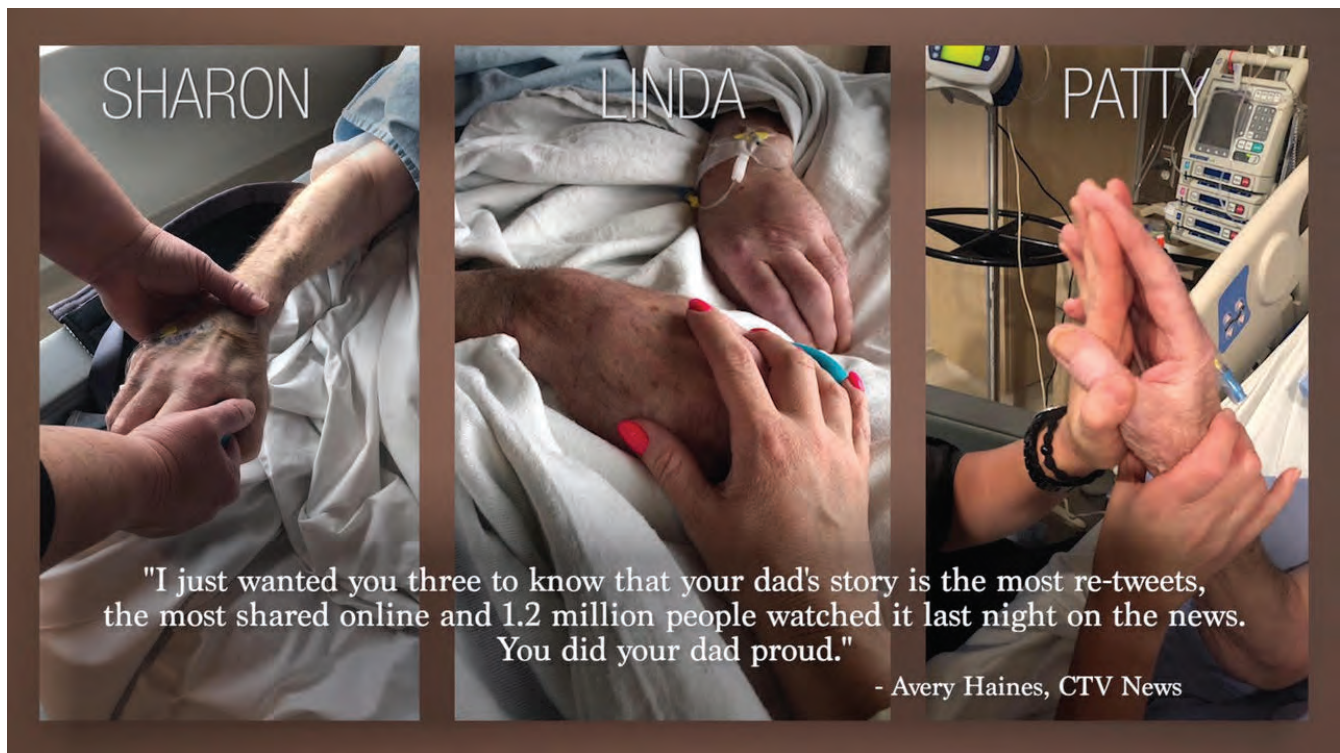
- Ask questions and become a part of care planning. From firsthand experience, she understands that families want to help but may not

know how to get involved or may feel they may get in the way.

- Be present, when possible, when physicians are making rounds. It can be difficult to get time with the physician, but families should not be afraid to request a meeting or ask questions.

“It hit us like a hammer . . . We were there every day and some days for five or six hours a day. We were told the bed was moving him, and we rarely saw him being turned. We could have helped turn him. When I think about the times when he held my hand really hard, or when a tear came down, was that his way of telling us something was wrong? He couldn’t talk. We were his voice but we were unaware what was festering under those sheets. This is something our family will live with—and it haunts us.”

- Ask about medications or treatment, and document everything. The health-care team may not be able to disclose everything, but it is important to ask anyway.
- Find an advocate, if one is available, at the hospital. Patient and family advocates can help



bridge the gap between the family and health-care team.

- Remember that Communication, Comfort, Companionship and Champions are essential in Care.

For Health-care Professionals

Moss emphasizes that the staff were kind and professional during their interactions with her and her family. However, the prospect of a deteriorating pressure injury was never mentioned. When reflecting on her interactions with the health-care team, she has some suggestions that may ensure families are better informed.

- Present information to patients and families upon admission on associated risks to hospitalized patients for conditions such as pressure injuries. This information can help prepare and guide patients and families during hospitalization.
- Share with patients and families on a timely basis information on the patient's current health status, including primary and secondary concerns. In Wilson's case, it appeared that each health-care professional assumed another per-

son had or would inform his family about the wound. It is important to reach out to family members, when appropriate, and provide them with a full understanding of the situation. Barriers to information sharing can be challenging for health-care professionals to navigate, so it is important to understand what can and

"The most painful thing was watching him pass away in front of us and knowing that we didn't have a chance to try and save his life."

cannot be communicated. Health-care professionals should also advocate for policies that are inclusive of families.

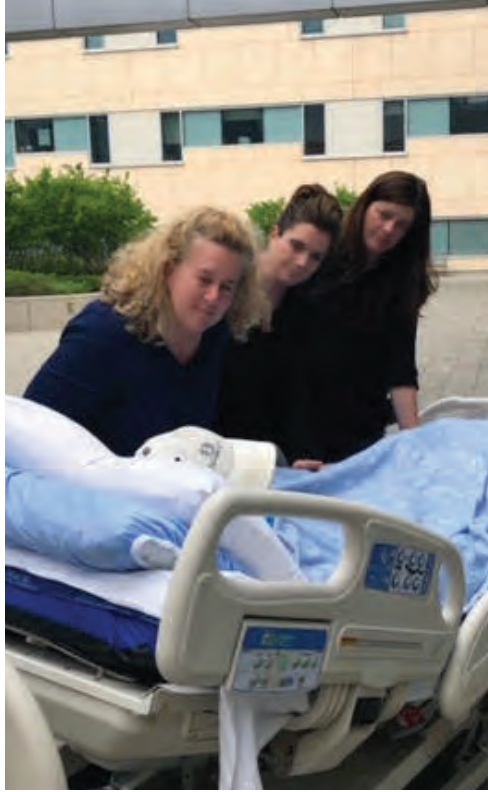
- Provide the family with care-related tasks to help reduce the workload of health-care professionals. Families often want to help but feel

unsure of how. In Wilson's case, he could not speak or press his call bell. His family would assist with providing whatever he needed, such as warm blankets and entertainment. Moss and her family were present each day and could have done more had they been taught what they could do and how to do it, such as help turn her dad and attend to his other needs. She notes that families do not require a complex understanding of the situation to participate in the care. Explaining broad concepts is enough.

- Include families in the care planning process. At minimum, families should be notified of the care plan upon the first week of admission.
- Refer patients and families to advocates and social resources. These resources can help families navigate the health-care system and improve their health literacy. This could be included during onboarding.
- Facilitate transparent and effective communication so health-care professionals and families can work together on creating and implementing a care plan to benefit the patient.

For Policy Makers

The prevention and treatment of pressure injuries requires change at all levels, and governments and policy makers are essential change agents. Moss and her family noticed drastic differences between hospitals regarding the protocols and procedures for pressure injuries. One hospital made sure that Wilson was constantly on an incline to reduce the risk of aspiration; however, this position also limited his ability to be turned and added more pressure to the wound. Another hospital followed a position-rotating schedule to ensure that the pressure was redistributed away from the wound.



After seeing these differences, Moss recommends that:

- Standardized pressure injury prevention and treatment based on best practice must be implemented in all settings and supported by policy.
- Each hospital and long-term care facility should have a wound specialist available along with a visible pressure ulcer prevention chart.

After Wilson's story appeared in various media outlets, the second hospital hired onsite wound care spe-

cialists. But it shouldn't have taken a story like Wilson's to spur the needed changes.

Just as 92.1 FM reminds Moss of her father, we must also be reminded that we each have a role to play in preventing potentially fatal pressure injuries. Families, health-care professionals and policy makers can all work to achieve better outcomes for at-risk patients. Linda Moss and her family continue to advocate for Bob Wilson and other at-risk individuals, raise awareness and heal. 🩹

Linda Moss participated in a discussion panel for Canadian Patient Safety Week in late October 2021. This year's theme was about patient engagement and partnerships for safety, with a focus on essential care partner programs. There is clear evidence that the presence of essential care partners benefits care, experiences, safety and outcomes. Guidance and evidence about essential care partners will be shared with health policy implementers, patients and essential care partners to make this process better understood.

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#StopPressureInjuries



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*Il est difficile de
gérer ce que l'on
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Empowerment for Your Patients: Is it yours to give?

By Mariam Botros, DCh DE IIWCC MEd; Janet L. Kuhnke, RN BA BScN MS NSWOC DrPsychology; Idevania Costa, RN NSWOC PhD; and Virginie Blanchette, Biomed DPM MSc PhD

As clinicians we sometimes struggle with the concept of empowerment, often feeling it is something we give to someone. The reality is empowerment is what the other person feels about their place within an environment. We can assist others by removing barriers, providing knowledge and coaching them so they discover and feel confident in their power to engage and have appropriate control over their situation. When individuals become empowered they are in a better position to effectively manage their health by getting involved in decisions and assuming responsibility for the choices they have taken for themselves.

In this article, we aim to explain the basis, benefits and outcomes of patient empowerment and how it can contribute to the patient journey as they navigate their own skin health and/or wound healing. The specific objectives are to:

- Highlight the importance of patients' perspectives in care
- Explore the benefits of patient empowerment from three different perspectives: patient, health-care provider and health system

What is empowerment?

Empowerment is often credited to the work of Paulo Freire, a Brazilian educator and philoso-

pher well-known for developing an emancipatory approach to educating people to overcome oppression through liberating education.¹ Note that the concept of *patient empowerment* has been used interchangeably with *patient engagement and involvement* in self-management.

Anderson and Funnel have defined empowerment as "the degree of choice, influence and control held by patients over treatment, the disease and their relationship with health provider."²

According to Gomez-Velasco et al. patient empowerment is built "within a person . . . [it] is a continuous process in which knowledge, motivation, and capacity to take control of their disease are built within a person."³



The World Health Organization (WHO) describes empowerment as a process through which people gain greater control over decisions and actions affecting their health. The WHO further states that four key components are necessary for patient empowerment:

1. A comprehensive understanding of their role in decisions that affect their health
2. Acquisition of sufficient knowledge to be able to engage with their health-care provider in decision making
3. Development of skills/abilities to implement self-management practices

4. The presence of a facilitating environment (the context where patients live and work)

This broad concept of patient empowerment leads to varying definitions in the literature, but the main theme is that, with appropriate supports, patient empowerment results in each individual being able to “be responsible for one’s own life.”⁴

The Components of Successful Patient Empowerment

To ensure the best clinical outcomes patient empowerment has three areas of responsibilities:

Patient empowerment is the foundation of self-management, and it lies at the heart of ethical principles that include patients’ rights and autonomy to make decisions. It allows them to carry out a care plan developed in partnership between them and their health-care providers.⁵

Patient empowerment requires skill and a relationship between the patient and the health-care team, within a supportive environment, that helps patients to develop or boost their confidence and autonomy in making health-care decisions.

Patient empowerment is a legitimate goal, regardless of age, diagnosis, income, country of origin or ethnicity.⁷ A patient's sense of control, being taken legitimately, having support from family, friends, peers and staff, having relevant individualized education and knowledge, and being able to participate are all essential elements of successful patient empowerment.⁶⁻⁷

Patients have rights, responsibilities and opportunities relating to autonomy, self-determination and power within the patient-provider relationship, as well as in optimizing health-care service utilization to support their self-management journey.

Health-care providers have responsibilities to respect patient autonomy and adopt a collaborative style within the patient-provider relationship.

Health systems have responsibilities to support patients and providers so they can optimize health-care service utilization and maximize patient health status and well-being.⁶

Empowerment is based on the recognition of the roles and responsibilities of everyone involved and continues into practice, working relationships and the system. However, empowerment *cannot* be achieved unless patients internalize the need for self-determination. Health-care providers are essential in helping patients understand their role in self-management. **Empowerment is not a technique or strategy, but a vision that guides the provider-patient interaction** within a system. It may require a mind shift for many providers and patients as well as a restructuring of health systems. The primary shift for providers is often a change in mindset from doing things *to* patients to doing things *with* or *alongside* patients. It includes supporting patients along a journey of making healthy choices for long-term health.

Patients' Perspectives and the Benefits of Empowerment

At times patients experience feeling overwhelmed by the responsibilities of their disease⁴ and are often left out of decision making, either due to

their own lack of knowledge or confidence or the health-care provider's inability or unwillingness to share decision making. When the patient does not actively communicate or participate in care planning or decisions, a common reaction is for providers to impose solutions or make decisions for addressing the patient's problems. Unfortunately, this can further reduce the patient's engagement, increase their feeling of loss of control, and shake their confidence in being able to make decisions about their own health.

When patient needs, preferences and concerns are not taken into consideration, patients describe a sense of loss of respect and autonomy, being taken for granted and feeling hopelessness or a loss of control associated with their chronic disease.

Each patient's sense of loss of control is individual, complex and affected by the health system in which they receive or participate in care.^{8,9}

However, there are common areas where patients need to be supported. These include:¹⁰

- Maintaining meaningful life roles (e.g., employment, family and friend relationships)
- Coping with emotions (e.g., fear, anger, frustration, sadness)
- Changing routines and adjusting lifestyle to benefit their own health
- Confronting mortality
- Implementing agreed-upon therapies
- Enhancing knowledge about health and illness
- Increasing capacity to monitor and care for themselves

In general, for patients, empowerment includes: "being listened to, being respected for one's cultural knowledge and traditions, being given credible information, and being engaged in education activities that are meaningful."¹¹

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¹Curry DJ, Wright DA, Lee RE, Kang UJ, Frim DM. Surfactant poloxamer 188-related decreases in inflammation and tissue damage after experimental brain injury in rats. *Journal Neurosurg* 2004;101(1 Suppl):91-96. Available at: https://pdfs.semanticscholar.org/8a72/3716bdfc7e9a7d12d673ec05ddacf754d15.pdf?_ga=2.266989255.870468603.1543508642-1669357893.1543508642. Accessed November 29, 2018.

²Hunter RL, Luo AZ, Zhang R, Kozar RA, Moore FA. Poloxamer 188 inhibition of ischemia/reperfusion injury: evidence for a novel anti-adhesive mechanism. *Ann Clin Lab Sci*. 2010;40(2):115-125.

³Birchough SA, Rodeheaver GT, Morgan RF, Peirce SM, Katz AJ. Topical poloxamer-188 improves blood flow following thermal injury in rat mesenteric microvasculature. *Annals of Plastic Surgery*. 2008;60(5):584-588. Available at: <http://www.hastatemizligi.com/makale/teknik5.pdf>. Accessed November 29, 2018.

⁴Tharmalingam T, Ghebeh H, Wuerz T, Butler M. Pluronic enhances the robustness and reduces the cell attachment of mammalian cells. *Mol Biotechnol* 2008; 39(2):167-177. Available at: <https://doi.org/10.1007/s12033-008-9045-8>.

⁵Data on file.

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The Empowered Patient

Patient empowerment occurs along a spectrum of engagement. Patients that actively participate in discussions about their care with health-care providers generally feel more confident to play their role as self-care managers. For this type of patient, preventative activities are done to avoid complications, and they participate in decisions and ensure they are included in the development of their treatment plans. Importantly, they know when and where to seek help.⁹

Some signs of an empowered patient were described by Werbrouck et al.¹² and adapted by the authors to the wound care field. An empowered patient:

- Seeks to ask questions (about their wound) and have them answered
- Attends wound care appointments and brings additional treatment options to be discussed

and considered by their health-care providers (e.g., different types of dressing)

- Shares health-related information, acquired during self-directed learning, with their health-care providers
- Inquires why certain lab tests (e.g., wound culture), treatments or approaches (e.g., laser therapy) have not been considered
- Commits to implementing the treatment plans they helped to develop
- Takes responsibility and is accountable for their own self-management
- Implements preventative measures to avoid wound deterioration
- Identifies early signs and symptoms of infection and knows where to seek help

Patients can move along the spectrum of engagement over time, depending on many factors. The two examples below illustrate how

Examples of patient empowerment journeys

Patient experience 1:

"In the province where I previously lived, I regularly attended the diabetes clinic and took six weeks of chronic disease self-management classes. In these classes, I learned about pacing my work, taking rest periods, wearing good-fitting protective work boots. I liked my classes as I met people of all ages living with diabetes; there was comfort in those conversations. In this province I asked about going back to these chronic disease self-management classes...they did not know what I was talking about."

