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# The Status of Wound Care Research in Canada: A Scoping Review

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## INTRODUCTION

Major wounds are a significant healthcare burden with clinical, personal, and financial implications. According to Wounds Canada, 30-50% of all healthcare in Canada involves wound care, 50% of nursing home care visits involve wound care delivery in the community, and 35% of persons receiving community care have a chronic wound (1). From a Canadian lens, the prevalence of pressure ulcers among patients admitted to acute care hospitals is between 24-26%, 28-31% in non-acute care facilities (including long-term care and nursing homes), 21-23% in mixed settings (acute and non-acute care), and 13-17% in community care settings (2).

Wounds can be classified as either acute or chronic (3). Acute wounds will heal at a predictable rate and generally resolve within three months when the cause of the wound is removed. Lacerations, surgical wounds, traumatic wounds, and burns are such examples. In contrast, chronic wounds do not progress through the expected stages of wound healing because unresolved factors interfere with healing. Wounds that have not healed in 3 months are classified as chronic wounds. The main types of chronic wounds are pressure ulcers, infected surgical wounds, and wounds caused by chronic diseases (e.g., venous leg ulcers, diabetic foot ulcers, peripheral arterial ulcers).

Wounds Canada has published guiding principles to help healthcare professionals in Canada support optimal prevention and management of skin breakdown. Published literature is abundant on wound care from many professional groups creating guidelines based on their scope of practice. While this encourages the dissemination of research, each discipline has different priorities informed by its interests and scope. Therefore, there is no Canadian consensus among wound care professionals and researchers on the hierarchy of these priorities.

## OBJECTIVE

This review will describe the current landscape of Canadian wound care research by exploring the breadth of literature available on the topic of wound care, summarizing key findings and identifying Canadian researchers in the field. The results of this analysis will inform a Delphi process to generate consensus among wound care stakeholders on wound care research priorities in Canada.

## METHODS

Our study systematically searched Ovid MEDLINE, Ovid Embase, CINAHL, Cochrane, and Scopus databases beginning from inception to July 2021.

The search strategy included:

- Wound care related terms of pressure injuries, skin tears, surgical wound complications, diabetic foot ulcers, burns, trauma, venous leg ulcers, peripheral arterial ulcers, malignant wounds, moisture associated skin damage, vascular insufficiency, foot deformity, neuropathy, peripheral arterial disease
- Canadian study population
  - Evaluated wound care in a Canadian adult population/institution
  - ≥1 co-author affiliated with a Canadian institution).



## METHODS

We abstracted general study data, participant, population studied (surgical, non-surgical or mixed), any other distinctive features; exposures; and outcomes of interest. All study characteristics are reported as a percentage of the total number of articles included (n=565) unless otherwise stated.

In the thematic analysis, we generated discipline-specific proportions for each theme (% of articles in that theme that have at least one co-author of a particular discipline). This included first determining the proportion of contributions by physician and nursing specialties to that theme based on the total number of articles.

## RESULTS

A total of 7643 articles were screened and 565 studies included.

Physicians co-authored 86.7% of studies (n=490) and nurses contributed to 32.4% (n=193) of studies. A total of 22 themes were identified.

The top 5 physician specialties represented include general surgery (18.9%), plastic surgery (15.9%), infectious diseases (9.6%), physical medicine and rehabilitation (7.8%) and dermatology (6.3%).

The top 5 nurse specialties represented include general nursing (59.6%), wound care (33.9%), burn and wound (2.7%), enterostomal (1.6%) and advanced practice nursing (1.1%).

Table 1 – Top 10 Prevalence of Wound Care Research by Exposure

Type of Exposure	Number of Articles with Exposure	Percentage of Total Articles with Exposure (%)
Surgical	158	28%
Pressure-Injury	87	15%
Diabetic Foot Ulcer	66	12%
Burn	57	10%
Unspecified	57	10%
Other	51	9%
Venous Leg Ulcer	49	9%
Peripheral Arterial Ulcers	22	4%
Skin Tear	16	3%
Malignant Wounds	12	2%

Table 2 – Top 10 Themes Identified by Canadian Wound Care Research Priorities

Themes	Number of Articles Analysing the Theme	Percentage of Total Articles with Themes (%)
Wound prevention/management/treatment	241	43%
Surgical Site Infection	105	19%
Vascular and Wound Healing biology	100	18%
Healing apparatus, Devices, Applications & AI	84	15%
Models of Care for Follow-Up Therapy	83	15%
Assessment/diagnosis	80	14%
Pressure/Arterial/Venous Ulcer	67	12%
Time to Heal	66	12%
Wound Severity/Recurrence/Amputation Rate	64	11%
Patient Risk Factors	61	11%

## RESULTS

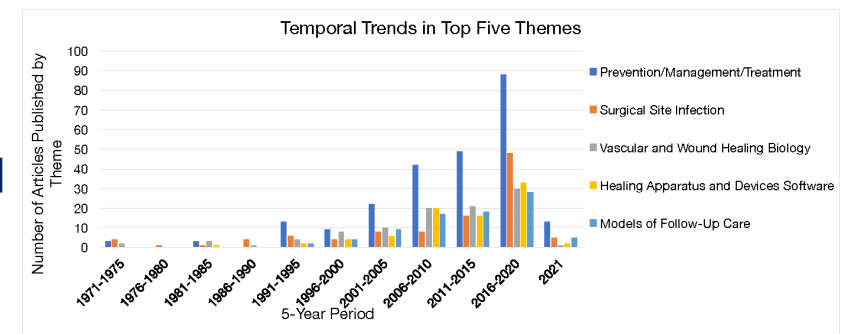


Figure 1 – Graphical representation of temporal trends in the top 5 themes.

Table 3 – Balance of research interests categorized by predominant co-authorship of the top 5 themes.