Patient experience 2:

"Why were my feet not emphasized in my appointments for my diabetes care? I saw my kidney and heart doctors, and nurses and dietitians. Now, I have callus, and a small foot ulcer was underneath the callus; this is not good in my mind. My ability to walk all day is not possible in this offloading boot. Then they want me to buy shoes with a liner. I know I cannot afford this. Just cut off my big toe."

Sustaining healthy behaviours = good choices + collaborative relationships

What would you do?

Read this short profile of Jeet, a patient with diabetes. Can you identify some of the individual and systemic barriers he and his team currently face? How would you help Jeet become a knowledgeable and actively engaged participant in his own health care?

- Jeet is a 34-year-old groundskeeper who has lived with type 1 diabetes since age 23. He developed a foot ulcer about 18 months ago. He has a high-school diploma and reads and speaks three languages. He is presently employed in a seasonal role and is primarily focused on gaining visitation rights to his three-year-old twin daughters.
- He has an infected plantar ulcer on his left foot 3 cm x 3 cm round, and the wound probes to the bone. He regularly uses marijuana and smokes one pack of cigarettes per day. He has a PICC line *in situ* and receives community-based intravenous antibiotic therapy. He has not attended the last three pre-arranged surgeon appointments; the community nursing team have given him taxi passes to attend the appointments. He describes himself as depressed and presently lives with his widowed mother in a small city.
- He tells the community wound care team he has not attended the diabetes education centre in 10 years.
- Due to seasonal employment, he takes insulin intermittently and is not really sure how much he should take. He takes oral anti-diabetic medications when he can afford them. When the wound care specialist assesses him in the community setting, he describes not feeling the ulcer though he can see the wound. He presents as "disinterested" in discussions about the seriousness of his diabetic foot ulcer and amputation risk.

Suggestions

- Investigate the personal, social, cultural and economic factors, such as lack of motivation and level of self-confidence, and social determinants of health like smoking, income and access to resources.
- Engage an integrated team in discussions involving reflection-action-reflection to come up with solutions that meet his needs and could transform his reality. It is important to note that Jeet is *the* key member of the integrated team. Who else should be on the team?
- Make a plan to address any modifiable barriers within the health system itself that may be standing in the way of Jeet's full engagement.



personal each patient journey is, and what the impact of knowledge, support from providers, and health system differences can be on the level of empowerment each patient can exercise.

But even the most enthusiastic and informed patient may not feel empowered to take control of their health decisions if barriers are in place that cannot be

identified and addressed. Health-care providers—through their actions—and health systems—through their designs—must support patients if they are to be successfully empowered.

Who's responsible?

All elements within a health system must work together to support patient empowerment. This section details the responsibilities of patients, health-care providers and health systems. Table 1 provides a summary.

Patients

When adequately supported, patients have a responsibility to:

- Make the decision to take control of their disease/condition and advocate for themselves
- Stay informed about their condition and choices
- Be prepared for appointments by bringing questions and relevant documents
- Become an active part of a team in the decision-making process

Health-care Providers

In health-care settings, many clinicians believe they are able to “empower” their patients. However, one of the most important roles of any health-care provider is to work alongside their patients and engage them in their self-management journey.¹³ This requires them to talk with and listen to patients to understand their needs, concerns and preferences. And because patients need to develop self-confidence to implement self-care practices, health-care providers must become successful at engaging and supporting their patients to gain control over their disease process and general health. To do this it is essential they address the factors affecting patients’ engagement in self-management, including

Table 1. Summary of responsibilities of patients, health-care providers and health systems in supporting patient empowerment

	Responsibilities
Patients	<ul style="list-style-type: none"> • Become empowered to participate in the management of their skin protection and wound care • Have the necessary knowledge, skills, attitudes and self-awareness to adjust their behavior in collaboration with their health team • Take action to improve the quality of their life • Recognize they have choices
Health-care Providers	<ul style="list-style-type: none"> • Be trained in empowerment communication skills • Respect patients’ expertise on their lives and health conditions • Provide patients with access to relevant, credible and timely health information and resources • Treat patients as equal partners in care planning and communication
Health Systems	<ul style="list-style-type: none"> • Ensure that patients are represented in program and policy design • Support programs that foster self-management and patient empowerment • Provide equitable and accessible programs • Communicate about the programs and available navigation support

health literacy, self-confidence and self-management support as well as access to services and resources.¹⁴

Health-care providers must appreciate that supporting patient empowerment is a process that takes many steps and may require time to learn the necessary skills and techniques. It involves a distinct way of communicating and engaging with patients and their families.¹⁵

When interviewed on techniques that can be incorporated by providers, many patients highlighted the following features^{12,16} that would benefit them. They indicated they would appreciate if their health-care provider could:

- Provide a vision of the future
- Add some fun and variety to the patient's routine
- Engage the patient in providing input to health-care plan
- Assist in developing goals and challenges *with* the patient, not *for* the patient
- Develop measurements to illustrate improvement
- Promote social interaction among patients
- Ask questions and listen to patient feedback
- Provide encouragement

Health Systems

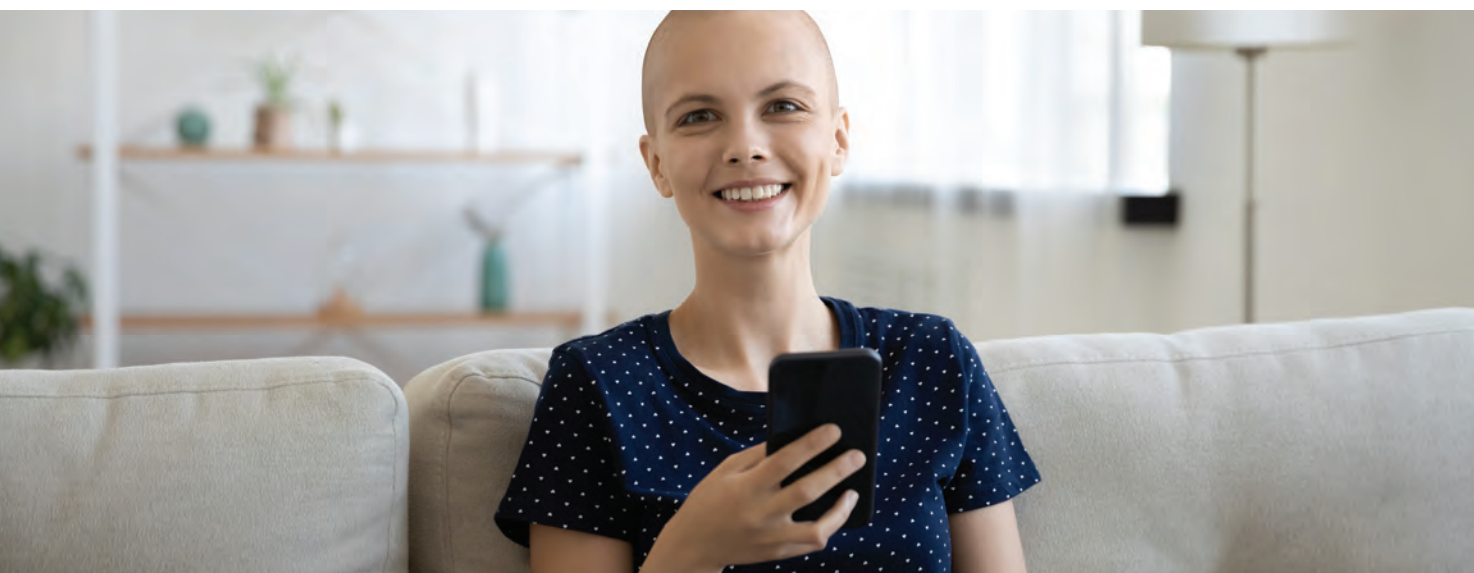
To support a high level of patient empowerment, health systems need to be shifted from the bio-

Resources

Multiple well-established tools and strategies are available that can support patient engagement, motivation and self-management based on patient needs and readiness. They include informational resources, communication techniques, self-management programs and specialized care. Here is a short list of resources to get you started:

- www.woundsinternational.com/download/resource/5947
- www.wuwhs.org/wp-content/uploads/2020/09/MOL%EF%80%A220_WUWHS_WINT_Web.pdf
- www.wounds-uk.com/resources/details/wound-essentials-11-1-patient-empowerment-in-wound-management
- <https://powerfulpatients.org/2018/05/22/what-does-it-mean-to-be-an-empowered-patient/>
- <https://patientengagementhit.com/news/6-steps-to-improving-the-patient-family-engagement-process>

medical/acute model that focuses on disease and treats patients as passive subjects, to one that emphasizes partnership and collaboration among providers and patients.¹⁷ To accomplish this, health policy that supports the uptake of patient empowerment and acknowledges health-





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care provider roles in enhancing patient engagement in their own health care must be developed, implemented and enforced. This will ultimately optimize health services delivery.^{6,17}

While more research is needed to develop a measure of patient empowerment for use in evaluation of health care, it is already known that health policy and patient empowerment are linked.^{18,19} Recent evidence has shown that patient and community involvement have a positive impact on health, particularly when substantiated by strong organizational and community processes. This is in line with the notion that patient engagement, participatory approaches and positive outcomes, including community empowerment and health improvements, do not occur in a linear progression, but are a complex process influenced by several personal, social and cultural factors.^{14,20}

At the most basic level, health systems must also support patient empowerment by providing adequate delivery systems, clinical information systems, decision supports and self-management and community services.

In Summary

The empowered patient is one who has discovered their personal abilities and strengths and uses them to be responsible for their own health. Health-care providers need to use their communi-

cation skills and available programs to enable patients to develop the knowledge, confidence and coping skills that allow them to manage the physical, emotional and social impacts of their illness. Providers must also help patients navigate the health system and, if necessary, identify and advocate to change systemic obstacles to patient empowerment and self-management. 🩹

*“People will forget what you said.
People will forget what you did.
But people will never forget how you
made them feel”
—Maya Angelou (1929–2014)*

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Patients' Voices, Stories and Journeys of Navigating Social Life while Having and Managing Complex Wounds:

A Knowledge Mobilization Project

By Idevania G. Costa, RN NSWOC PhD; Catherine Phillips, BA BSW MA PhD; Michelle-Marie Spadoni, RN MA DNP; Mariam Botros, DCh DE IIWCC; and Pilar Camargo-Plazas, RN PhD

Wounds Canada is thrilled to announce the launch of the "Patients' Voices, Stories and Journeys" project, which aligns with the research program and previous work related to patients' empowerment and engagement in everyday self-management of diabetic foot ulcer (DFU) of Idevania Costa (principal investigator).¹⁻³ A central aspect of the project will be the gathering and disseminating of individuals' and families' video stories about balancing everyday life while living with complex wounds. This project is particularly relevant because:

- Health-care professionals have noted a rapid rise in the unmet needs (e.g., physiological, emotional and spiritual) of people with complex wounds in all parts of the country
- Not everyone is aware that living with a complex wound is challenging and affects many aspects of individuals' lives
- Health-care providers need to understand the social determinants of health (SDH) that may be

preventing these individuals from successfully navigating through their journeys

Why Listening to Patients' Voices, Stories and Journeys Matters

Nationally, health-care professionals have noted a rapid rise in hard-to-heal wounds that require life-long management and affect patients' physical, psychosocial and spiritual lives, particularly for low-income, marginalized and/or vulnerable people. The cost to Canadians of treating complex wounds is estimated at \$3.9 billion per year. The indirect costs to individuals is more significant, and include stigmatization, social isolation, economic hardship and psychological issues such as depression, stress and anxiety.⁴ Unfortunately, many health-care providers and social service practitioners do not have a widespread understanding of such indirect costs. Frequently, individuals are blamed or judged for not being "compliant" or "adherent" to a plan of care "designed

for them” but “without them.” In these cases, the plan of care is often not inclusive of their unique needs or lifestyle. The extent to which these plans consider social context, needs, concerns and preferences can vary significantly.

This project will provide an opportunity to listen to and disseminate individuals’ and families’ stories and:

- Capture the impact of hard-to-heal wounds on their lives
- Identify the gaps and synergies in wound care provision uncovered by their stories
- Identify areas in which holistic wound management is developing and/or can be enhanced

Throughout the project, the research team and participants will create an online library of resources to help individuals living in similar situations find new pathways and support to address the impact of wounds on individuals and families. The multiple knowledge translation materials generated from this project will be distributed widely to the media along with events hosted on Wounds Canada’s website.

Implications

Our aim is to have this project generate new knowledge and learning that will address a gap in current thinking and evidence about people with wounds who live on a low income, have limited access to specialized wound care or who are marginalized and/or vulnerable. Our study will inform policy makers, government bodies, non-specialized wound care providers and those new to the field on the realities of living with a complex wound. The desired result is that health-care providers and authorities in the position to improve care and access to services and resources for this population will have more resources to help them visualize what lies beyond the ragged edges of a wound and appreciate how aspects like the SDH intersect with an individual’s overall health and well-being.

Listening to patient and family stories potentially may uncover social realities that perpetuate health and social inequities and social injustice.


Our goal is to influence health policy and clinical practices and shift the current paternalistic paradigm that places individuals and families as passive recipients of information and care and does not consider the effects of the SDH. Our proposed work goes beyond the disease/wound or dressing management and moves toward understanding the reality and uniqueness of individuals living with wounds in the Canadian context.

Ultimately, this work will emphasize the process of rethinking and revising the delivery of wound prevention and care programs and lead to placing individuals at the centre of care and engaging them as more active participants in their own care and decision making.

Funding: Financial support for this project has been provided by a SSHRC Connection grant with in-kind contributions from Lakehead University and Wounds Canada.

Disclosure: The authors have no conflicts of interest related to this project.

Acknowledgments

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Wound Sleuth

By Zaki Sadik, MB BCH, DCH, CCFP, LM and
Janet L. Kuhnke, RN BA BScN MS NSWOC DrPsychology

Addressing the Wound Healing Needs of a Person Who Injects Drugs

Mr. B, a 55-year-old male patient, arrived at the community-based methadone clinic with a wound on his upper left buttock.

He is a person who injects drugs (PWID), and after his last injection was unconscious for 16 hours. When he awoke his left buttock was red. He is currently enrolled in a methadone maintenance program for opioid dependency but is struggling with maintaining sobriety. His co-morbid conditions include spinal stenosis and malnourishment. He smokes daily. He has no known allergies and does not abuse alcohol.

The ulcer was located on his left buttock 5 cm below the iliac crest. It was 7.5 cm wide, 7.5 cm long and 5 cm deep, with ragged, necrotic edges. The wound bed was covered with necrotic tissue. It was draining with an offensive discharge.

Q What is the cause of this wound?

A Because of this patient's history and current status, the following were considered: pres-

sure while unconscious, overall poor nutritional status (failure to thrive) related to food access and choice, chronic opioid abuse, underlying osteomyelitis, lack of exercise and mobility, and vasculopathy.

Q How would you determine a diagnosis?

A A complete history and assessment of Mr. B's lifestyle leads to a likely diagnosis of a single, extended period of pressure on the buttock.

Q What is the treatment?

A Interventions need to be two-fold:

One: Address the original cause of the wound: pressure during a long unconscious episode. What is the risk that something similar might happen in the future? If the risk is moderate to high, develop and implement a prevention strategy with Mr. B.

Two: Treat the wound. As the wound had necrotic tissue and was infected, the initial treatment

included debridement, antimicrobial wound dressings and systemic antibiotics based on the results of a culture sample and sensitivity. Antibiotic management for osteomyelitis continued after the initial treatment.

While we were able to address Mr. B's immediate wound concerns at the methadone clinic, we recognized he needed further investigation and specialized treatment, so we referred him to a nearby multidisciplinary wound clinic for additional care.