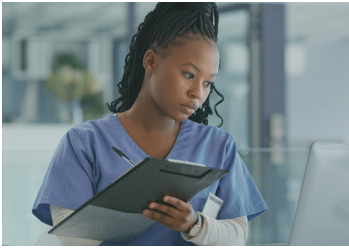
Theme	Physician contribution	Nursing Contribution
Wound prevention/management/treatment	62.0%	63.4%
Surgical Site Infection	61.0%	4.7%
Vascular and Wound Healing biology	79.0%	7.0%
Healing apparatus, Devices, Applications & AI	61.2%	44.0%
Models of care to follow patients during therapy (e.g. nurse run clinic, surgeon follow up, home care, education)	65.1%	36.0%

## CONCLUSIONS

We mapped the scope of wound care research in Canada. Surgical wounds, pressure-injuries, diabetic foot ulcers and burns were the most reported exposures. Wound prevention, management and treatment were the most common priority followed by surgical site infections management and vascular and wound healing biology. We have provided data that supports potential high-yield themes. Different specialties have different emphases contributing to the body of the literature. Our results have informed a Delphi process for a national consensus of stakeholders on wound care research priorities to accelerate improved patient outcomes.

References:

- Canada W. Wounds in Canada: The Hidden Epidemic. Wounds Canada. 2020.
- Woodbury MG, Houghton PE. Prevalence of pressure ulcers in Canadian healthcare settings. *Ostomy Wound Management*. 2004;50:22-30.
- Martin P, Nunan R. Cellular and molecular mechanisms of repair in acute and chronic wound healing. *British Journal of Dermatology*. 2015;173(2):370-8.



# Improving Capture of Pressure Injury in Hospital Data to Support Quality of Care

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## Abstract

Pressure injuries are a serious quality-of-life and clinical challenge. They can be debilitating and life-threatening to patients, and they can increase length of stay and hospital costs.<sup>1,2</sup> However, pressure injuries are potentially under-reported in Canadian hospital administrative data. These injuries are most likely to be documented by nurses, but they are captured in hospital administrative data as a significant diagnosis only when documented by a physician and when they meet the criteria for significance. CIHI investigated ways to improve pressure injury data to reflect their prevalence more accurately.

## Introduction

Pressure injuries are a serious quality-of-life and clinical challenge. They can be debilitating and life-threatening to patients, and they can increase length of stay and hospital costs.<sup>1,2</sup> Pressure injuries are preventable, and they pose a risk to vulnerable populations (e.g., seniors, patients who have mobility issues).

Canadian hospital administrative data is used for decision-making, health care planning, funding allocation, performance and outcome measurement, and so forth. However, pressure injuries are potentially under-reported in Canadian acute care hospital data submitted to CIHI's Discharge Abstract Database (DAD) and National Ambulatory Care Reporting System (NACRS).

For an ICD-10-CA code to be assigned, the diagnosis must be documented by a physician and it must be mandatory to code or meet the criteria for significance outlined in the *Canadian Coding Standards for Version 2022 ICD-10-CA and CCI*. The fact that the diagnosis must be documented by a physician presents a challenge, as information about pressure injuries is most likely to be documented by a nurse, such as a wound care specialist, or by another regulated allied health professional (e.g., physiotherapist). Due to the potential under-reporting, CIHI investigated ways to improve pressure injury data.

i. Physician documentation is used for code assignment and determination of significance. The criteria for significance include "the condition requires treatment beyond maintenance of the pre-existing condition; increases the length of stay (LOS) by at least 24 hours; and/or significantly affects the treatment received."

## Approach

In collaboration with external stakeholders such as the National Coding Advisory Committee (NCAC), which includes representatives from all provinces and territories, CIHI investigated opportunities to improve pressure injury data to ensure that it is more accurately and completely collected. This included

- A multi-year review of pressure injury volumes; and
- A discussion with stakeholders to better understand
  - Pan-Canadian data collection practices;
  - Best practices for data collection, including clinical documentation;
  - Opportunities to expand data collection at the time of coding; and
  - The impact of data collection on hospital indicator reporting (e.g., frailty, hospital harm).

Figure 1 Pressure Ulcers coding standard directive statement

**DAD and NACRS directive statement**

Assign a code category L89 *Decubitus [pressure] ulcer and pressure area* whenever a diagnosis of pressure ulcer is documented, **mandatory**, regardless of significance.

- Apply the prefix N, **mandatory**, when a diagnosis of pressure ulcer is documented by a regulated allied health professional.

Figure 2 Example of pressure injury documented by wound care specialist

**Example:** The patient is admitted to hospital with pneumonia. On day 15 of the patient's stay, they are seen in consultation by a wound care specialist who documents that the patient has a stage III coccygeal decubitus ulcer. Treatment involves cleaning and dressing the ulcer three times a day.

Prefix	Code	DAD	Code title
	J18.9	(M)	Pneumonia, unspecified
N	L89.2	(2)	Stage III decubitus [pressure] ulcer

**Rationale:** Pressure ulcers must be coded whenever documented. It is acceptable to use regulated allied health professional documentation to fulfill this mandatory coding requirement. Prefix N is applied, **mandatory**, to identify that this diagnosis was noted **only** by a regulated allied health professional. The patient was seen in consultation by a wound care specialist, and the pressure ulcer meets the criteria for significance. The condition arose post-admission; therefore, diagnosis type (2) is applied.

Note  
L89.2 Stage III decubitus [pressure] ulcer is assigned and prefix N is applied.

ii. A diagnosis prefix is a 1-character data element that is applied to an ICD-10-CA code recorded on a DAD or NACRS abstract. It provides additional information related to the ICD-10-CA code to which it is applied. Prefix N is applied when a pressure injury that is classified to an ICD-10-CA code from category L89 *Decubitus [pressure] ulcer and pressure area* is documented **only** by a regulated allied health professional (non-physician).

Based on this investigation, opportunities to improve data collection for pressure injuries were identified.

One observation was that the presence of a pressure injury and its specific stage are more likely to be documented by a nurse or a wound care specialist than by a physician. In some cases, there was no physician documentation about the pressure injury during that episode of care.

This presented an opportunity to expand data collection of the ICD-10-CA code L89 – *Decubitus [pressure] ulcer and pressure area* by allowing coders to use documentation by regulated allied health professionals to better capture pressure injury data.