Outcomes

After referral to the wound clinic, where they initiated negative pressure therapy (see Figure 1) as part of the care plan, the wound drainage, foul odour and necrotic tissue resolved and the wound became smaller and shallower, with good granulation tissue in the base (see Figure 2) over the course of eight weeks. It is important to note that negative pressure wound therapy is not generally considered a first-line treatment for patients living with a pressure

Q What could inhibit healing in this patient?

A In this case, clinicians should ask themselves the following:

- Could healing be impaired by a negative protein balance?
- Could the maladaptive lifestyle behaviour influence the healing process? For example, where does the patient sleep and on what? Are there any sleeping positions he maintains for long periods of time?
- Could drug use influence the wound-healing trajectory?

injury. However, in this case, after the cause was addressed and a comprehensive risk assessment done, the wound clinic prescribed NPWT for the patient.

Mr. B was encouraged to continue to attend the methadone clinic to reduce his risks for recurrence and additional adverse events due to his drug use.

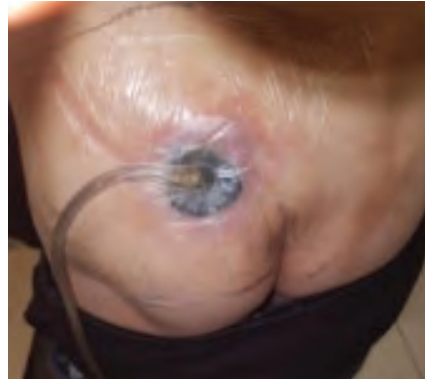


Figure 1: Negative pressure therapy applied to the wound



Figure 2: The base of the wound showing healthy granulation tissue, a pink colour and reduced size and depth following negative pressure therapy

Takeaway

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Wound Sleuth

By François Harton, DPM, FACFAS

Red and Swollen Hallux Seeping Fluid

History

A 56-year-old male presented to the clinic with a wound to the medial aspect of the right hallux, which is draining serosanguinous fluid (Figures 1 and 2). He mentions that he was out camping for the week, and at the end of the week his big toe became red and swollen. Within 24 hours it had opened and started draining. He went to the local ER where the wound was cultured. X-rays were taken and the patient was placed on IV cefazolin. He has insulin-dependent

diabetes mellitus (IDDM) and has a history of hypertension (HTN), dyslipidemia, arrhythmia and hypothyroidism.

Q What is the cause of this wound?

A This patient has gout, a condition where uric acid crystals (tophi) are present in the joint, often causing significant pain. As one can see from the X-ray (Figure 3) there is erosion of the medial IP joint of the hallux. Unfortunately, this patient did not have a uric acid level taken. A bone biopsy was done and sent to pathology along with a bone culture, as originally osteomyelitis was high on the list of differential diagnoses. At the same time, a specimen was sent in alcohol to rule out gout. The test result was positive.

Q How would you treat this patient?

A First, the acute gout attack has to be calmed down. Since the patient is on an anti-coagulant for his arrhythmia, NSAIDs would not be very prudent. Local injection with a steroid could be considered, but if



Figure 3: X-ray showing erosion of the medial IP joint of the hallux

the area is infected it could make the infection worse, so caution is necessary. Local wound care, proper diet to reduce the deposition of uric acid and possibly a change in medication to avoid hydrochlorothiazide for his hypertension could all be helpful in relieving the gout and helping the wound heal.

The take-home point here is that not all diabetic ulcers are caused by pressure, and other underlying causes should be investigated. A proper and thorough evaluation of the patient and their medical condition is important in the assessment and healing of all wounds. 🩹



Figures 1 and 2: Wound on the medial aspect of the right hallux

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BONUS CONTENT

Highlights

from the Fall 2021 Virtual Conference



Fall 2021

**Virtual
Conference**

The following pages contain a selection of session summaries and the sponsored Presentation Digests from the Fall 2021 Wounds Canada Virtual Conference.

"Way to go Wounds Canada! Best virtual conference I have attended."

"Loved this conference and the virtual platform that was used. Very easy to navigate and user friendly."

"WONDERFUL platform and this will be so accessible to ALL. Super easy to use and navigate. There should be no excuses NOT to attend. Thank you so much."

"I found everything pertinent to my practice. I love the documents that I downloaded to my swag bag and they are bilingual for our bilingual clients, and sometimes, this breaks barriers and can be used as pamphlets for them."

"It was all great. I appreciated the mix of academic sessions and industry-sponsored sessions."

"I enjoyed the keynote speakers. Data collection for wounds now has a whole new meaning for me."

October 21–24, 2021

Wounds Canada
2021 Virtual Conference:

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Reporter: Katie Bassett, BMus

Session Summaries

Wounds Canada held its fall 2021 conference as a virtual event October 21 to 24. The session summaries that follow include highlights and practice pearls from selected sessions.

CLOSING THE GAP ON PI: WHERE ARE WE NOW AND WHERE ARE WE GOING?

*Session Speakers: Elizabeth A. Ayello, PhD, RN;
Alan Rogers, FC Plast Surg, FACS, MSc; Vera Santos, PhD RN*

Epidemiology of PIs

Vera Santos began by presenting the overall epidemiology and burden/impact of PIs on health-care systems. Pressure injuries (PIs) are potentially preventable adverse events that act as important quality indicators of patient safety and the performance of the health system. According to a Brazilian National Report on Patient Safety Policy (2014–

2017), PIs are the third most frequent adverse event experienced by patients (17% of 134,501 incidents; 73% stage 3 and 22% stage 4; 34 deaths).

In a 2020 systematic review of 39 studies (2008–2018; 2.5 million patients), an overall PI prevalence rate of 13% and a hospital-acquired rate of 8.4% were reported among acute care patients. In a 2018 systematic review (2000–2015, 19 studies), depending on the methodology used, a worldwide PI rate of 6 to 18.5% was reported among acute care patients.

In a 2018 systematic review of 22 studies (2002–2017), a prevalence rate of 17 to 24% was reported



among intensive care unit (ICU) patients, with a cumulative incidence rate of 10 to 26%. A systematic review of 28 studies conducted between 2010 and 2016 identified 43 risk factors for PI development in ICU patients that were sorted into six broad categories (e.g., demographics, comorbidities, severity of illness). It is important to remember the contribution of medical device-related PIs in this patient population.

A 2018 multicentre study of 60 long-term care facilities (6,556 patients) in Australia found a rate of 1.3 PI per 1000 residents per day, with 10% of facilities demonstrating persistently high rates of PIs, especially in areas of low socioeconomic status.

In palliative care, a 2017 systematic review of 12 studies (63,907 patients) found a PI incidence of 11% and a prevalence of 12%. Critical risk factors in this population included mobility, age, Waterlow scale scores and length of stay.

A 2020 systematic review of 29 studies (82,722 patients) found that more than one in five patients with a spinal cord injury (SCI) will develop a PI (global incidence 0.23).

Impact of PIs on Health-care Systems

Santos went on to explain that PIs present a massive economic burden on health-care systems. In the U.S., stage 3 and 4 PIs are estimated to cost \$26.8 billion; each hospital-acquired PI is estimated to cost \$21,767. In Ontario (2013), among the community-dwelling SCI population, one month of PI care costs about \$4,700.

Prevention is cost effective for all patients. In a 2019 systematic review (2001–2013, 17 studies), PI prevention was found to cost between € 2.65 and €87.57 per day (across all settings), whereas PI treatment was found to cost between € 1.71 and €470.49 per day (and significantly more for advanced stage PIs).

Should punitive measures be imposed on institutions? If so, which ones are effective?

Elizabeth Ayello described the way decisions in the U.S. are made based on money. When the payment system was changed to a diagnostic-related system and emphasis on HAPI from CMS, hospitals saw a reduction in the amount of money they received if someone acquired a PI during their hospital stay. If there was appropriate documentation of a PI on admission, the hospital would receive appropriate amounts of money. She discussed the difference between motivating people with a financial penalty or with a quality prevention incentive. Unfortunately there is no clear answer on which approach is more effective—the “carrot” or the “stick.”

How accurate are data outside of well-developed centres?

According to Alan Rogers, data are only as good as the systems that allow for its collection. Data collection is often only possible once systems are in place to actually care for the patients—if care is not optimal, data collection is not a priority. This raises questions about the accuracy of data collected worldwide, especially in less developed centres.

How accurate are data on pediatric and long-term care populations?

Ayello explained that most PIs in pediatric populations are related to medical devices. In long-term care, PIs are being seen in less common places on the body. For example, during COVID-19, some LTC residents developed PIs on their ears as the result of wearing masks. Staff were not accustomed to checking ears for these injuries. Similarly, prone positioning due to COVID added to PI development rates in LTC (in one case, a patient’s tooth punctured the lip). Ayello also discussed the ways data collection

can be made challenging by multiple risk factors being present. For example, some patients with diabetes acquire wounds on their feet that are primarily caused by pressure. In these cases, it is not always clear how the wound should be classified.

What is the most challenging barrier to managing PIs?

Santos discussed the ways overloaded systems cause shortages of human resources. This can significantly contribute to PI numbers, especially among SCI patients and during exceptional circumstances like COVID-19.

Should assessment tools be commercialized?

In Canada, the Braden Scale is being commercialized. According to Ayello, since its development in the 1980s, Barbara Braden and Nancy Bergstrom owned the copyright to the Braden Scale and required those using the scale to pay a fee. In April 2021, the developers sold the scale to HD Nursing, who now own the copyright and have the right to charge a fee for its use. It is not new that money was due to use the scale.

The purpose of an assessment tool is to help people think about the factors that may put people at risk for developing a wound. Sometimes these risk assessment scales become just another task and are quickly filled out. As a result, they may not be accurate or lead carers to consider the patient holistically.

Are we expecting there to be magical new strategies to prevent or treat pressure injuries?

According to Rogers, this is unlikely. That being said, integrated care and knowledgeable and confident care staff are likely to lessen the numbers and severity of PIs.

Are all PIs treatable? Are terminal ulcers something we should accept?

Rogers reminded delegates that it is important to consider that further interventions might be contrary to the patient's wishes at end of life. Ayello explained that in the U.S., "unavoidable

pressure injuries" are declared when an individual has developed a pressure injury even though the facility or provider has evaluated the individual's clinical condition and PI risk factors; defined and implemented interventions that are consistent with the individual's needs, goals and recognized standards of practice; monitored and evaluated the impact of interventions and revised the approaches as appropriate. The problem is this is a diagnosis made in retrospect; there is no way to make this diagnosis prospectively. In a 2019 paper, 87% (226) of survey respondents agreed that terminal ulcers at the end of life are unavoidable and not attributable to substandard care.

THE ROLE OF MENTAL HEALTH IN MANAGING WOUNDS

*Session Speakers: Noha George, RP MSW RSW;
Stacey Coomber Stevens, JD*

Noha George began the session by stating the mind-body connection is well established and backed by scientific research and anecdotally. Neural pathways, made of neurotransmitters, hormones and chemicals, impact our overall functioning. The link between physical and mental health is inseparable. The link goes both ways: just as our mind impacts our physical health, our physical health impacts our mental health. Depression, anxiety and stress influence our immune function, hormones and organ function.

Simple Strategies, Powerful Results!

- Provide direct and concrete information
- Cultivate "realistic hope" & positivity
- Promote a BIG PICTURE approach / logos
- Discuss and reinforce principle of self determination
- Invite and inspire self reflection /Mindfulness
- Facilitate affect recognition
- Look for support networks (formal and informal)
- Encourage self compassion

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Wounds can affect all aspects of a patient's life, including independence for activities of daily living, family life, interpersonal relationships and intimacy, social/leisure time, and vocational and financial status. It is critical to remember that autonomy is a major psychological need.

Family Life

Our mental health is linked to our routines, roles and responsibilities in different settings. Being unable to contribute to these can have a profound impact on mood, self-image, self-esteem and more. Changes also often come with a change in interpersonal and power dynamics. Fatigue, pain, stress, self-image, self-esteem, mood and physical changes caused by wounds can contribute to decreased desire for physical and emotional intimacy. This can also affect the partner without a wound, especially in terms of fatigue if they become a caregiver.

Social Life

Social isolation, loneliness and withdrawal can affect individuals living with wounds. These issues can be caused by actual or perceived barriers. Actual barriers include comorbidities, pain, fatigue and the presence of physical challenges. Patients may be affected by perceived barriers such as low self-esteem, changed body image or feeling they have little to contribute, all potentially leading to withdrawal.

Vocational and Financial Status

Chronic wounds have a significant impact on a person's ability to work and generate income, often leading to financial insecurity.

These factors can become cyclical, resulting in increased stress, anxiety, grief/depression, self-esteem issues, body image issues, loneliness/social isolation and more financial insecurity. A person's sense of meaning and purpose in life comes from their experience of whether their life adheres to the vision of how they see themselves and thought their lives would play out. Those with chronic wounds can feel a disconnect or tension between who they are and who they expected to be or are expected to be. This can be extremely intrusive to the healing process.

Key Principles to Keep in Mind

1. Power dynamics are critical. Patients receiving medical services can feel intimidated and overwhelmed. Depending on others for care requires a huge amount of trust. Remind patients that they are the most powerful agents of change and set goals with the patient based on their needs and desires.
2. Remember the boundaries of a person's body and space. Ask permission before touching or beginning procedures and always be as respectful as possible. If entering the home, ask permission before sitting down or using objects.
3. Countertransference. Be self-aware if someone is triggering feelings associated with someone you have known in the past and remind yourself not to respond based on preconceived notions or habits.
4. Use silence, pauses and sentence fragments to allow patients time to speak and to be heard.
5. Mine for emotion beyond the surface. Don't take behaviours at face value but look for the emotion behind the behaviour.
6. Provide patients with reliable information. Anxiety can be caused by a lack of knowledge and feeling a loss of self-determination.
7. Cultivate realistic hope.
8. Promote the big picture. See patients as more than the sum of their physical or emotional limitations. Take a moment to ask about things that are important to them; don't limit conversation to the wound.
9. Reinforce the principle of self-determination. Patients are the experts on their own health and do have control over their care and health.
10. Invite and inspire self-reflection and mindfulness. Mindfulness has been shown to be powerful in the healing process for physical or mental unwellness.
11. Facilitate affect recognition. Help patients name their emotions and recognize what they are truly feeling and why.
12. Look for formal and informal support networks for patients.
13. Encourage self-compassion. Treat patients with genuine compassion and non-judgement to model that behaviour. Self-compassion can

increase motivation, self-esteem and body image, and improve quality of life.

14. Avoid minimization and catastrophizing. These can be shown verbally or in tone of voice and body language. Try to avoid saying things like, “I know what you’re going through” or “Oh no! Your wound looks awful!”
15. Validate, validate, validate! While you don’t have to validate an action if it is contributing to the wound, it is important to validate the emotion behind it.

Stacey Coomber Stevens continued the presentation by discussing burnout—which can manifest in a number of ways, including fatigue, sadness, disinterest, anger and withdrawal—and countering it with a strong physical and mental foundation. Her vision of health requires appropriate and adequate nutrition based on fresh, not processed, foods; regular exercise; adequate high-quality sleep; stress management and social relationships.

THE CONTINUUM OF CARE: IMPROVING TRANSITIONS OF PATIENTS WITH WOUNDS

*Session Speakers: Irmajean Bajnok, RN MScN PhD;
Elizabeth Parfitt, Infectious Diseases MD*

Irmajean Bajnok began the session by emphasizing that transitions for patients with wounds—either from pediatric to adult services or from one health-care setting/sector to another—are critical to achieving management or healing goals.

While we often think of care transitions as transition of the patient, they can more accurately be defined as transfers of responsibility and accountability for some or all aspects of patient care related to providers, institutions and/or sectors. These transitions occur across the lifecycle (child to youth, youth to adult, adult to older adult) and when there are changes in health status or care that result in changes in treatment goals, service providers or the location of services.

Each time patients move from one setting of care to another, there is a risk to their health because of



the potential for miscommunication between care providers. When gaps in care transitions occur, individuals are susceptible to fragmented care, delayed care, poor quality care, unfavourable experiences, compromised safety and/or adverse medical events. Therefore, when patients experience a change in care setting, a set of actions designed to ensure the safe and effective co-ordination and continuity of care becomes critical to wound prevention and management.

10 Concepts to Consider in Care Transitions

- Confidentiality and privacy
- Interprofessional collaboration
- Leadership
- System integration
- Continuous quality improvement
- Patient-centred care
- Therapeutic relationships
- Effective communication
- Informed decision making (including the patient!)
- Ethical principles

A Case Study

Elizabeth Parfitt continued the presentation with a case study illustrating the concepts of care transitions. The case featured a patient from Kamloops, BC, with severe venous stasis wounds who experienced several care transitions over a six-year period from 2015 to 2021. This included 29 emergency room visits with 13 resulting hospitalizations, as well as intermittent home care provided by various home care services and later by his wife.

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In 2015, Parfitt met the 68-year-old male with diabetes with elevated A1c, coronary artery disease (CAD), atrial fibrillation (AF), high body mass index (BMI), venous stasis and recurrent cellulitis. He used a motorized scooter following a complicated coronary artery bypass graft 15 years prior. He had a history of pressure injuries related to cardiac surgery complications, but these had healed. In 2015 he had a small venous ulcer; compression and outpatient wound care were recommended. The wound healed, but he experienced progressive venous stasis changes.

In 2016, he sustained a collision with a vehicle while using his scooter and developed a large laceration to his left lower leg. This evolved into skin necrosis that was debrided by a plastic surgeon and healed within a few months.

In 2017, the patient presented with sepsis, and Group B *Streptococcus* were found in his blood cultures. He also had lymphangitic changes on his right leg. He was seen by a vascular surgeon, and the arterial investigations were reassuring. At this point

he was using Velcro compression devices at home, although there was some concern about adherence and it was noted that he slept in a recliner.

In 2019, he presented with cellulitis in his right leg and lymphatic change. Around this time he experienced multiple hospitalizations due to lower gastrointestinal bleeding, chronic obstructive pulmonary disease exacerbation and pneumonia. Later that year, he had multiple ER visits due to cellulitis of the right lower leg that was complicating now-chronic wounds. To prevent more ER visits, the team moved to a pre-emptive approach with antibiotics. Challenges with home care included difficulty donning and doffing compression, low adherence and difficulty for his wife as primary caregiver due to significant arthritis in her fingers and full-time employment. As confidence in the treatment plan was lost, little healing occurred. In October 2019, he was hospitalized with an infected wound on his left leg. Significant healing was achieved during an inpatient stay.

In 2020, preventative penicillin was started due to the frequency of skin and soft tissue infections and ER visits. Within a month of this new regimen, he was in the ER twice. At this time he was applying petroleum jelly to wounds, had a deteriorating relationship with outpatient care and was often not at home when home visits were scheduled to occur.

In 2021, the patient was discharged from the outpatient wound care program as adherence to the prescribed care plan had been poor. A meeting was scheduled with the multidisciplinary team and patient to discuss next steps as frustration among the patient and health-care team grew. In June, he had additional ER presentation but for non-infectious, non-wound-related issues, including hyperkalemia, chest pain and hyperglycemia. The team decided to adopt a palliative paradigm for wound management. Malodour was especially problematic at home, so topical metronidazole was tried. The patient's relationship with his wife was also becoming strained. In September, the patient was admitted to hospital with COVID-19 and ultimately palliated when respiratory failure developed.

Parfitt ended the case presentation by asking delegates to think about the concepts Bajnok introduced related to care transitions and to consider how they were demonstrated in the case. Were they facilitators, barriers or both? She recapped both the physical transitions experienced by the patient and the transition of goals of care during treatment. Bajnok reminded delegates that there was fairly sustained improvement for five of the six years of the patient's care, noting that it is important to discuss positive and negative factors in the overall case.

In the discussion, Parfitt described several lifestyle factors she learned about only during her debrief with the patient's wife following his passing and explained she felt even more sympathetic about his situation and goals with this added understanding than when they were treating him. This underscores the importance of holistic care and understanding the emotions behind a patient's actions.

One delegate raised the point that the patient had been living with poorly managed comorbidities for years and that maybe it is unrealistic to expect this type of patient to be motivated and engage in complex self-care for wounds, especially approach-

ing end of life. Perhaps involving a social worker or someone trained in motivational interviewing could have shed light on the patient's underlying motivations. Another delegate suggested that patient burnout might have been a factor in this case with multiple complex comorbidities.

Upon reflection, a consistent team of caregivers would likely have enhanced transitions. More direct communication between community care and outpatient care could have also aided with the frequent transitions. It is critical to strive for a full understanding of the patient as a person and the meaning behind their behaviours. In this case, the multidisciplinary care team meeting with the patient and his family was very valuable; this should have been done at the start of care and periodically throughout care.

Successful Transitions

Bajnok continued her presentation by describing requirements for successful care transitions, which include:

- Multidisciplinary communication and co-ordination
- Comprehensive planning, including patient and care partner education and health-care provider involvement
- Shared accountability during all points of transition

She then shared several strategies to help with care transitions, including communication between members of the care team; standardization of processes and policies; leveraging technology; considering environmental strategies; providing training and education for health-care providers, patients and care partners; and encouraging staff involvement in the transition process.

Health Quality Ontario's 10 standards of care transition, which are informed by direct patient input, are:

- Information sharing on admission
- Comprehensive assessment
- Patient, family and caregiver involvement in transition
- Patient, family and caregiver education, training and support

- Transition plans
- Co-ordinated transitions
- Medication review and support
- Co-ordinated follow-up medical care
- Appropriate and timely support for home and community care

Bajnok acknowledged the value of the Registered Nurses' Association of Ontario's evidence-based **Best Practice Guideline Care Transitions** in understanding approaches to successful transitions in care.

THE FUTURE OF WOUND PREVENTION AND CARE: GENE THERAPY, DERMAL SUBSTITUTES, PLATELET-RICH PLASMA, 3D PRINTING

Session Speakers: Paul F. Gratzner, BASc MASc PhD PEng; Marc Jeschke, MD PhD FACS FCCM FRCS(C)

Dermal Substitutes

Dermal substitutes act as temporary 3D scaffold that provides physical and biochemical cues to cells that drive and support the regeneration of new tissue. Paul Gratzner explained that these substitutes work by utilizing extracellular matrix (ECM) components that mimic the dermis structure. This can include growth factors and ECM components that stimulate and drive cells, including macrophages, fibroblasts, T_h cells, stem cells, vascular cells and epithelial cells to move through

the wound healing process.

Dermal substitutes can “break” chronic inflammatory cycles seen with some hard-to-heal wounds and push toward tissue regeneration, stabilizing the wound environment and encouraging the formation of neo-dermis. Dermal substitutes are an adjunct to the standard of care, which involves debridement, offloading and the use of wound dressings. Wound dressings create and maintain the environment for wound healing, but the dermal substitutes get actively involved in helping cells in the surrounding tissue promote a more regenerative response.

Dermal substitutes can be divided into five categories:

1. Human acellular dermal matrix (ADM) – decellularized human tissues
2. Cultured human cell constructs – combination of live human cells and non-living matrix
3. Reproductive tissues – amnion/chorion
4. Animal-derived matrices – Reconstructed or taken from animals, including pigs, cows, fetal cows and fish
5. Allograft skin – intact donated skin

Human Acellular Dermal Matrix (ADM)

ADM is derived from donated human split-thickness skin grafts and processed using chemicals, surfactants and other means to remove the cellular materials of the donor (sources of immunogens that may result in donor rejection). The remaining non-living, porous dermal “scaffold” (ECM) stimulates wound healing and regeneration. Some products are “ready to use,” while others are dehydrated to make storage easier. A large number of these products are currently available and are regulated under Cells, Tissues and Organs (CTO) regulations by Health Canada and under human cell and tissue-based products (HCT/Ps) by the Food and Drug Administration (FDA) in the U.S.

Cultured Human Cell Constructs

Cultured human cell constructs are made from dermal and/or epidermal cells harvested from human neonatal skin combined with non-living matrix (PGA, bovine collagen). These cells pro-

Cultured Human Cell Constructs

Human neonatal (foreskin) cells (dermal and/or epidermal) combined with matrix (PGA, Bovine collagen)

Original idea: cells increase healing by staying in matrix and are accepted by host

Current evidence: cells produce growth factor and cytokines, die off soon after implantation

Most expensive dermal substitutes

Delivered frozen or “live” with short shelf life

Regulated with Pre-Market Approval by FDA

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duce growth factors and cytokines that stimulate the patient's cells to accelerate wound healing, and then die soon after implantation. These products are the most expensive of the dermal substitute categories. They are delivered frozen or "live," with a short shelf life (~10 days). They are regulated with Premarket Approval by the FDA.

Reproductive Tissues

A more recent type of dermal substitute is reproductive tissue products, which are derived from the innermost lining of placenta (including one or both of the amnion and chorion layers). This tissue has an immune-privileged state, growth factors and anti-inflammatory properties. Commercial preparations of these products include cryopreserved, dehydrated or sterilized. These products are regulated under HCT/Ps of the FDA.

Animal-derived Matrices

Animal-derived matrices are made from repurposed purified collagen, glycosaminoglycans (GAGs) or tissues from animal sources such as pigs, cows or fish. The purified collagen/GAGs can be formed into porous matrices and may be stored in a dehydrated form. Due to the use of animal tissues, even if the cells are removed, these products may cause issues with immune response (e.g., reaction to alpha-gal). There is also some scientific evidence that human cells react differently when put within or onto animal cells versus human-derived matrices. These products are regulated by the FDA under 510(k) Premarket Approval.

Burn Injuries

Marc Jeschke continued the session by emphasizing the importance of closing burn injuries. Autologous split-thickness skin grafts are one option for covering burn wounds. This approach requires donors and increases wound size and pain.

Cultured Epithelial Autograft (CAE)

This was the first step in tissue engineering. Using this technology, a tissue biopsy is taken and keratinocytes are cultured into an epidermal sheet used to close large burn injuries. This technology is currently viewed with some skepticism because

the cost of treatment is high and length of hospital stay is not shortened.

Collagen-elastin Dermal Matrix

Collagen-elastin dermal matrices are three-dimensional bovine collagen and elastin matrices. These extracellular matrix proteins serve as a scaffold for reconstitution of the skin and the modulation of scar tissue. These matrices result in good cosmetic outcomes when used for acute wounds, burns, trauma and burn reconstructions. Adding stem cells to these non-living matrices has been seen to enhance healing.

Bilayer Wound Matrix

Bilayer wound matrices include dermal and epidermal analogs. The dermal analogue is made of a biodegradable collagen-GAG co-polymer matrix. The epidermal analogue is a thin silicon elastomer. In this layer, bovine collagen and shark chondroitin-6-sulphate are cross linked to maximize growth of cells and control the rate of matrix degradation. After neodermis formation (~2–3 weeks), the epidermal analogue (silicon) is removed and replaced with thin epidermal autograft or cultured epithelial cells. Major causes of loss of dermal analogue include infections and shearing with devascularization. Current engineering is exploring seeding of the dermal analogue with epidermal cells that could then produce epidermis (a one-step skin replacement process).

Stem Cell Therapies

To date, no stem cell technologies have been clinically introduced as a standard. Anecdotally, Jeschke had great success with stem cell treatment for a patient who had almost 90% burn coverage and had been in hospital without healing for two years. Upon admission to Jeschke's unit, stem cell treatment was attempted and the patient was out of the hospital within three months. One current challenge is the inability to perfectly mimic natural human skin with this technology.

Human Fibroblast-derived Temporary Skin Substitute

Human fibroblast-derived temporary skin substitutes

Lower Leg Ulcers

Leg ulcers account for 80% of all cases of ulcerations worldwide. The cost of wound care for leg ulcers in Canada, is estimated to be more than \$100 million per year. Based on an analysis conducted in Ontario, cost-savings of \$6,200 per patient can be realized if the geko™ device is used as a first-line adjunctive therapy for Venous Leg Ulcers.



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are based on neonatal foreskin fibroblasts cultured into a nylon mesh. This mesh is then coated with porcine dermal collagen that is bonded to a silicon membrane epidermal analogue. The fibroblasts secrete collagen, matrix proteins and growth factors. With these products, tissue matrices and bound growth factors are left intact. Human fibroblast-derived temporary skin substitutes are indicated for partial-thickness burns or donor sites, or for temporary coverage of excised full-thickness burns.

Skin Printing

Skin printing allows the in-flow formation of a continuous, cell-populated sheet with the characteristics of human skin using progenitor cells. Various cell types can be printed, including fibroblasts and cardiomyocytes. *In vivo*, during a study of mice, printed skin improved excisional skin healing and led to complete keratinization in comparison with the control group; however, this technology failed when it was tested on a pig. This led to the development of a hand-held bio-printer.

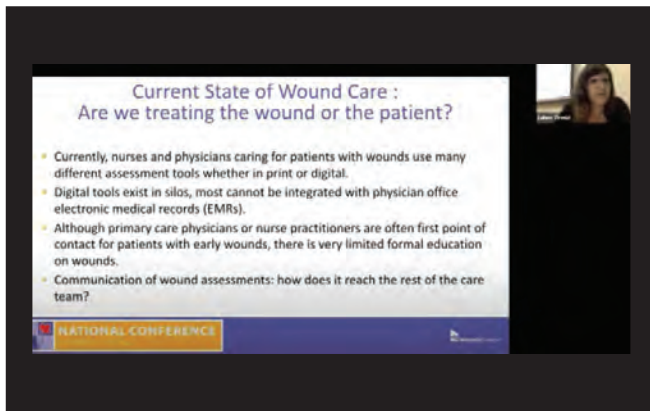
Hand-held Bio Printing

This device is lightweight, flexible and intraoperatively usable. It can address heterogeneous topography (e.g., fragile, wet, large, angled wounds) and enables equal, precise, homogenous depositing. Using this printer, an entire body's worth of skin that mimics patient cells and structure can be printed in about one hour. When tested on pigs, it had a remarkable efficacy. Researchers are currently seeking clinical approval for this device.

IMPROVING EQUITABLE ACCESS TO QUALITY WOUND PREVENTION AND CARE IN CANADA: A CASE-BASED APPROACH

Session Speakers: Catherine Phillips, PhD; Lubna Tirmizi, MD

According to Michael Marmot, professor of epidemiology and public health at University College



London (UCL) and director of The UCL Institute of Health Equity, “Health inequalities and the social determinants of health are not a footnote to the determinants of health. They are the main issue.” To begin the session, Catherine Phillips encouraged delegates to consider the impact of factors like mobility limitations, food insecurity, exposure to violence, precarious housing, wound stigma and traditional knowledge/ritualistic practices on health status and wound healing.

Bryant & Raphael (2020) define social determinants of health as the conditions in which people are born, grow, live, work and age. These include socioeconomic status, housing, education, literacy, physical environment (neighbourhood and home), social support, religion, networks and social capital, employment, obesity status, race, gender, sexuality and health status. It is critical for health-care providers to recognize the context and conditions in which patients are living and the impact these have on healing.

The global need to recognize the legitimacy of wound healing as a clinical specialization and the development of funded collaborative, multidisciplinary teams are critical to equity in wound care. Another important structural factor is support for development of centres of excellence that provide optimal, individualized care as well as standards and education.

Backpack services have been shown to be quite effective for those with poor social capital or with several social determinants impeding their care. These wound care services can refer either to a carer who carries services from patient to patient,

or to packs of supplies and resources that are left in shelters, co-operative housing facilities and other underserved locations for access by staff or residents.

Wound Care Equity

Lubna Tirmizi continued by discussing the current state of wound care equity. Although primary care physicians or nurse practitioners are often the first point of contact for patients with early wounds, there is very limited formal education on wounds. Nurses and physicians caring for patients with wounds may use different assessment tools. These tools often exist in silos, and most cannot be integrated with physician office electronic medical records (EMRs) and are not always communicated to the rest of the care team, especially those providing community care or home care. She emphasized that non-compliance should act as a trigger for an in-depth examination of a patient’s social determinants of health and intervention by allied health providers like social workers. Unfortunately, as we lived through the pandemic, many gaps in care delivery were identified and deepened.

Case Studies

Tirmizi presented a number of case studies that demonstrated gaps in health equity for both patients and care providers.

Jared is a 49-year-old man with no fixed address for the past three years. He is a person who injects drugs and a frequent presenter at the local emergency department. In this instance, the outreach health hub team found him sitting in pain on a park bench. The team found a 3 cm open wound at a needle entry site on his mid left arm with thick yellow discharge and a foul odour. Although he had a fever, he refused to go to the hospital. A virtual visit with a physician was initiated, but Jared threatened to leave if he had to wait.