The minimum requirements to ensure national comparability of the data submitted to CIHI's DAD and NACRS databases are specified in the *Canadian Coding Standards*. Therefore, to support the expanded coding of pressure ulcers when documented by regulated allied health professionals, a new coding standard was developed in collaboration with stakeholders and tested by hospital coders as facilitated through the NCAC. The new *Pressure Ulcers* coding standard directs coders that it is mandatory to assign the ICD-10-CA code from category L89 *Decubitus [pressure] ulcer and pressure area* for any pressure injury, whenever documented by a physician and/or a regulated allied health professional (see Figure 1). The coding standard also directs coders to apply the diagnosis prefix 'N' in addition to the ICD-10-CA code when the pressure injury is documented only by a regulated allied health professional. The use of this prefix will allow CIHI to identify the impact of the new coding standard on pressure injury data collection. See Figure 2 for an example that demonstrates application of the new coding standard.

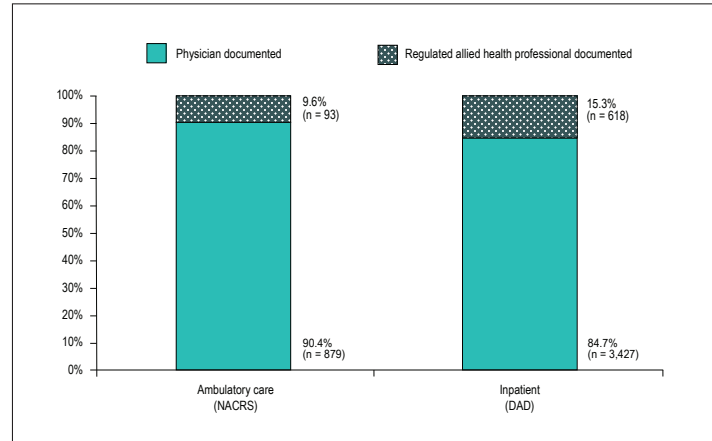
## Results

The new *Pressure Ulcers* coding standard came into effect on April 1, 2022. The coding standard's direction is mandatory in all provinces and territories that submit data to CIHI's DAD and NACRS databases. Documentation by regulated allied health professionals may be used to assign L89 – *Decubitus [pressure] ulcer and pressure area*.

Of encounters submitted as of August 1, 2022, where pressure ulcers were identified (N = 5,017), 9.6% (n = 93) of ambulatory care encounters and 15.3% (n = 618) of inpatient encounters had prefix N applied. This demonstrates that there are encounters where the only documentation of L89 – is by a regulated allied health professional.

Further analysis is necessary to determine the effect of the new *Pressure Ulcers* coding standard on pressure injury data collection. This is provisional data, and not all jurisdictions have submitted all their 2022–2023 first quarter data.

Figure 3 Pressure injuries documented by physicians and regulated allied health professionals



Note  
2022–2023 provisional data submitted as of August 1, 2022.

## Limitations

Code assignment is based on clinical documentation. Variations in documentation practices by physicians and allied health professionals at the facility, regional and provincial/territorial levels may impact the application of this coding standard and ultimately the data available for reporting purposes.

## Conclusion

Better data can support improved pressure injury reporting across Canada. This initiative offers a path to further assess the capture of pan-Canadian pressure ulcer data as well as to identify future opportunities to use documentation by regulated allied health professionals to inform code assignment.

This data can also contribute to decision-making processes by signalling where actions or improvements may be required to support quality patient care in Canada.

## Acknowledgements

We gratefully acknowledge CIHI's classification specialists, CIHI program areas and members of the NCAC for their contributions to the coding standard that led to improving national data on pressure injuries.

## Abbreviations

CIHI: Canadian Institute for Health Information  
 DAD: Discharge Abstract Database  
 ICD-10-CA: *International Statistical Classification of Diseases and Related Health Problems, Tenth Revision, Canada*  
 NCAC: National Coding Advisory Committee  
 NACRS: National Ambulatory Care Reporting System

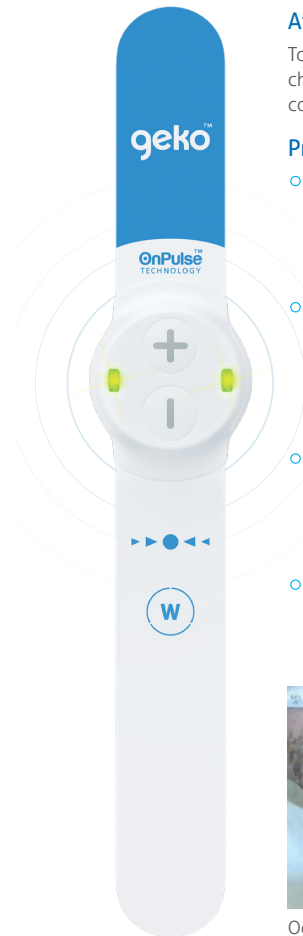
## References

1. White BAB, et al. The economic burden of urinary tract infection and pressure ulceration in acute traumatic spinal cord injury admissions: Evidence for comparative economics and decision analytics from a matched case-control study. *Journal of Neurotrauma*. 2017.
2. Chan BC, et al. The average cost of pressure ulcer management in a community dwelling spinal cord injury population. *International Wound Journal*. 2013.
3. Canadian Institute for Health Information. *Canadian Coding Standards for Version 2022 ICD-10-CA and CCI*. 2022.

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# Muscle Pump Activator Device: A Case Study in Chronic Leg Lymphedema and Papillomas

Authors: Reeves, J., LPN, Gosse, M., RN, IIWCC (C), Sinclair, H., OT, IIWCC, Swindell, J., RN, Gates, T., LPN



## Aim

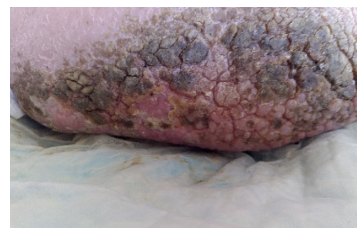
To evaluate the geko™ wound therapy device to reduce chronic lymphedema and papillomas prior to initiating compression therapy.