In Jared’s case, patient barriers included food insecurity, unstable housing and hygiene, lack of regular medical care, poor social supports and unknown medical history. Physician and system barriers included lack of training and programs for point-of-care clinicians caring for high-needs patient

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populations, little incentive for clinicians to engage in this work, lack of safe and dignified examination spaces for patients seen outside of a physical clinic, and poor technology for virtual wound visits.

Abdul is a 76-year-old man with diabetes, in Canada with refugee status. He has an Interim Federal Health plan (IFH), lives in a men's shelter and has no family or friends in Toronto. For six weeks, he had had an untreated, 6 cm-long ulcer on his inner ankle. A shelter support worker brought Abdul to a walk-in clinic for dressing changes, and in the second week Abdul went to a different clinic. He had no regular family doctor, no referral to home care and no recent bloodwork. His mobility was poor, and access to home care at his shelter was a challenge.

In Abdul's case, patient barriers included poor literacy of the health system (new to Canada), lack of regular diabetes follow-up, lack of community or caregiver supports, lack of a stable home and

poor access to home care in a shelter. Physician and system barriers included shortage of primary care in Abdul's area, walk-in doctors and new graduates who are uncertain about wound treatment, and limited home care reach in shelters.

Betty is an 80-year-old woman living at home who had had recent hip surgery, is obese and is in the early stages of dementia. She noticed a deep pain on her tailbone and buttocks. At the time of this case, Betty's hip surgery was two weeks prior and she was having physiotherapy three times per week. Betty's daughter gives her rides to the surgeon and family doctor but is always in a rush. During a post-operative visit, Betty forgot to tell her surgeon that her wound is oozing and her tailbone is sore. Betty's physiotherapist sends a handwritten note to Betty's family doctor that she noticed slight discharge from a surgical wound and a small ulcer on her coccyx. No measurement or description of either wound was given.

In Betty's case, patient barriers included mild memory changes, limited family supports, shame related to weight, and poor mobility. Physician and system barriers include inability to get an appointment with a family doctor, a difficult-to-navigate home care referral process and lack of connectivity between providers, leading to delayed assessment and treatment.

Summary of Barriers for Equity in Wound Care

- Challenges of converting standardized print assessment tools for wounds to digital formats
- Sector health-care partners using siloed approaches
- Poor access to resources for remote and high-needs populations
- Lack of formal wound education of graduating physicians

How do we achieve equitable wound care?

- Using an integrative care approach (one patient, one care plan)
- Implementing patient neighbourhoods (delivering all services close to home)
- Developing and implementing a standard wound care "language"
- Developing and implementing digital solutions for wound care that are supported by research and available to all point-of-care clinicians
- Integrating digital wound care tools into EMRs and community collaborative platforms

PRACTICAL SOLUTIONS TO MALNUTRITION IN WOUND PREVENTION AND CARE

Session Speaker: Maria Weatherbee, RD

Malnutrition is defined as the insufficient intake of calories, protein and/or other nutrients over a period of time resulting in loss of fat and/or muscle stores. It can also occur with an excess of nutrients. Malnutrition has many faces and both over- and under-nutrition can result in muscle loss and func-



tional decline. Overnutrition is sometimes overlooked; these patients require better quality calories. Sarcopenic obesity refers to both muscle loss and obesity happening at the same time, which is often caused by excessive intake of poor-quality calories. Cachexia is malnutrition related to an underlying disease.

Approximately 45% of adults admitted to Canadian hospitals are malnourished. These patients stay an average of three days longer in hospital than those who are not malnourished. Malnutrition costs the Canadian health-care system an estimated \$2 billion each year. Additionally, one in three seniors in Canada struggles to meet their nutritional needs.

Malnutrition has many causes. For example, poor appetite, hospital admission, inability to prepare and/or buy food, infection, feeling unwell, new medications, gastrointestinal issues, pain, depression, anxiety, food insecurity, poor knowledge of nutrition and poor dentition or dysphagia can all lead to malnutrition and serve as barriers to wound healing. Malnutrition can lead to lack of energy, prolonged hospital stays and/or recovery time, increased risk of dehydration, increased risk of infection, delayed wound healing and increased fall risk.

Nutrition and Wound Healing

Every phase of wound healing requires adequate nutrition; protein that is consumed is broken down into amino acids that are used to rebuild and repair tissues. Malnutrition leads to delayed healing time by prolonging inflammation, increasing angiogenesis and fibroblast metabolism, and prolonging the time required for extracellular matrix remodeling. Malnutrition (especially if it causes dehydration and/

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¹ In vivo study EM-13977.

² 3M data on file. 34-8719-9395-1_BG_IFU.

³ 10 cm x 10 cm and 15 cm x 15 cm (4 in x 4 in and 6 in x 6 in) dressings, based on in vivo studies EM-13977 and EM-13978. Two times longer wear time than leading competitor silicone foam dressing when worn for 7 days (6.9 days for 3M™ Tegaderm™ Silicone Foam Dressing, 2.8 days for Mepilex® Border Foam Dressing). 3M data on file.

⁴ 3M data on file. Claim-sheet-US-05-291517_6.

or anemia) is associated with increased risk of developing wounds like pressure injuries.

Malnutrition cannot be treated if clinicians are unaware of it. It is important to ask patients open-ended questions. Ask questions that are not related to eating (e.g., about diabetes management, recent bloodwork, social network, employment status, household dynamics), ask about nutrition knowledge and/or previous nutrition education and, if possible, ask family members and other care supporters questions about the patient's lifestyle. Some questions that clinicians can ask to gain a more complete picture of a patient's nutrition include:

- What are your favourite protein foods to eat?
- How many meals do you eat each day?
- How often do you eat meals alone?
- What foods have protein in them?
- How do you get your meals?
- Who cooks at your house?
- What did you have for breakfast today?
- How do you get your groceries?
- How would you describe your appetite?

Early detection and nutrition intervention are important for pressure injury and malnutrition prevention. Nutrition screening can be the first step in identifying patients at risk for malnutrition. There are a variety of practical, easy-to-use and cost-effective nutrition screening tools available. These can be found on Wounds Canada's [Additional Best Practice Resources](#) page. The Canadian Nutrition Screening Tool (CNST) is composed of two questions:

- Have you lost weight in the past six months without trying to lose weight?
- Have you been eating less than usual for more than a week?

If the patient answers yes to both questions, a dietitian referral is recommended to confirm malnutrition. This tool has not yet been validated for use in the community setting.

It is important to remember that blood work is not always necessary to confirm malnutrition. A conversation about nutrition may give you enough information on a patient's nutrition status to initiate a dietitian referral. Previously, albumin was considered a good predictor of protein intake, but it is not always reliable, especially for patients with

wounds. Because albumin levels can be elevated with dehydration or lowered with inflammation, it can give clinicians a false picture of a patient's nutrition status. Currently, there is no specific marker for malnutrition.

Wound healing increases a patient's daily energy (calorie) need. Weight monitoring can help prevent malnutrition. Significant weight loss is a red flag; clinicians should refer patients to a dietitian when significant unintentional weight loss (5%) occurs. If possible, clinicians should obtain a patient's weight history on admission and weight should be taken monthly in long-term care. Loose-fitting rings, watches and even dentures can be indicators that a patient has lost weight.

Wound healing also increases a patient's daily protein requirements. Clinicians should encourage patients to take in consistent protein and calories throughout the day to encourage protein sparing and avoid having protein being broken down and used as energy.

Adequate hydration is required for the perfusion of oxygen and nutrients to wound tissue for repair. Clinicians should educate patients on the signs and symptoms of dehydration. Soup and flavoured gelatin can be used to increase hydration.

Barriers and Supports

Purchasing and preparing healthy foods can be difficult for individuals with wounds. These patients may not be able to get to a grocery store (e.g., if offloading feet) or stand to prepare food at a counter or stove. Patients may rely on convenience stores or fast-food establishments, which typically offer fewer healthy options. A few potential solutions to these issues are food and grocery delivery apps, meal kits or community ride sharing.

Low-income households are at higher risk of food insecurity, which is associated with higher rates of diabetes, cardiovascular disease and hypertension. While these patients may not appear malnourished, referral to a social worker is indicated in these cases, as supplement coverage and special diet funding may be available. Clinicians should be aware of and able to communicate to the patient about possible government supports and/or benefits available and free food resources in their area.

Social media can be a large source of misinformation for patients. Clinicians can direct patients to accredited organizations who are now using social media, like Wounds Canada, Diabetes Canada, Dietitians of Canada and the Heart and Stroke Foundation. By engaging with these organizations, patients may be able to find a network of others in similar health situations and relieve feelings of isolation.

TIPS FROM THE EXPERTS: SCARS, FROSTBITE

*Session Speakers: Michael G. Brandt, MD MSc FRCSC;
Alexander Poole, MD FRCSC DiMM;
Josianne Gauthier, B.Pharm MSc Pharm CRE*

Complex Scars

Every surgical incision results in some form of post-operative scarring. Facial scarring has been correlated with reduced quality of life, negative perception of body image, decreased objective attractiveness and higher incidence of depression. Scars can be defined by their height, width, discolouration, distortion, texture, evidence of surgery, impact and camouflage.

“Unsatisfactory” scars can be pathologic (e.g., hypertrophic or keloid) or non-pathologic. Non-pathologic scars can be intrinsically unsatisfactory as a consequence of normal wound healing (e.g., wide scar, discolouration, raised/depressed, texture/surface irregularities) or extrinsically unsatisfactory from iatrogenic sources (e.g., misaligned wound edges, trap-door deformities, evidence of surgery). Treatments for intrinsically unsatisfactory scars are based on their features and might include revisions, make-up, resurfacing and/or filler. Scar location and/or position and distortion of surrounding structures can cause a scar to be extrinsically unsatisfactory.

When addressing unsatisfactory scars, surgeons aim for improvement over perfection and often wait for the scar to mature and for the patient to “own” the scar. Surgical techniques for scar revisions include fusiform excision, re-excision and close, Z-plasty (to reorient the scar), W-plasty and geomet-

ric broken line closure. Multiple procedures may be necessary to improve the appearance of a scar.

Frostbite

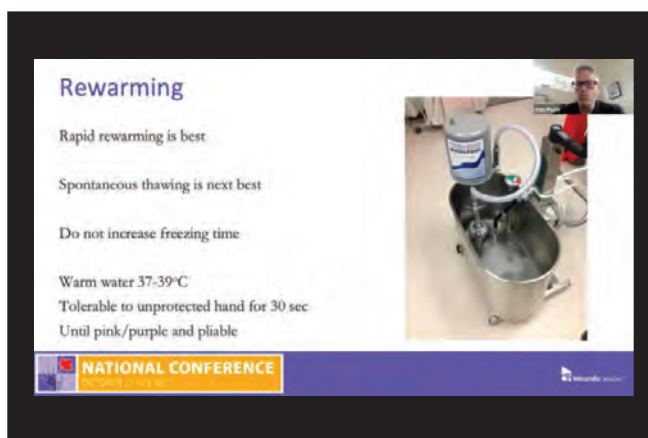
Frostbite is often a preventable injury. When extremity cold injuries occur, there are three phases: prefreeze, freeze and thaw. Frostbite occurs in the second and third phases. When the surface temperature of the skin reaches 15°C, pain occurs. At 7°C, numbness occurs; and at 0°C, frostbite occurs. Symptoms of frostbite include pallor and/or a waxy, blue appearance. Post-thaw, skin may appear pink, red, blue or grey. Additionally, blisters, edema and eschar may be present.

Freezing injuries like frostbite are caused by extracellular ice formation and osmotic pressure changes. During the thawing phase, vasoconstriction and microthrombosis occur. The faster the intervention in this injury, the better. There is a 28% decrease in salvage rate with each hour that passes.

Frostbite classification is based on acute physical findings:

- **1st degree:** numbness, erythema, white, yellow plaque, mild edema
- **2nd degree:** clear blisters, edema, erythema
- **3rd degree:** deeper, hemorrhagic blisters, beneath the dermal vascular plexus
- **4th degree:** through dermis and into subcutaneous tissue, into muscle and/or bone

First- and second-degree frostbite are considered *superficial*, with minimal anticipated tissue loss, while third- and fourth-degree frostbite are considered *deep*, with deeper injury and anticipated tissue loss.



Bone scans have been found to accurately predict ultimate amputation levels.

A grading system has been proposed for hands and feet to predict outcomes:

- **Grade 1:** absence of cyanotic changes, no risk of amputation
- **Grade 2:** cyanosis in distal phalanx, moderate risk of amputation
- **Grade 3:** cyanosis into the middle phalanx, high risk of amputation
- **Grade 4:** cyanosis into the metacarpal/tarsal, amputation 100%

Basic treatment includes rapid rewarming, early movement, wound care, hydrotherapy and the use of advanced therapeutics, and avoidance of surgery.

Rapid rewarming is best, spontaneous thawing is next best. Freezing time should not be increased. Warm water (37–39°C) should be used; it is tolerable to an unprotected hand for 30 seconds. Skin should be rewarmed until pink or purple and pliable.

Topical Wound Preparations in Frostbite

While there have been over 40 publications on frostbite management from 1961 to today, wound care is only described in 26 and is often poorly detailed.

Antiseptics with a broad range of antimicrobials are often added to rewarming water and whirlpool hydrotherapy. Povidone-iodine and chlorhexidine are frequently used.

Silver nitrate is a compound with antiseptic properties that has similar effects as hexachlorophene

and povidone-iodine but can result in less pain and infection. However, it stains skin, clothing and linens.

Silver sulfadiazine is an antimicrobial cream that releases free silver ions in high concentration. This treatment is controversial as there is not enough evidence to know whether it promotes or slows wound healing, and it requires frequent application.

Aloe vera is an antimicrobial with anesthetic properties that inhibits thromboxane B₂ and limits the production of PGF_{2α}. In elevated amounts caused by frostbite, thromboxane B₂ and PGF_{2α} can cause vasoconstriction and platelet aggregation. Clinicians should avoid after-sun products as these often contain lidocaine and alcohol.

There is very little evidence or documentation of the use of topical antibiotics for treating frostbite.

Frostbite wounds should be left open as much as possible. Most dressings used for frostbite care are non-adherent, synthetic contact layers like silicone, paraffin, smooth acetate or petrolatum. Bulky dry dressings or gauzes like cotton, rayon and polyester are used as an outer layer to absorb excess moisture and protect from trauma by providing some padding. Occlusive dressings should be avoided.

There are some anecdotal reports on the use of either hydrofiber silver dressings that release silver ions in a sustained fashion or silver foam dressings for frostbite management. These dressings have been used with the goal of reducing bioburden and treating local infections, but they do not promote wound healing. 🩹



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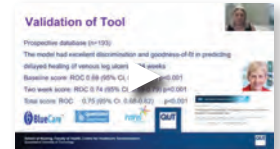
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Perfuse Medtec Sponsored Learning: What a Difference a Day Makes in Wound Healing Outcomes: A New Chapter in the geko™ Device Story

[Click to view](#)



Presenters: Gary Sibbald, MD FRCPC (Med, Derm) MACP FAAD Med FAPWCA; Christina Parker, (SFHEA) BHLthSci (Nsg) Grad Cert. Academic Practice PhD; Holly Murray, BNSc RN WOCN NSWOC WOCC (C); Kieron Day, PhD; Rochelle Duong, RN BScN IIWCC MHA(CC)

Gary Sibbald is a dermatologist and internist with a special interest in wound care and education. He is a professor of Medicine and Public Health at the University of Toronto and international wound care key opinion leader. He received the Queen Elizabeth II Diamond Jubilee Medal in 2013.

Christina Parker is an associate professor from the School of Nursing, Centre for Health Care Transformation in Brisbane, Queensland, Australia. She has been a registered nurse for 28 years and worked in hospital, aged and community settings and leads a wound healing research team at Queensland University of Technology.

Holly Murray is a registered nurse who graduated from Queen's University, Kingston, Ontario. She has worked 25 years in the home care setting and is a certified NSWOC. She has been working the past 10 years in a nurse-led ambulatory clinic in the Mississauga-Halton region in Ontario.

Kieron Day is a clinical research professional with over 20 years of experience in industry and academia. He specializes in creating key strategies to facilitate medical technology adoption and therapy expansion.

Rochelle Duong is a registered nurse who has transitioned into industry. She has worked within home and community care settings and is presently the National Director of Clinical and Market Development for Perfuse Medtec.

Predicting Venous Leg Ulcer Healing

Slow- and non-healing venous leg ulcers create significant socioeconomic burdens for patients and health-care systems. It is estimated that 3% of total health expenditure in Australia is spent on the treatment of chronic leg ulcers, where 70% are predominantly venous in etiology.

It is often difficult to determine whether a VLU will be hard to heal. Evidence on healing trajectory of VLUs varies. In general, 70% of VLUs will take approximately 24 weeks to heal. 30% of VLUs will remain unhealed even in the presence of best practice treatment protocols. For these reasons, there is a need for a Venous Leg Ulcer Risk Assessment tool (VLURA) to better stratify patients and predict wound healing outcomes.

Table 1. Risk Factors for Delayed VLU Healing

Physiological	e.g., lack of high compression, larger wound area, longer ulcer duration
Economic	e.g., low socioeconomic status
Social	e.g., lack of social support
Psychological	e.g., anxiety, stress, depression

Many factors may delay healing of VLUs (Table 1). After reviewing current evidence regarding risk factors for delayed VLU healing and analyzing predictors for delayed healing from databases, an expert wound advisory group has developed a 10-item VLURA tool (Table 2). Four of the 10 items remained significantly related to delayed healing: patients who live alone, compression <30mmHg, PUSH score of ≥ 10 , ulcer area reduction of <25% in 2 weeks.

A validated venous leg ulcer risk assessment tool can

Table 2. A 10-Item Venous Leg Ulcers Risk Assessment Tool

1. Age	6. Size of ulcer area (in cm ²)
2. Duration of ulcer (weeks)	7. Type of compression
3. Does the patient live alone?	8. Risk assessment score from baseline visit
4. Calf and ankle circumference	9. Size of ulcer area from baseline visit (in cm ²)
5. Wound bed presentation	10. Current size of ulcer area (in cm ²)

<https://www.vlur-risk-tools.org.au/>

help clinicians identify risk factors for delayed healing. Clinicians can then determine realistic outcomes for patients, guide early referrals and tailor treatment plans. This VLURA tool can also be converted to IT applications for phones, tablets and handheld devices to enable efficient and accurate use. Ultimately, a VLURA tool such as this will help improve healing rates for patients with VLUs, leading to cost savings for the patients and health-care systems.

Measuring Progress to Wound Healing

Wound healing is a complex biological process, and measuring wound healing is often challenging. Traditionally, wound healing rates can be evaluated either by total area healed or percentage area healed. Both metrics provide an inherent bias when analyzing wound healing rates. Area-to-perimeter ratio compared to wound diameter (i.e., wound margin advance [WMA]) demonstrates a linear relationship and is a much better representation of the rate of healing and predictor of wound healing as it removes bias (Figure 1).

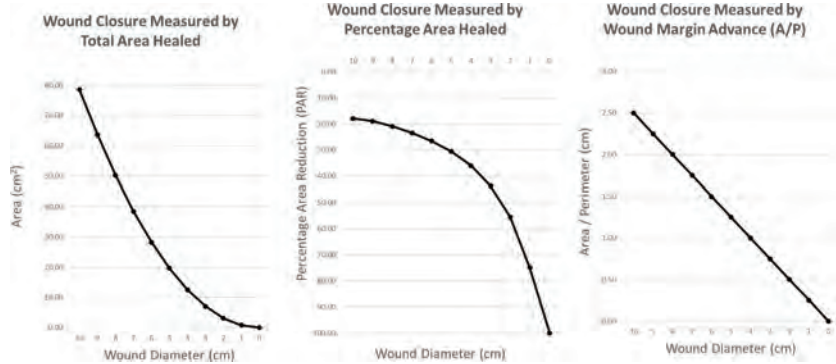


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Figure 1. Comparison of Wound Closure Metrics

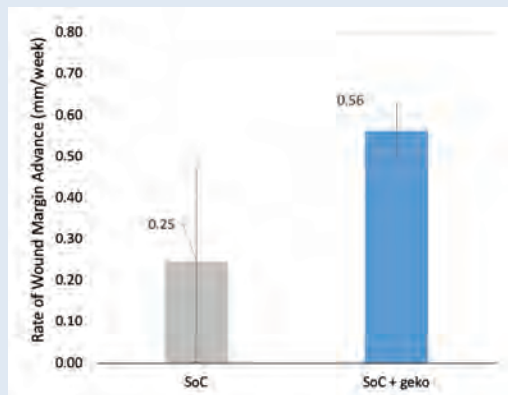


How a Change in Practice Improved VLU Healing Outcomes

The geko™ device is a muscle pump activator that stimulates the common peroneal nerve at the lower leg, activating lower leg muscle pumps, and can increase circulation up to 60% achieved normally by walking. It is often used as adjunctive therapy for the management of VLUs.

At a nurse-led ambulatory wound clinic, 30 days of standard-of-care treatments for VLUs was required prior to adding the geko™ device to the care plans. An evaluation with 18 patients was conducted to compare the healing outcomes of VLUs with standard-of-care only and standard-of-care plus the geko™ device. The evaluation demonstrated that,

Figure 2. The Effect on Rate of Wound Margin Advance of Adding geko™ to Standard Care (N=18)



by shortening the time to initiating the geko™ device treatments (from 14.3 weeks to 3.8 weeks), VLU closure was significantly faster (~55% increase in rate of healing) (Figure 2). Faster healing times translate to earlier patient discharge from wound care services. This, in turn, reduces the socioeconomic burden of VLUs for patients and health-care systems.



Cost Savings when the geko™ device is used:

Cost of VLUs and the use of the geko™ device

- Direct nursing care
- Dressing supplies
- geko™ device
- Length of healing

Savings

In home and community care:
Cost avoidance of \$6200/patient

In acute care:
Cost avoidance of \$2300/patient

3M Sponsored Learning:

Management of Lower Extremity Wounds: Practices to Help the Wound Healing Journey

Presenters: Chris Murphy, RN WCCC(C) BSc(Hons) MClScWH PhD; Cindy Miller-Mikolajczyk, RN

Christine Murphy is a registered nurse and a Nurse Specialized in Wound, Ostomy and Continence (NSWOC) who works at The Ottawa Hospital with specialties in complex surgical and vascular surgery wounds. She completed the Master of Clinical Sciences (Wound Healing) at Western University. Her doctoral research investigated the assessment and treatment of lower extremity wounds in the vascular surgery population, with a focus on ultrasound debridement and wound infection.

Cindy Miller-Mikolajczyk has been a registered nurse since 1978. She has worked in various roles at KCI/3M for the past 22 years, including sales, clinical, marketing and research and development. She held the role of Senior Director of Clinical Science and Education at KCI's Corporate Headquarters and currently holds the role of Global Medical Translational Lead at 3M.

Vascular Wounds – Time is Tissue

Ischemic wound infection can rapidly progress to tissue loss. All lower extremity wounds should be considered to have concurrent peripheral arterial disease (PAD) unless demonstrated otherwise. PAD is a progressive disease that often requires revascularization surgery. Even then, surgery may have to be repeated for some patients. After revascularization surgery, there is a three-month “window of opportunity” for wound healing.

For vascular wounds:

Time is vascular patency

Time is extent of wound care requirements

Time is antibiotic requirement

Time is tissue

PAD can pose specific challenges for wound healing.

On a cellular level, PAD can lead to impairment in:

- Collagen crosslinking (i.e., collagen scaffold rebuilding)
- Growth factor and cell availability
- Biofilm clearance

- Nutrient and oxygen availability
- Metabolic waste clearance (leading to altered pH, cell function and increased bioburden)

PAD can also hinder wound healing by:

- Cultivating an environment favouring bacterial growth
- Neuropathy (i.e., altered sensation and cell function)
- The presence of edema

Patients with vascular wounds often have complex systemic diseases and comorbidities that can impact wound healing and their overall well-being. Even post-revascularization and when the wound progresses to closure, the tissue is often fragile and the wound can recur. Advanced therapies are a critical part of the toolkit for timely wound closure.

Non-Healing Wounds – Driving an Inflammation Cycle

Some vascular wounds can be trapped in a never-ending cycle of delayed wound healing (Figure 1). Non-healing wounds are often colonized by bacteria. These bacteria secrete proteases and toxins that can degrade the extracellular matrix and growth factors, leading

Figure 1. Cullen's Circle – The Vicious Circle of Delayed Wound Healing



Gibson D, Cullen B, Legerstee R, Harding K, Schultz G. MMPs made easy. *Wounds Int.* 2009;1:1-6.

to damaged tissues in the wound. Damaged tissues signal the body to initiate the inflammatory process, causing cytokines and free radicals to be released. Bacterial proteases and toxins can also cause the body to release cytokines and free radicals directly. This accentuates the inflammatory response. The ongoing inflammation causes cells in the wound to produce excess proteases, upsetting the balance between proteases and protease inhibitors. This causes further tissue damage and re-starts the cycle of non-healing. Advanced wound therapies and products can be utilized to break free of this cycle of delayed wound healing.

Advanced Therapies: Part of the Complete Plan of Care for Vascular Wounds

Dressings:

Dressings are an important component of wound management. Dressings may aid in wound healing by:

- Maintaining pH and moisture balance
- Reducing inflammatory proteases
- Stimulating positive wound response by:
 - ◆ Supporting angiogenesis
 - ◆ Providing cellular components for collagen scaffolding, cell attachment, mitosis
 - ◆ Growth factor protection

Compression Therapy:

Compression therapy is the gold standard of care for venous leg ulcers (VLUs) in the presence of adequate arterial blood flow. They are also helpful for the management of post-operative edema (Table 1). When applying compression wraps, bulky underlying

layers of gauze wraps and dressings can inhibit the comfort layer's ability to manage skin moisture and impact compression. Compression wraps should only be applied by trained clinicians to prevent negative outcomes. Inadequate compression may feel more comfortable for patients but can lead to sub-optimal wound outcomes (e.g., delayed healing).

Negative Pressure Wound Therapy:

Negative pressure wound therapy (NPWT), such as 3M™ V.A.C.® Therapy, is a useful adjunctive therapy to support wound tissue building and healing. NPWT can aid wound healing by:

- Reducing edema
- Promoting perfusion and granulation tissue
- Drawing wound edges together
- Reducing wound size
- Providing an external barrier to contamination
- Enhancing epithelial migration
- Supporting structural integrity

NPWT with instillation incorporates soaks (most often saline) and dwell time. Instillation and dwell time are useful for facilitating the removal of thick wound exudate and other infectious material in the wound. 3M™ Veraflo™ Therapy is an example of NPWT with instillation and dwell. This therapy can be used with the 3M™ V.A.C. Veraflo Cleanse Choice™ Dressing, which may be considered as a wound cleansing option when surgical debridement must be delayed or is deemed inappropriate by the clinician.

3M Science.
Applied to Life.™

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Coloplast Sponsored Learning:

Modern Management of Complex Woundscapes



Presenter: Melody Yaceyko, BScN MN:NP ET/NSWOC

Melody Yaceyko is a registered Nurse Specialized in Wound, Ostomy and Continence (NSWOC) who has been practising at Alberta Health Services for the past 17 years. She is also a Family All Ages Nurse Practitioner. She has contributed to the development of policies and guidelines on topics such as basic and complex wound management, ostomy assessment, lower leg assessment and negative pressure therapy.

Client-Centred Dressing Selection

Dressing selection for wound care is a complex clinical decision. There is no “magic bullet” dressing that is suitable for all wounds and clients nor a “one-size-fits-all” approach for dressing selection. Clinicians should choose dressings based on client-centred goals and research evidence. Clinicians should also consider the following factors when choosing a dressing:¹

- Goal of treatment
- Wound characteristics (including infection)
- Indications and contraindications
- Phase of healing
- Needs (and risk factors) of the patient, patient choice, lifestyle and comfort
- Cost-effectiveness
- Product availability and skill of the caregiver
- Safety, effectiveness and ease of use

Biatain® Foam: An Ideal Dressing

As mentioned above, there is no “magic bullet” when it comes to dressings. With that said, according to research evidence, there are “ideal” dressing properties and characteristics that can support and/or accelerate wound healing.

Thermal Insulation and Wound Protection

When a wound bed is cooled below core temperature (<33°C), evidence shows that neutrophil, fibroblast and epithelial cell activity decreases. There is also impaired collagen deposition, reduction of late-phase inflammatory cells and fibroblasts, delayed re-epithelialization and increased risk of infection. In essence, cooling of a wound bed below core temperature delays healing. Similarly, overheating wounds (>42°C) also delays wound healing. At core temperature of 33°C, there is increased blood flow, improved oxygen tension and increased collagen deposition and immune function.

Biatain® foams are made with polyurethane (PU) substrate, are biocompatible, mechanically stable, non-toxic, hypoallergenic, non-shedding and flexible. The open-celled PU structure is uniquely engineered to support form and function, unlike other polyurethane foams (PUF). Biatain® foams can provide thermal insulation without overheating, and protection from external trauma and debris.

Moisture Balance

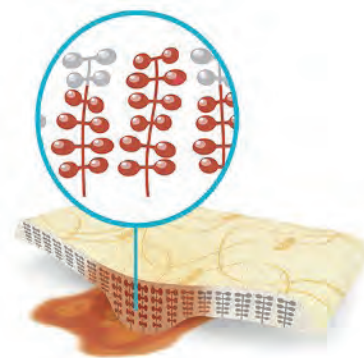
Evaporative loss of moisture of injured skin is 20 times that of intact skin. Without a dressing, wounds can easily dry out and healing will be delayed.

Biatain® foams have an open-cell alveolar structure that promotes vertical absorption of exudate into the dressing. Since liquid is a better thermal conductor than air, drawing exudate vertically into the dressing promotes better thermal insulation than a dry dressing. Biatain® foams also have superior exudate retention, reducing flashback and retaining drainage in the structure of the dressing.

The outer layer of the Biatain® foam dressing consists of a film backing. This film is water-proof and impermeable to environmental contaminants and pathogens. It is also engineered to support moisture-vapour transfer, preventing the wound from drying out.

Conformability

Wounds come in all shapes and sizes on all parts of the body. These factors can be a challenge for clinicians when choosing and applying dressings. For deeper wounds,



there is often a need to apply “filler” dressings to fill the dead space and gaps. Failure to fill the wound adequately can lead to increased risk of drainage pooling, maceration, tissue degradation and infection. The use of “filler” dressings also increases the cost of treatment.

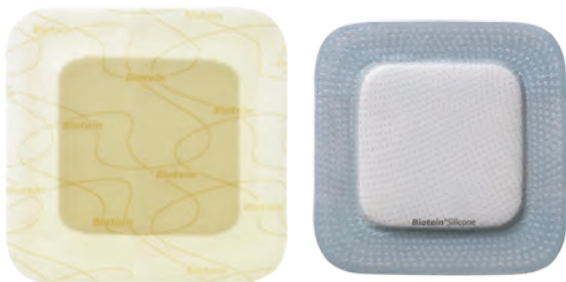


Biatain® foams are engineered with a proprietary 3DFit technology to maximize intimate contact with the wound bed by conforming exactly to the shape and depth of the wound to a maximum of 2 cm.

Non-adherent/Atraumatic Removal

Dressing removal is often reported as the most painful component of wound care by patients. Pain related to dressings is commonly associated with suboptimal moisture balance and tissue adherence or skin stripping associated with adhesives.

Biatain® foams come in adhesive and non-adhesive forms. Biatain® Silicone dressings contain atraumatic silicone technology across the foam interface and the borders of the dressing. This significantly reduces the incidences of painful dressing adhesion and skin stripping related to removal. Biatain® Adhesive dressings contain the Coloplast proprietary 3DFit technology in the PU substrate along with a thin hydrocolloid border. This feature facilitates an improved seal compared with standard acrylates. The moisture absorption into the hydrocolloid promotes superior seal flexibility and contamination prevention. The Biatain® Adhesive dressing is especially useful for clients with complex periwound anatomy.



Protection from Infection and Removal/Containment of Odour

Biatain® foams contains an occlusive film outer layer that provides a barrier against external contaminants and pathogens. Biatain® Ag and Biatain® Silicone Ag dressings provide a sustained release of silver ions to achieve delivery of high volumes of soluble ionic silver

to the wound bed for up to seven days. Biatain® Ag and Biatain® Silicone Ag dressings have also been shown to kill 99.9% of mature biofilms (*Pseudomonas aeruginosa*) and to prevent biofilm formation (shown *in vitro*). Both dressings are effective against a broad spectrum of bacteria and fungi, without the need for agents such as chelators or surfactants. By addressing the bacterial balance in the wound, these dressings can also contain and prevent odour associated with local infections.