## Procedure/Method

- A 60-year-old lady resided in a Long-Term Care (LTC) setting since 2017.<sup>1</sup> She was confined to bed for 4 years, developed papillomas over the lateral aspect of the right thigh with recurring infections secondary to chronic lymphedema.<sup>2</sup>
- Previous treatment modalities included best practices and evidence-based therapies. In 2021, the geko™ wound therapy device was implemented as an adjunctive therapy. Consent for photos and reproduction for publication was obtained from the resident.
- The geko™ wound therapy device was placed over the right fibular head as directed in the Manufacturers Instructions for Use to stimulate the common peroneal nerve which activates the calf and foot muscle pumps.
- This action improves venous return, reduces edema, increases microcirculation, blood flow velocity and pulsatility.<sup>3</sup>



October 13



October 19



October 28



November 3

- Prior to initiating the geko™ wound therapy device average daily urinary output was 800-1000cc's per day.
- During four weeks of geko™ wound therapy treatment the urinary output was 4-5L/day with a weight loss of 60lbs.
- There was no impact on the patients' serum potassium (pre geko™ -3.6mmol/L, post geko™ -4.8mmol/L).
- The resident tolerated the fluid shift well, the papillomas reduced in size and scaled off with light friction during cleaning.

## Findings/Results

- Prior to initiating the geko™ device, she was unable to tolerate high compression therapy due to pain.
- Following the reduction of edema, she was fitted with tubular elastic compression. Her caregivers reported that she experienced an improved quality of life and was able to sit in a chair for 2-hour intervals.
- Psychologically, the resident indicated that she "feels great," and was pleased to become more engaged in her care by moving independently in bed.

## Implications/Applications

- The outcome and potential application of the geko™ wound therapy device used as an adjunctive therapy can significantly reduce edema, and decrease pain to comfortably initiate compression therapy that wasn't previously tolerated.<sup>3</sup>
- The staff expressed that the geko™ wound therapy device was easy to use, they were happy with the results. This was a positive experience for both the caregivers and the resident.

## References

1. Harris C, Ramage D, Boloorch A, Vaughan L, Kuilder G, Rakas S. Using a muscle pump activator device to stimulate healing for non-healing lower leg wounds in long-term care residents. *Int Wound J*. 2019 Feb;16(1):266-274. doi: 10.1111/iwj.13027. Epub 2018 Nov 20. PMID: 30460740; PMCID: PMC7379663. Online available: <https://pubmed.ncbi.nlm.nih.gov/30460740/>
2. Harris C, Rabley-Koch C, Ramage D and Cattryse R. Debilitating chronic veno-lymphoedema: using a muscle pump activator medical device to heal wounds and improve skin integrity. Case Study Online available: <https://www.gekocodevices.com/wp-content/uploads/2019/06/Debilitating-chronic-venolymphoedema-using-a-muscle-pump-activator-medicaldevice-to-heal-wounds-and-improve-skin-integrity.pdf>
3. Manufacturers Information for Use. Firstkind Ltd. Online available: <https://www.gekocodevices.com/userinformation/ifus/w3-english/>

## Using Digital Technology to Facilitate Access to Wound Care Specialists in Times of COVID-19 Pandemic in Northwestern Ontario Communities, Canada.

Idevania Costa, RN, NSWOC, Ph.D.CEO & Founder of Advanced Wound Care Consultancy and Education Inc.



### Introduction

- The challenges of providing timely wound care have become more apparent than ever during the COVID-19 pandemic.<sup>1</sup>
- During COVID-19 outpatient wound care was scaled back and deemed unessential.
- A wound was not viewed as an essential problem during the pandemic until it became threatening (Figure 1) to the individuals' limbs or even lives.<sup>1,2</sup>



Figure 1. Poor outcomes of the lack of access to wound care during pandemic

### Objectives

- Demonstrate the usability and benefits of digital technologies for enhancing access to wound care specialists and self-management support in times of COVID-19

### Procedure/Activities

- We used a virtual wound care platform, which is PHIPA compliant and features a live wound care consultation, digital wound photos and measurement process, chat-like environment for self-management support (all integrated to EMR) were implemented.
- Employed by a NSWOC-led clinic to facilitate access to wound care services and enhance collaboration between, generalist healthcare providers (e.g, RN, NP, Physicians), families and patients with a chronic wound in Northwestern Ontario.

### Building Collaboration: summary of steps

#### Before implementation

- Develop relationship with partner organizations and understand what they have available (e.g., nursing staff, wound supplies, adjunctive therapies)
- Determine their needs and provide support to build capacity

#### Before wound visit with patient

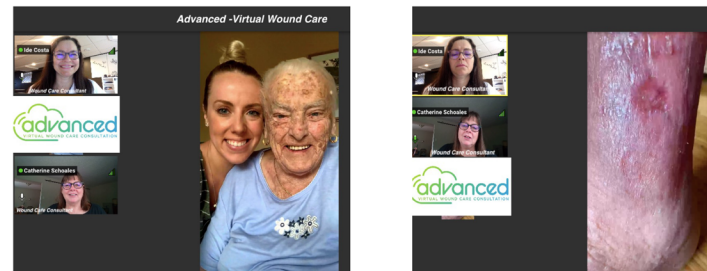
- Explain and rehearse steps with the partner nurse
- Review paperwork and patient history
- Get information and consent from patient to allow collaboration and communication with primary care provider as needed

#### Before a wound consultation with collaborating providers

- Determine the reason for the support— what they want from the wound care specialists
- Obtain necessary information about the patient they want wound care for
- Set a date and time for wound care collaboration at patients' bed side

### Implementing the Solution

- Over 100 patients have been engaged in the Telehealth Collaborative Approach in Wound Care from August 2020, to February 2022.



\*Pictures shared with patient and family's permission.