Ease of Use, Infrequent Changes and Cost Effectiveness

Biatain® foams have a no-touch backing system and are easy to apply. They require infrequent dressing changes due to their abilities regarding moisture balance and sustained ionic silver release. Their ease of use and infrequent changes can result in reduction in the nursing time required. Compared with conventional gauze, advanced products such as Biatain® foams have a high per-unit-cost but may ultimately be more cost-effective due to faster wound closure rates and the decreased frequency of dressing changes. The 3DFit technology allowing the dressing to conform intimately to different wound shapes reduces the need for “filler” dressings and hence, the overall treatment cost.

Reference

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Urgo Medical Sponsored Learning: Pressure Injury: With Focus on Prevention, Is Quality Treatment Overlooked?



Presenters: Terry Treadwell, MD FACS; Emily Greenstein, APRN CNP CWON-AP FACCWS

Terry Treadwell received his medical education at The University of Texas Southwestern Medical School in Dallas, Texas, and practised vascular and general surgery in Montgomery, Alabama. In 1998 he founded The Institute for Advanced Wound Care at Jackson Hospital in Montgomery and serves as the Medical Director. He has been involved with numerous educational and research initiatives and serves as a clinical editor for Wounds and is a member of the World Association of Medical Editors.

Emily Greenstein is a certified (adult-gerontology) nurse practitioner at Sanford Health in Fargo, North Dakota, where she treats patients with acute and chronic wounds. She has been certified in wound and ostomy care for the past nine years. She has also served as an expert reviewer for various wound-related journals and is on the board of the Alliance of Wound Care Stakeholders and the editorial board for the Journal of Dermatology Nurses' Association.

PIs and the Importance of Wound Cleansing Choice

Pressure injuries (PIs) are very common in the hospital setting and are a challenge to manage. There are various treatments for the management of PIs and guidelines regarding the use of certain wound cleansing products.¹ Hypochlorous acid preserved wound cleansers are recommended (Level 1 evidence).

Safety vs. Efficacy

When choosing wound cleansing products, clinicians are often faced with the dilemma of choosing between safety and efficacy, and it can be difficult to find the right balance between the two. Normal saline, for example, is very safe; however, the efficacy of saline on wound cleansing and healing is questionable. On the other end of the spectrum, Dakin's solution and other blended synthetic solutions may be able to remove germs better than saline but are also cytotoxic to key cells involved in the wound healing process.

Hypochlorous Acid (HOCl) and Innate Immunity²

The human body's ability to fend off pathogens naturally (i.e., innate immunity) provides valuable insight into the development of wound care products such as Vashe® Wound Solution. Once neutrophils encounter pathogens in the body, they engulf the pathogens via phagocytosis. Subsequently, hypochlorous acid (HOCl) is released to kill the pathogens.

Why pH Matters in Wound Healing

Wound pH is closely associated with the wound healing process. When a wound is healing, the pH level decreases (see Figure 1). The decreasing pH causes an increase in protease activity and oxygen release, a reduction in toxicity of bacterial end products, an enhancement of destruction of abnormal collagen, a stimulation of angiogenesis and increased macrophage and fibroblast activity and control of enzyme activity.³ pH also has the greatest impact on antimicrobial preservative activity of chlorine in solution:⁴ an increase of pH decreases antimicrobial preservative activity; a decrease of pH increases antimicrobial activity. Controlling pH in the wound can encourage healing,

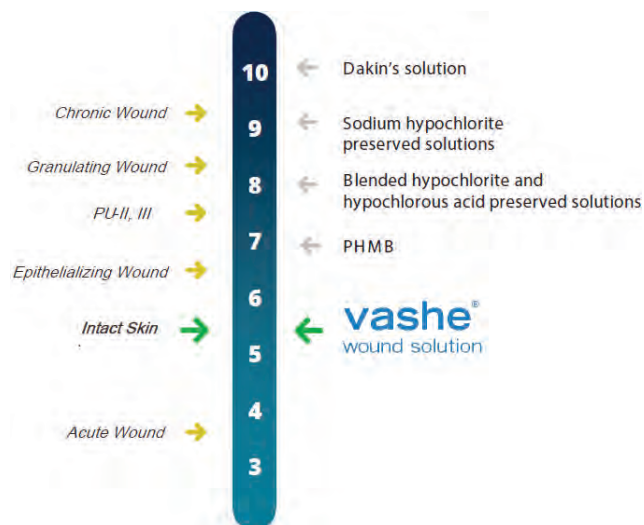


Figure 1. pH levels during wound healing and of commonly used cleansing solutions.

protect cells and aid in the removal of pathogens from wounds.

Best of Both Worlds: Vashe® Wound Solution

Vashe® Wound Solution contains 0.033% HOCl as an antimicrobial preservative and is produced at a pH of 5.5. Because HOCl is naturally occurring—and thus it is not foreign to human tissue and cells at the level present in Vashe®—the Vashe® Wound Solution is biocompatible and safe to use on wounds. The Vashe® Wound Solution has also been found to be tissue-friendly (e.g., to fibroblasts and keratinocytes) and has demonstrated fast *in-vitro* killing of bacteria, fungi and spores.⁵ With the Vashe® Wound Solution, clinicians do not have to sacrifice safety for the sake of efficacy—and vice versa.

Vashe® Wound Solution can be used in conjunction with ultrasonic debridement (Figure 2) and negative pressure wound therapy with instillation (NPWT-id) (Figure 3).

Vashe® and Wound Bed Preparation

Vashe® Wound Solution has been shown to significantly reduce costs related to wound debridement protocols when Vashe® was used instead of saline and collagenase-based debriding agents.⁸ Vashe® Wound Solution can also be used to mechanically remove biofilms on chronic and/or hard-to-heal wounds. It has been demonstrated to penetrate and disrupt the polysaccharide/protein matrix of bacterial biofilms⁹ and reduce wound bioburden effectively without the concern of bacterial antibiotic resistance.^{10,11}

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Ultrasonic Debridement with Vashe® versus Saline

Ultrasonic Debridement Solution	Initial Bacteria Count	Post-Debridement Count	7 days Post-Debridement Count	Failure Rate of Flap
NaCl .9%	>10 ⁶	10 ²	>10 ⁵	80%
Vashe	>10 ⁶	10 ²	10 ²	25%

Figure 2. In comparisons with saline and ultrasonic debridement, patients treated with Vashe® showed a reduction in bacterial count initially and did not have increased bacterial count for seven days post-operatively.⁶ Vashe®-treated patients also had a reduction of post-operative complications, such as flap failure, 55%.⁶

NPWT-id with Vashe® versus Saline and Dakin's

Solution Used	Mean Operating Room Visits	Length of Stay	Days to Closure
NaOCl/NaCl	7	25	37
Vashe	3.2	14	30

Figure 3. Compared with saline and Dakin's solution with NPWT-id, patients treated with Vashe® and NPWT-id had decreased operating room visits, decreased hospital length of stay and faster wound closure.⁷

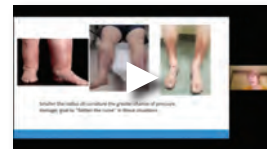
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Medline Sponsored Learning: Putting Comfort and Versatility in the Wound Management Toolbox

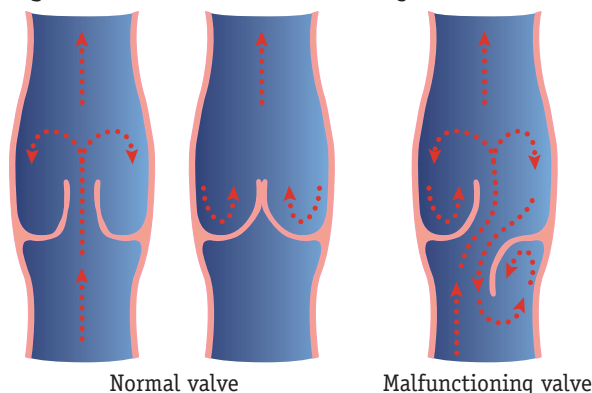
Presenter: Michele Labbie, RN MN NP

Michelle Labbie is a nurse practitioner who is passionate about complex wound management in the context of chronic disease management, particularly in people with lower leg ulcerations and diabetic foot complications. She has focused her expertise in these areas for over 25 years and is actively involved in clinical research, pathways and practice guideline development and implementation of evidence-based care.

Venous Leg Ulcers and Chronic Venous Insufficiency

Venous leg ulcers (VLUs) are a common complication for patients living with chronic venous insufficiency (CVI). VLUs account for 80% of all leg ulcers and have a high recurrence rate, at 70%. Unlike arteries, veins have valves to prevent reflux. These valves work to ensure a one-way return of blood back to the heart to be re-oxygenated (Figure 1). In the leg, the calf muscles serve as a “pump” to aid venous return. The calf-muscle pump works like a bicycle pump, cycling between filling and pumping during gait. Inadequate calf-muscle pump function can result from prolonged inactivity, loss of mobility or age-related decrease in activity level. Venous hypertension can result from valvular incompetence, inadequate calf-muscle pump action and/or venous obstruction. Over time, venous hypertension leads to increased capillary permeability, resulting in leaking of fluid and protein into peripheral tissues (i.e., edema). When untreated, CVI and venous edema can lead to dermatological changes, including hemosiderin deposit, atrophie blanche and hardening of tissues in the leg (lipodermatosclerosis).

Figure 1. Normal and Malfunctioning Venous Valves



(Source: Best Practice Recommendations for the Prevention and Management of Venous Leg Ulcers. Wounds Canada)

Compression Therapy and Venous Return

Compression therapy is the key to reducing, managing and preventing edema. A complete health history and vascular assessment should be completed prior to initiating compression therapy, and clinicians should also carefully consider contraindications to compression therapy, such as allergies, severe peripheral arterial disease and psycho-social factors.

There are two forces that work together to create an interface pressure between the skin and compression garments or wraps. Resting pressure is exerted by the compression garment or wrap when the patient is at rest. This produces the “static effect.” Working pressure is exerted by the compression garment or wrap when the patient is ambulating. This produces the “dynamic effect.” The difference between the two pressures is dependent on the stretch or stiffness of the compression. Compression ther-

***Compression does not work
if the person does not buy in to
the management plan!***

apy assists in working against the forces of gravity and helps support normal venous return up the leg. 30–40 mmHg is the gold standard level of therapeutic compression for the management of venous insufficiency if arterial perfusion is adequate.

Forms of Compression

Compression exists in different forms, including compression garments, wrapped layered compression, adjustable wraps and intermittent pneumatic compression. It is important to note that compression garments help to *prevent* edema, but do not *reduce* edema. Compression wraps are used to reduce and prevent edema from recurring.

How Compression Wraps Work

Compression wraps should be applied at the same tension over the entire lower leg. Wraps exert higher pressure at the ankle, and less at the calf. The amount of pressure exerted by the wraps is dependent on the number of layers applied, degrees of overlap and degree of tension applied. The circumference of the leg inversely impacts the interface pressure (i.e., pressure underneath the wraps). The smaller the circumference of the limb, the greater the interface pressure. Clinicians should always consider the size of the limb when applying compression wraps. The goal is to “flatten the curve” and build up skinnier areas of the leg to even out the interface pressure.

Short-stretch (inelastic) compression provides a lower resting pressure and a higher working pressure (during ambulation) in comparison to long stretch (elastic) compression (Table 1). For these reasons, short stretch (inelastic) compression systems are more comfortable at rest and have more dynamic effects during

ambulation due to the higher interface pressure. With that said, there are instances where elastic compression may be preferred.

Table 1. Types of Compression Bandages

Type	Alternate Name	Static Stiffness	Compression	
			Resting	With Activity
Long Stretch	Elastic	Low	High	Lower
Short Stretch	Inelastic	High	Low (support)	Higher

(Source: Best Practice Recommendations for the Prevention and Management of Venous Leg Ulcers. Wounds Canada)

Things to Consider when Choosing Compression Therapy

- Peripheral arterial perfusion
- General health status and comorbidities (e.g., congestive heart failure)
- Presence of wounds (e.g., location, shape, size)
- Presence of pain and/or infection
- Is the patient managed with antimicrobials and for how long?
- Edema (e.g., where, how much, etiology)
- Skin and hygiene (e.g., cleanliness, contact or stasis dermatitis)
- Adherence to health management plan
- Tolerance of compression
- Social supports (e.g., at home, ability to attend clinic appointments)
- Team approach, with patient-centred considerations
- Characteristics of the compression system (conformability to leg size and shape, ease of application, durability, comfort, ease of patient movement)

AccuWrap



AccuWrap is a two-layer short-stretch compression bandage system. It consists of thin and streamlined layering and is made of 100% woven polyester that is sturdy and breathable. There are accuracy indicators, a visual aid to ensure consistent application of the system. The bandages have a slight cohesive texture, which helps them stay in place, prevents rolling/unrolling during application and facilitates minor adjustments by lifting and repositioning. AccuWrap comes in three different kits: AccuWrap (30–40 mmHg), AccuWrap XL (30–40 mmHg for longer/large legs) and AccuWrap Lite (20–30 mmHg). The packaging includes clinician instructions and a rip-off patient education card.

IoPlex and Compression Therapy

IoPlex is an iodine-based dressing that can be used in conjunction with compression bandaging systems. Iodine is a common antimicrobial agent in wound care. IoPlex dressings are indicated for cleaning of exudative wounds, infected traumatic or surgical

wounds and infected burns. Caution should be taken when using IoPlex for patients with a history of thyroid disease (e.g., Grave's disease, Hashimoto's thyroiditis, goiter) and should not be used on pregnant or lactating patients.

IoPlex is a polyvinyl alcohol (PVA) foam containing controlled-release iodophor for on-demand release of iodine when it comes into contact with proteinaceous exudate. The polymers within the PVA foam reduce cytotoxicity common with iodine and is therefore safe to use.

The PVA foam has large exudate capacity and a wicking ability for significant absorption.

IoPlex has extended wear time, lasting up to three days. However, IoPlex can be stacked under compression to increase wear time if you are changing the compression once a week. The dressing changes colour from charcoal black to white once the iodine is depleted, signalling the dressing is likely ready to be changed.

IoPlex comes pre-moistened and is easy to apply. It can be cut to size or shape and stacked under compression bandaging systems.

Unlock healing potential with IoPlex.

IoPlex with I-Plexomer™ is the world's only controlled release iodine foam dressing.

A proprietary controlled-release system allows for regulated and sustained infection management through the slow release of iodine within the wound dressing.

Highly absorbent, gentle and stackable. Easy to apply and remove.

-  Reduces bacterial burden within the wound dressing
-  Effectively removes exudate and debris
-  Sustained release over 24 to 72 hours
-  Can be cut to shape of wound and stacked



Together Improving Lives
Ensemble, améliorons des vies

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Cardinal Health™ Sponsored Learning:

Waiting Hurts: Let's Heal More Together

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Presenters: Rose Raizman, RN-EC PHCNP CETN(c) MSc MScN; Jennifer Janz, LPN; Jeremy Caul, RN BScN MCIScWH CDE; Susan Chandler, RN MCIScWH NSWOC WOC; Lawrence Lavery, DPM MPH

Rose Raizman's nursing career spans more than 20 years in a variety of nursing positions, including staff nurse, educator, supervisor, faculty, research and special project co-ordinator. She has worked as a Clinical Nurse Specialist in Canada and Israel. She is currently a wound care nurse practitioner at Scarborough Health Network, in Toronto, Ontario.

Jennifer Janz is a licensed practical nurse working at VON Canada in a community nursing environment. She is instrumental in planning and implementing services and products at VON in Nova Scotia.

Jeremy Caul is a registered nurse practising in a mobile team of allied health professionals providing essential services to Sioux Lookout and surrounding First Nations Communities, most of which are fly-in only. He completed the Master of Clinical Science, (Wound Healing) program at Western University.

Susan Chandler started her nursing career in England and has worked in acute, community, primary and long-term care settings. She received a Master of Clinical Science (Wound Healing) degree from Western University. She is also a Nurse Specialized in Wound Ostomy and Continence (NSWOC) with Wound Ostomy Certification from the Canadian Nursing Association (CNA).