### Outcomes of the Collaborative Approach



Figure 2. Multiples patients with wounds who were treated through this innovative approach

### Conclusion

- The use of this approach has helped a general practitioner to speak and engage in collaborative care with a specialist via telecommunications.
- Both professionals work together to co-manage the patients' wounds and help to improve individuals' health outcomes and well-being.
- **References**

1. Shah, J. (2019). *How Telemedicine Is Influencing Wound Care*. Today's Wound Clinic.
2. Harnett, C. E. (n.d.). *As pandemic persists, B.C. rolls out Hospital At Home program*.
3. Baumgart, D. C. (2020). Digital advantage in the COVID-19 response: perspective from Canada's largest integrated digitalized healthcare system. *Npj Digital Medicine* 2020 3:1, 3(1), 1–4. <https://doi.org/10.1016/J.TIBTECH.2018.07.007>
4. Najafi, B., & Mishra, R. (2021). Harnessing Digital Health Technologies to Remotely Manage Diabetic Foot Syndrome: A Narrative Review. *Medicina*, 57(4), 377. <https://doi.org/10.3390/MEDICINA57040377>



## Research Background

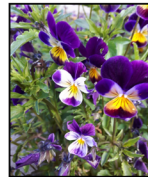
Among persons who inject drugs, the risk of skin and soft tissue infections (SSTIs) are common and preventable injuries. The lifetime prevalence of SSTIs is up to 68% and leads to use of community health, harm reduction, wound clinics, nursing, nurse practitioners, and acute care services. Injuries are primarily, abscesses with cellulitis (mild, moderate, severe) that lead to sepsis. Persons, self treat SSTIs ahead of coming for formal health care.

## Goal of the Study

- 1) To understand and then describe the experiences of persons who inject drugs and who use self-care treatment(s) to deal with resulting skin and tissue abscesses.
- 2) We also sought to understand and describe their journeys to and experiences with formal health care services.
- 3) To promote prevention of SSTIs.

**Ethics:** Cape Breton University Research Ethics Board approved the study.  
**Funding:** CBU Dissemination Grant.

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## Key References

1. Canadian Centre on Substance Abuse. Needle exchange programs (NEPs) FAQs-2019. Available from <https://www.ccsa.ca/sites/default/files/2019-04/ccsa-01055-2004.pdf>
2. Hope VD, Parry J V, Ncube F, Hickman M. (2016). Not in the vein: 'missed hits', subcutaneous and intramuscular injection and associated harms among people who inject psychoactive drugs in Bristol, United Kingdom. *International Journal of Drug Policy* 2016;28:83-90.
3. Nova Scotia Government. Nova Scotia's opioid use and overdose framework 2017-18. Available from <https://novascotia.ca/opioid/nova-scotia-opioid-use-and-overdose-framework.pdf>
4. Patton MQ. Evaluation flash cards. Embedding evaluative thinking in organizational culture. Otto Bremer Foundation; 2018:1-28.
5. Braun V, Clarke V. Successful qualitative research a practical guide for beginners. Sage; 2013.
6. Creswell JW. A concise introduction to mixed methods research. Sage; 2015.
7. Liamputtong P. Researching the vulnerable. Sage; 2007.
8. Bickerton J. Ally Center outreach street health pilot: Final report 2022. Available from <https://www.allycentreofcapebreton.com/images/Files/Final-report-Outreach-Street-Health.pdf>
9. Dechman M, Bickerton J, Porter C. Paths leading into and out of injection drug use. Available from <https://www.allycentreofcapebreton.com/images/Files/PathsLeadingIntoAndOutOfInjectionDrugUse-October-2017.pdf>
10. Government of Nova Scotia. Coronavirus (COVID-19) latest guidance 2022. Available from <https://novascotia.ca/coronavirus/>

## Self-treatment of Abscesses by Persons who Inject Intravenous Drugs: A Community-based Quality Improvement Inquiry

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Cape Breton University, The Ally Center of Cape Breton<sup>2</sup>, Victorian Order of Nurses<sup>3</sup>, Nova Scotia, Canada

### Methods

**How:** Participants were asked by harm reduction staff to complete semi-structured and open-ended questions using a face-to-face interview methodology and while adhering to COVID-19 protocols. Each participant was given a 25.00 gift card upon completing the interview of 45 to 60 minutes.

**Who:** Individuals who access care at The Ally Center and were knowledgeable about SSTIs. They read a Letter of Information and completed an Informed Consent. Participants, were adults (18+) English speaking, have experience with SSTIs, and were willing to focus on health care service solutions.

**When:** The study has a multi-phase data collection timeline. In the fall of 2020 and spring of 2021 interviews were conducted by the NSWOC and research assistant.

**Frameworks Guiding the Study:** Informed by the harm reduction focus of Nova Scotia's Opioid Use and Overdose Framework (2017) and we utilized an IHI quality improvement approach. We sought to engage in semi-structured interviews with persons who inject drugs to understand their experiences and their recommendations for how to improve community-based abscess care. We focused on the words of: Paulo Freire (2011) who wrote, "human existence cannot be silent, nor can it be nourished by false words, but only by true words, with which men and women transform the world" (p. 88).

### The Voices of Adults - Findings

#### Theme 1: Lack of Experiential Knowledge

- When first injecting drugs, I had limited knowledge of skin infections, cellulitis, and abscess(es). Participants shared: "I thought I was the perfect user, I never thought I would get an abscess". "I didn't know what the redness was – the cellulitis; a nurse taught me. I did not know it had become an abscess as I still played sports".
- Another knew the risks: "I knew you could get them wherever you inject!"

#### Theme 2: Progression of Self-treatment Strategies (See Images: Mild, moderate, severe abscesses & cellulitis)

- Participants engaged in abscess self-care treatment(s) and identified additional steps taken if the abscess worsened. They described extreme pain when pressing the abscess(es) with their fingers to pop or squeeze the abscess, or when using a pen knife, surgical blades, or a big needle to lance, drain or draw out the infection from the infected area(s). These activities may take place in a kitchen, bathroom (e.g., work, public, home), or bedroom alone or with a friend.
- Self-care includes: "...soap, water, or what I can find to clean it. I try to keep it covered. I use clean needles or blades to lance it. If it does not fill back up with stuff, I leave it alone. I have stuffed bread in them, the bread turns green and takes the infection out. It helps. I have had quite a few, the last one was on my finger. It is fine now, but it was discoloured. These were not the nasty ones. I have had to clean abscesses on my hands, legs, but they were not so bad that I had to go to the hospital. When I have them bad, they physically drain me.
- Participants described urgency related to a worsening abscess: I would only wait a day before getting care from the nurses, not wait longer. I do not rely on anyone else to know how bad my skin is, that is my job. Abscesses can kill you. I get care right away. I got care for my wrist abscess from the community nursing team. I am prepared, I keep a kit ready for abscesses in case...people die. My last one in my elbow was so big I could fit a whole roll of gauze in the hole. The nurses helped me. I know I can come to the centre for care, they are amazing.

#### Theme 3: Utilization of Formal Health Care

- Participants preferred to receive care at the community nursing wound clinic or the centre as they are respected. They expressed concern when interacting with emergency care teams (e.g., Alberta, Ontario, Nova Scotia) because it regularly evoked feelings of shame and being judged when asked assessment questions and planning abscess care (e.g., returning to emergency, hospitalization). Their reluctance to access or remain in care once assessed was related to prior experiences.
- They shared: "It would take a lot for me to ask for help! I would have to be really sick to ask for help from the hospital. We really need a safe injection site, then the abscesses would not be happening. I would cut open my abscess myself ahead of going to the hospital. I would get oral antibiotics first from someone, then if it got worse, I would go to the hospital as my last stop. There should be a priority for abscess care at the hospital. Why can't I get care from a pharmacy or pharmacist? If you need intravenous antibiotics four times a day, and you can hardly make up your mind to plan to go back to the hospital...it is not a surprise that I did not go back. Many people do not have cars or parking money, so we do not go back! If you miss a dose, it is worse, as you must be readmitted and wait, wait, and wait".
- **Respectful Care is Possible:** Participants shared experiences of respectful care and negotiating with the acute care teams: My abscess was so infected I went for care. They were good to me. I went to emergency; they treated me well. I was ashamed to go, I just knew I had to get there. I went alone. They let me have a cigarette, so I stayed. I did not want to go to the hospital. People were initially judgemental. They asked me about being an intravenous drug user, then they backed up in the room. I did not like this. Yet, they did drain my hand. The care was okay...actually, it was good when the walls come down and you know you are accepted, care was good for me. The hospital was okay. I just focused on the abscess. They treated me good.

#### Theme 4: Education Matters, Do Not Rush

- Participants expressed the importance of education related to the safe injection of drugs and skin hygiene. Participants reflected on the person(s) who initially taught them how to inject drugs and practice skin hygiene. They described the risks of a missed hit, when they inadvertently injected into the fatty, subcutaneous, or intramuscular layers, or when the drugs leaked into the skin. One participant learned how to inject from an internet video, or I learned from a former partner who taught him to use new filters and needles.
- Participants expressed they learned how to safely inject from nurses at the centre. They readily described the importance of using clean equipment, cookers, needles and cleansing the skin with alcohol swabs. Three stated education classes should include: correct injecting techniques, discussions of the risk of missing, pictures of SSTIs and abscesses to compare their abscess to, in order to determine the level of seriousness.

## Conclusions

Participants described their lives including their journeys to intravenous drug use. They described the self-care treatments they used because of a reluctance to utilize formal health care services, including experiencing stigma, discrimination, and feeling labelled. From a quality improvement perspective participants outlined suggestions for:

- expanding hours of service at the community wound care clinic and the centre;
- permitting pharmacists to include prescribing topical and oral antibiotics;
- promoting abscess prevention education for clients and health care providers; and
- promising practices for the provision of respectful care during emergency care visits.

### Skin & Soft Tissue Infections



## Potential Research Outcomes

1. Inform the practice policy for health-care professionals providing skin and wound care services for specific populations
2. Be used to develop / modify professional development opportunities
3. Provide an outlet for persons injecting drugs a place to share their experiences and have their voices heard

**2022 September - Ongoing Study Progress:** Interviews continue. We are seeking partnership from the health authority.



## Research Background

The World Health Organization declared COVID-19 a global pandemic in March 2020. As a result, Wounds Canada, in partnership with researchers at Cape Breton University, wanted to identify strategies to support health-care professionals providing skin and wound care during the pandemic to minimize negative impacts on individuals and families.



## Primary Contact

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**Research Ethics:** Cape Breton University Research Ethics Board approved the study.  
**Funding:** In-kind from Wounds Canada.  
**Images copyright:** Wounds Canada and JLKuhnke.

## Key References

- Bakker, K., Apeltqvist, J., Schaper, N. C. (2012). Practical guidelines on the management and prevention of the diabetic foot 2011. *Diabetes Metab Res Rev*, 28(Suppl. 1), 225-231.
- Braun, V., & Clarke, V. (2013). *Successful qualitative research: A practical guide for beginners*. Sage.
- Government of Canada. (2020 March 24). COVID-19 disease. <https://www.canada.ca/en/public-health/services/diseases/coronavirus-disease-covid-19.html>
- Hosted in Canada. (2020). *Academic researchers: Surveys in Canada*. <https://www.hostedincanadasurveys.ca/>
- Kuhnke JL, Jack-Malik S, Botros M, Rosenthal S, McCallum C, Bassett K. (2021a) Early COVID-19 and the experiences of Canadian wound care clinicians: preliminary findings *Wounds International* 12(2):14-19
- Kuhnke JL, Harley C, Lillington T (2021b) Nurses specialised in wound, ostomy, and continence Care: Self-care during the novel coronavirus (COVID-19) pandemic. *WCET Journal* 41(1):12-15
- Kuhnke JL, Jack-Malik S, Botros M, Rosenthal S. (2022) Struggling to create and sustain work-life balance while providing skin and wound care six months into a global pandemic: findings from survey two *Wounds International* 13(1):20-28.
- Salmons, J. (2015). *Qualitative online interviews* (2nd ed.). Sage.
- Shaw J, Jamieson T, Agarwal P, et al. Virtual care policy recommendations for patient-centered primary care: findings of a consensus policy dialogue using a nominal group technique. *J Telemed Telecare*. 2018;24(9):808-15.
- World Health Organization. (2020a, Feb 12). *Coronavirus*. <https://www.who.int/health-topics/coronavirus>

## Wound Care Clinicians' Voices During COVID-19: Canadian Qualitative Serial Survey - Final Results

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## Goal of the Study

This research highlights results from data gathered during the final survey emailed to clinicians in the fall of 2020.