Lawrence Lavery is the Director of the Diabetic Limb Salvage Program at Parkland Hospital and the Director of Diabetic Foot Research Group in the Department of Plastic Surgery at the University of Texas Southwestern Medical Center in Dallas, Texas. He has received awards and recognition for his contribution and advocacy for the treatment of diabetic foot disease and amputation prevention.

Negative Pressure Wound Therapy

Negative pressure wound therapy (NPWT) is an adjunctive therapy for the management of a variety of wounds, including acute surgical wounds, dehisced surgical wounds, skin grafts and flaps, burns, traumatic wounds and lower extremity wounds. NPWT is typically employed for the management of wounds that are larger and exudative and require quick tissue deposition or approximation.

Cardinal Health™ NPWT Products Across the Care Continuum

Cardinal Health™ offers a variety of NPWT products for acute, post-acute and home care environments. These



products ensure a smooth transition for patients who require NPWT as they move across the continuum of care.

Cardinal Health™ PRO NPWT Device

The Cardinal Health™ PRO NPWT device is **simple** to use. It has a simple design for easy therapy initiation and troubleshooting for optimal patient care. It weighs less than 0.5 kg and is portable. Patients can bring this device along as they participate in day-to-day activities and attend rehabilitation or therapy sessions. The device also allows for personalized pressure therapy settings and can support up to 1,000 hours of therapy.



The Cardinal Health™ PRO NPWT device is **reliable** and can function at a high-performance level with a powerful yet quiet motor. There are visual and audible alerts to ensure patients are receiving constant therapy. The device has long battery life and can operate for up to 24 hours.

The Cardinal Health™ PRO NPWT device is **effective** for

wound healing. Its clinical effectiveness is equivalent to other market-leading NPWT devices.* It can handle a high volume of wound exudate and is equipped with dependable technology with over 10 years of clinical use.* A recent clinical trial demonstrated that the NPWT PRO (with and without instillation) was found to be as effective as traditional NPWT devices for the management of foot wounds with moderate or severe infection. These wounds required surgical incision and drainage and parenteral antibiotics in addition to NPWT.

Contraindications for NPWT

- Wounds at a high risk of bleeding
- Malignant wounds
- Patients with unstable INR
- Explored fistulas
- Infected wounds
- Necrotic tissue or unbridged eschar in wound bed
- Untreated osteomyelitis
- Wounds with exposed organs, anastomosis

Cardinal Health™ PRO to GO Starter Kit

The Cardinal Health™ PRO to GO starter kit can be utilized to ensure patients are receiving NPWT without interruption as they transition from acute to post-acute/home-care settings. The kit provides everything patients need for 10 days of NPWT. It is off-the-shelf ready and is intended for single-patient use.

Like the Cardinal Health™ PRO NPWT device, the PRO to GO device is user friendly and allows care providers to quickly assess and make decisions. There is a single button control for easy navigation. It is intuitive to use, so clinicians can help patients troubleshoot issues—even remotely. It is lightweight (~0.41 kg), portable and allows patients to continue with activities of daily living while receiving uninterrupted NPWT. The Cardinal Health™ PRO to GO device has various pressure settings and provides visual and audible alerts.

Traditionally, it is challenging for patients from remote communities to access NPWT. Patients have to travel and stay away from home for days at a time to receive such therapy. Medical staff in these areas tend to be transient as well. This poses a challenge for training and implementation of NPWT. The Cardinal Health™ PRO to GO provides an alternative to traditional NPWT options for patients from remote and rural communities.



The Cardinal Health™ PRO to GO starter kit contains:

- 10-day PRO to GO NPWT device
- Three large black foam dressing sets
- Two 300 cc canisters with gel
- A carrying case
- An AC power adapter

Cardinal Health™ SVED® & PRO

Cardinal Health™ offers disposables and accessories for their SVED® and PRO® devices. They include:

- Black and white foam kits
- Canisters (available in 300 cc and 500 cc)
- Irrigation kit for delivery of Simultaneous Irrigation™ technology
- Bridging kit for positioning of SpeedConnect™ for patient comfort
- Other accessories: SensiSkin™, IV pole adapter, y-connector, carrying case



* Data available at Cardinal Health™

Davis KE, La Fontaine J, Farrar D, Oz OK, Crisologo PA, Berriman S, Lavery LA. Randomized clinical study to compare negative pressure wound therapy with simultaneous saline irrigation and traditional negative pressure wound therapy for complex foot infections. *Wound Repair Regen.* 2020;28(1):97–104. doi: 10.1111/wrr.12741. Epub 2019 Jun 27. PMID: 31245901; PMCID: PMC6973291.



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Hydrofera® Sponsored Learning: Coast to Coast – Clinicians Choose Blue

Presenters: Rosemary Hill, RN BSN CWOCN WOCC(C); Natasha Lowe, BNRN IIWCC CCHN(C) NSWOC WOCC(C); Anik Belleville, ISPC; Amanda Loney, BScN RN IIWCC NSWOC WOCC(C)

Rosemary Hill is a registered nurse and certified NSWOC working at Lions Gate Hospital in British Columbia. She participates regularly on provincial committees and is an expert speaker at national and international events. She is also a recipient of the Award of Excellence in Practice from the Association of Registered Nurses of British Columbia.

Natasha Lowe is a registered nurse with experience working in general and plastic surgery and burn units. She completed the IIWCC in 2010 and is a Regional Skin and Wound Care Consultant for Eastern Health in Newfoundland. She is also a certified NSWOC.

Anik Belleville is a registered nurse and has been practising as a certified NSWOC at CIUSSS Estrie, affiliated with Sherbrooke University in Quebec, since 2006. She was a pioneer in prescribing wound care treatments at CIUSS Estrie and has been instrumental in implementing this practice in her organization through various initiatives.

Amanda Loney is a registered nurse and a certified NSWOC and has also completed the IIWCC. She has worked as a community-based nurse and educator for 25 years, specializing in areas of wound, ostomy and continence for the last 20 years. She has been a keynote speaker at national conferences and published in the International Wound Journal.



READY, Transfer and Border PU dressings are ideal for shallow wounds. Transfer is great for between toes, under compression and total contact casting (TCC). The Border dressing provides secure hold and yet gentle removal. No silicone over the foam allows for intimate contact with the wound bed and uninterrupted exudate management.

Natural autolytic debridement and disruption of bio-film. The CLASSIC PVA dressing removes slough and devitalized tissue and biofilm at dressing change.

Natural Negative Pressure. CLASSIC PVA powerfully wicks bacteria-laden exudate away from the wound surface and into the dressing where bacteria and yeast are effectively killed.

The safe, non-cytotoxic choice. All Hydrofera Blue dressings can be used longer term, and throughout the continuum of care. Ideal for clinicians looking for an alternative to silver dressings. Hydrofera Blue is compatible for use with HBOT and with growth factors and enzymatic debriders.

Flatten rolled wound edges simply by cutting the CLASSIC dressing about 1/2" bigger than the wound, covering the edges.

Why Choose Blue?

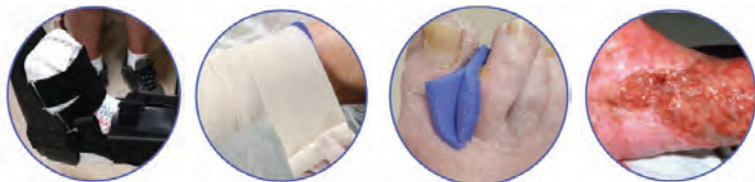
Hydrofera Blue antibacterial dressings are very versatile and address all 4 factors of local wound care: Debridement, moisture management, infection and edge effect.

Hydrofera Blue has two types of foams: Polyvinyl alcohol (PVA) and Polyurethane (PU). The CLASSIC PVA dressings have a very high tensile strength and can be used for packing deep cavity wounds, sinuses and undermining, and ideal for use with negative pressure wound therapy (NPWT). The

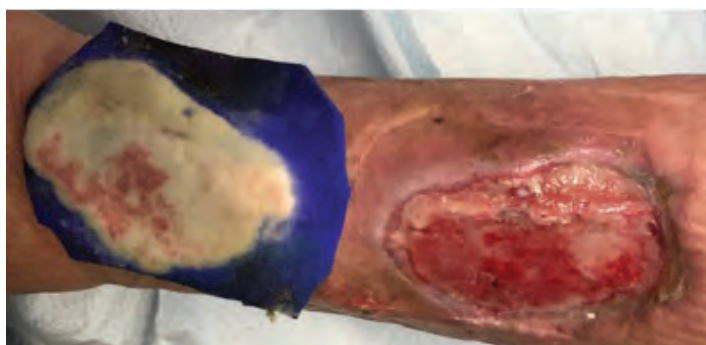


High tensile strength and wicking capacity. Hydrofera Blue CLASSIC PVA and tunneling dressings exert a natural negative pressure through capillary flow. This unique feature allows the dressing to absorb and wick away large amounts of exudate while maintaining a moist wound healing environment. Due to its high tensile strength, it can be used to pack deep cavities, sinuses and undermining without worries of fraying or leaving remnants behind. Easy one-piece removal.

The versatile READY-Transfer PU dressing. TCC remains one of the mainstays for the treatment of diabetic foot ulcers. **Hydrofera Blue READY-Transfer** has been used successfully in conjunction with TCC. No film backing allows for exudate to transfer through the dressing, away from the wound and into a secondary absorbent dressing, killing bacteria as it passes through. The dressing manages exudate and bioburden while the cast works to offload the high-pressured areas. Transfer is also ideal under compression, between toes and areas with yeast and venous leg ulcers.



All Hydrofera Blue dressings have a bioburden indicator. When the bacteria and yeast are absorbed into the dressing, they are effectively killed. When this occurs, the dressing may turn white. This indicates that it is time to change the dressing. We often say “If it turns white, it’s lost its fight. If it stays blue change in 72 (hours).”



Debridement. The removal of slough, debris and bacterial components is essential for wound healing and prepares wounds for adjunctive treatments such as NPWT.

Hydrofera Blue CLASSIC PVA dressings facilitate autolytic wound debridement safely and effectively. Ideal for clinicians who do not sharp debride.



Hydrofera Blue and NPWT

Traditional NPWT and disposable negative pressure wound therapy (dNPWT) are common adjunctive therapies. NPWT typically requires a white PVA or black PU foam in contact with the wound. Many clinicians have found added benefits and great outcomes by substituting these foams with **Hydrofera Blue Heavy Drainage PVA** foam which:

- Can be used over bone and tendon, tunnels and undermining
- Provides antibacterial protection and added wicking
- Saves time: no need to cut HFB to exact wound size “picture frame” like you need to with black foam
- Saves \$\$ by allowing faster transition from canister to disposable NPWT



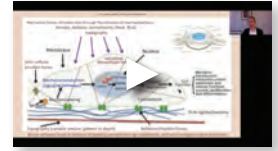
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Daniel@hydrof.com**

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Mölnlycke Sponsored Learning: Setting a New Standard in Advanced Wound Care the Flex 360° Revolution: A Clinical Case Series

Presenter: Kevin Woo, PhD RN NSWOC WOCC(C) FAPWCA

Kevin Woo is a Professor at Queen's University, Faculty of Health Sciences in Kingston, Ontario. He is a leading Canadian researcher in the areas of wound care and chronic disease self-management. He has served on expert panels and advisory boards to develop Best Practice Recommendations and received awards for his contribution in wound care. He is also a web editor for the Advances in Skin and Wound Care website and the president of the Canadian Pressure Injury Advisory Panel.

The Burden of Pressure Injuries

Pressure injuries (PIs) are common across different health-care settings, especially among patients who are hospitalized. The incidence of PIs in hospitalized patients was found to be ~12%.¹ PIs are costly to patients and health-care systems. Amid the ongoing COVID-19 pandemic, there is a rise of medical device-related pressure injuries (MDPIs). Galetto et. al. found that the prevalence of MDPI was ~62%.²

Pathophysiology of Pressure Injuries

PIs are a result of direct pressure, shearing forces and soft tissue deformation. These forces combine to cause a decrease in capillary flow, which leads to capillary thrombosis, ischemia and lymphatic obstruction. Edema then occurs as a result of increased capillary permeability and can cause cell and tissue death. Edema can also lead to decreased capillary flow. Lustig et. al. found that the combined effects of ischemic cell damage, inflammatory edema-related cell damage and direct deformation cell damage lead to exponential cumulative skin damage and rapid damage progression in PIs.³

Risk Factors for Pressure Injuries

Risk factors for PIs include mechanical boundary conditions, susceptibility and tolerance of individuals, internal

strains and stress and damage threshold. A key intrinsic risk factor to PIs is nutrition. Patients with very low or very high BMIs are at a higher risk for PIs.^{4,5} It is important for clinicians to remember that obesity does not always equate to the patient being well-nourished.

Focus on Prevention

The best way to heal a wound is if the wound never existed in the first place. Prevention is key when it comes to PI management. A bundled approach, such as S-Skin (Table 1), can be helpful in planning PI prevention strategies.

Table 1. Pressure Injury Prevention Strategies

S	Surface
S	Skin inspection
K	Keep moving
I	Incontinence and moisture management
N	Nutrition (including hydration)

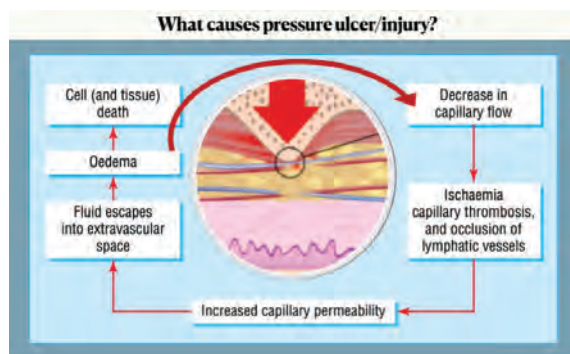
Prophylactic foam dressings have been found to be beneficial for the prevention of PIs. The National Pressure Injury Advisory Panel (NPIAP) recommends the use of:⁶

- Silicone multi-layered dressings to protect the skin for individuals at risk of pressure injuries
- Prophylactic dressings as an adjunct to heel offloading and other strategies to prevent heel pressure injuries
- Prophylactic dressings beneath a medical device to reduce the risk of MDPIs

Challenges for dressing selection for the management of pressure injuries include pooling of wound exudate, lack of conformability and comfort, infection and leakage and wound maceration. Foam dressings that can redistribute shear, pressure and friction and manage wound microclimate are ideal for the prevention and management of PIs.

Mepilex® Border Flex

The Mepilex® Border Flex dressing consists of five



layers: a wound contact layer, a foam pad, a dispersion layer, a drainage retention layer and a waterproof/vapour-permeable film backing. This dressing comes in different shapes and sizes to accommodate different wound types and anatomy. There are “Y” shaped cuts to allow for 360° stretch. The Flex technology allows the dressing to be conformable to accommodate different anatomy and prevent early dressing detachment. The SafeTac® soft silicone wound interface technology results in less painful dressing changes and reduces the risk of maceration. The waterproof film backing allows patients to leave the dressing on while showering and bathing.



The Mepilex® Border Flex dressing retains its shape despite normal weight and shearing forces.⁷ It has excellent fluid handling capacity (FHC) and proposed bacterial trapping action due to its exudate-absorbing properties. It has high axial stiffness.⁸



This allows the dressing to distribute tissue loads better to prevent PIs. However, when a dressing is too stiff (especially around the borders), it can cause skin damage. The Flex technology reduces stress on the border of the dressing by an average of 20% compared with similar dressings, reducing on skin damage around the borders of the dressing. Importantly, the SafeTac® technology allows for atraumatic dressing removal.

In a recent study, the Mepilex® Border Flex and Mepitel® One were observed to be effective for the treatment of type 1–3 skin tears. The complete wound closure rate for these silicone dressings compared with non-adherent, non-silicone dressings with Alldress was significantly higher at one, two and three weeks.⁹ The wound closure rate at week 3 was 96.9% for the silicone dressings compared with 34.4% for the control dressings.⁹

How to Choose a DRESSING?

D	Diameter and depth of the wound
R	Resources available
E	Exudate (amount and viscosity)
S	Site (contour, movement, contamination)
S	Surrounding areas (skin and beyond)
I	Infection and/or biofilm management
N	Necrotic or non-viable tissues
G	Goals: Is the wound healable, maintenance or non-healable?
S	Suffering (pain and related symptoms)
?	Questions from patients and/or caregivers

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