This research aims to understand how the delivery of skin and wound care has changed during the pandemic. The study includes feedback from nurses, dietitians, occupational therapists, physicians, physiotherapists, chiropodists, podiatrists and other types of wound clinicians.

Participants were asked if and how they adapted delivery of patient-centered wound care services, with the aim of providing practical evidence to Wounds Canada as it continues to support clinicians through educational activities and the delivery of informational resources.

## Methods

**How:** Participants were asked to complete structured, semi-structured & open-ended questions in a qualitative online survey.

**Who:** Individuals listed on the Wounds Canada database were sent an email link to the survey. They read a Letter of Information and completed an Informed Consent form before completing the survey. Participants were individuals who:

- deliver wound care services;
- regulated or unregulated health-care providers & were willing to complete a survey.

**When:** The study had a multi-phase data collection timeline. In December 2020, the final survey was circulated. Fifty participants completed the final survey. We compared, contrasted and analyzed the data for themes. The data in this poster are the final data from the survey.

**Summary of Survey Research:** Thank you to the two-hundred and seventy-five (n=275) participants who replied to survey one; sixty-seven (n=67) who responded to survey two; and the fifty (n=50) participants who completed the final survey.

## These are the voices of Clinicians.

**1. We want easy access to educational materials.** The most useful resources are those that are accessible, in multiple formats and available asynchronously.

- Before the pandemic we were planning for improved provincial skin and wound care services. Even though we were in the pandemic, we were able to utilize the new wound care consultant and the electronic wound care form. We now complete and email the form to the consultant. It works okay. As well, the provincial wound care team sent out new education links and the updated wound product formulary – this was great. Clinicians stated: the Care at Home Series was great; we need more topics.
- I am constantly embedding preventative, patient education in my lower leg community practice. I had good success with an individual community after healing three patients' leg ulcers successfully and teaching about compression therapy. After the education sessions, community members went to the local medical supply store and an entire community of women got measured and fitted for compression socks to treat and prevent varicose veins and prevent future leg ulcers. The women worked in a cannery where they stand for long periods. Because of the education the wounds have remained closed with no re-occurrences.

**2. Many wound care clinicians want to be guided by policies**

- Wounds did not go away because of the pandemic; risks of peripheral artery disease and diabetes did not go away, wounds got worse because clinic closures interrupted the provision of care! Why were policies put in place that identified clinics as non-essential?
- I have a client with diabetes, the person ended up waiting for an assessment for six or more weeks, resulting in an amputation prior to having any home care services; how does this happen?
- We get a lot of complex scenarios in our private clinic, patients that have fallen through the cracks in the public health care system; clients come to us for wound assessment and treatment to prevent their wounds getting worse. Many have waited weeks and weeks before getting any level of assessment for their foot or leg wounds; there is a long delay to get treatment.

**3. Virtual technologies are increasingly embedded as part of care. Of interest was their impact on the triaging of service provision.**

- It brought specialized assessments and wound care into individuals' homes.
- A year into the pandemic and we don't use or have technology to record or pass along wound care pictures or monitor changes.
- The utility of virtual wound care is limited. You can't debride a wound over the phone, more research is needed.
- We do not have trained nursing staff in the community, other than part-time NSWOCs. Mostly they perform conservative sharp wound debridement, lower-leg assessments including ankle-brachial pressure index measurements, and total contact casting. Our virtual practice as a NSWOC was almost impossible to do as we were the only ones trained in these specialities, so we did home visits as able.
- A clinician practicing as part of a harm reduction team and with persons housing challenged, stated that internet access remained poor was inconsistent. It is fine to have an app for this wound and that wound, but none of it matters if I cannot reach the NP or physician in real time. I can get internet when I drive into town; however, then it took me two days to track the client down to provide care.

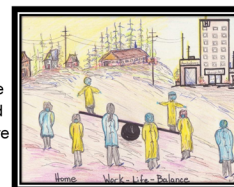
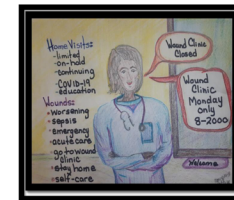
**4. Complex financial, personal, and societal loads on individuals and systems are high and continue to result in losses.**

- Efforts to establish and maintain work-life balance continued to be a complex issue for many service providers.
- Most respondents stated that prior to the pandemic they worked to create some semblance of work-life balance. Throughout the pandemic-precarious efforts to positively impact work-life were negatively impacted and stress continued and increased. For example, some providers described continued distress related to access to & use of personal protective equipment.
- Cost and management of wound care supplies must be addressed. We are worried about access, cost, and over-supply of wound care products in rural settings. What we would like to see is a list of stores or health buying groups that purchase and supply specific wound care products. This is important because a single store does not carry the required products. We need consistent access to wound care products that we know work. As well, when ordering online there can be delays, particularly when you are not a big hospital, long-term care or in a health region / authority. It becomes a nightmare to source proper wound products that we know are effective, and yet the prices are high when not linked to a group that buys in bulk.

## Potential Research Outcomes: The findings will:

1. Inform the practice policy for health-care professionals providing skin and wound care services
2. Provide context and support for those working in remote locations
3. Be used to develop new or modify existing professional development opportunities
4. Provide an outlet for frontline workers to share their experiences and have their voices heard

## Findings and Going Forward - More Research is Needed.





## Primary Contact

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**Ethics:** Cape Breton University Research Ethics Board.  
**Funding:** In-kind contributions from Wounds Canada and Spinal Cord Injury Ontario

## How is COVID-19 affecting access to and the delivery of skin and wound care services for individuals living with pressure injuries and/or spinal cord injury? A Qualitative Survey

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### Research Background

Since the COVID-19 pandemic began in Ontario, health-care professionals have noted a rapid rise in acute and hard-to-heal wounds across all health-care settings and in high-risk populations.<sup>1-3</sup> Many patients experienced advanced stages of pressure injuries and experienced in a number of areas, including a lack of expertise on site, poor co-ordination between long-term care, acute care and wound care experts, and inadequate policies or implementation of policies designed to provide even baseline care. While some research exists exploring how individuals living with SCI coped during the COVID-19 pandemic, the experiences of individuals with PI are lacking, especially in the Canadian setting. With COVID-19-related restrictions easing, research is now possible to understand the direct impact, PI development or ulcer recurrence, and indirect, mental, emotional and spiritual health effects on individuals living with PI and/or SCI.<sup>4,5</sup> Wounds Canada, Spinal Cord Injury Ontario AND CBU partnered in this area of research to help advance the public health policy and meet the ongoing challenge of delivering high quality, cost-effective health care.

### Aim of the Research

This research aims to describe the experiences of individuals living with PI, particularly individuals with SCI and those who are at risk for PI during a pandemic. This study will explore how and if the delivery of care changed during the coronavirus pandemic.<sup>6</sup> As well, we will explore how individuals with new or first pressure injury navigated the health-care systems.

We are asking participants to describe how they adapted their prevention strategies, treatment and management of skin and wound care issues during the pandemic. Wounds Canada and Spinal Cord Injury Ontario will use the participant-generated comments as they endeavour to support individuals with educational activities, including the delivery of prevention, treatment and management resources. As well, the survey results will be used as part of Wounds Canada and Spinal Cord Injury Ontario efforts to advocate for persons living with PI and SCI.

### Methods

**How:** We are utilizing a qualitative (serial) online survey methodology<sup>7</sup> using structured, semi-structured and open-ended questions using a survey platform based in Canada.<sup>8</sup> To increase question face-to-face validity, two patients and one caregiver have critiqued the survey questions; their feedback has been embedded to ensure we are capturing patient and caregiver.<sup>9,10</sup>

**Participants:** We are recruiting adults (18+) living with a PI and or a spinal cord injury of any type. We are recruiting caregivers providing skin and pressure injury wound care. We are recruiting participants using the Wounds Canada and SCI Ontario databases (via newsletters and eblasts) and organizational social media pages (e.g., Twitter, Facebook), of which members and followers are either individuals (or friends and family members of individuals) with SCI (paraplegia, quadriplegia).

**Survey Sequence:** Surveys are being administered three times: June 2022, September 2022 and January 2023. Individuals from the existing Wounds Canada and Spinal Cord Injury Ontario databases will be sent an invitation to participate. Included will be a Letter of Information describing the study and researcher contacts for any questions. As well, there is an informed consent to sign and date before proceeding to the survey link. Participants will also have the ability to engage in one-on-one qualitative semi-structured interviews (using the same questions as the survey) via phone or an online platform to support a deeper discussion regarding the participants' responses and any other topics that arise, or statements provided at that time.

### Data Analysis

The data will be thematically analyzed, attending to themes as they emerge from the data. We will look for common themes and seek to understand the respondent issues related to advancing public health policy.

### Findings / Results

The study has 95 respondents to date.

Preliminary findings discuss the challenges of accessing care during the pandemic. A quote from one of the survey respondents helps to illustrate the issue:

*"I am dealing with an infected pressure sore right now that started many months ago and the lack of resources and general knowledge on how to deal with this is astounding to me. Even the agency that sent a nurse to deal with my wound only has one nurse that can actually deal with a wound as complex as mine. To the point where I actually had to call them and specify that they are not to send anyone except for this one nurse, who is literally their best expert in their entire agency."*

### Implications / Applications

This research will provide stakeholders with data to help them:

- Develop an advocacy, awareness and training strategy based on the findings, and
- Disseminate findings through our collective knowledge networks to influence best practice recommendations, training, patient self-management resources policy and position papers.

### References

1. European Pressure Ulcer Advisory Panel, National Pressure Injury Advisory Panel and Pan Pacific Pressure Injury Alliance. Prevention and Treatment of Pressure Ulcer/Injuries: Clinical Practice Guideline. The International Guideline. Emily Haesler (Ed.). EPUAP/NPIAP/PPPIA: 2019.
2. Houghton PE, Campbell KE, CPG Panel. Canadian best practice guidelines for the prevention and management of pressure ulcers in people with spinal cord injury. A resource handbook for clinicians. 2013. Accessed at <http://www.onf.org>.
3. Kuhnke JL. North American pressure ulcer summit: Tackling an underreported issue. Wound Care Canada. 2018;16(1):42-43.
4. Felix E, Alvarado JV, Miranda-Cantellops N, Jackson S. (2021). Access limitations and level of psychological distress during the COVID-19 pandemic in a sample of individuals with spinal cord injury. Arch Phys Med Rehabil. 2021;102(4):E5-E6.
5. Hearn JH, Rohin EJ, Monden KR. Isolated and anxious: A qualitative exploration of the impact of the COVID-19 pandemic on individuals living with the spinal cord injury in the UK. J Spinal Cord Med. 2021;45(5):691-99.
6. Government of Canada. COVID-19 disease. 2020. <https://www.canada.ca/en/public-health/services/diseases/coronavirus-disease-covid-19.html>.
7. Salmons J. Qualitative online interviews (2nd ed.). 2015. Sage.
8. Hosted in Canada. Academic researchers: Surveys in Canada.2020. <https://www.hostedincanadasurveys.ca/>
9. Braun V, Clarke V. Successful qualitative research: A practical guide for beginners. 2013. Sage.
10. Braun V, Clarke V. One size fits all? What counts as quality practice in (reflexive) thematic analysis? Qual Res Psychol. 2020;18(3):328-352.

## EVALUATION OF THE MICROBIAL POPULATION AND TREATMENT WITH PHOTODYNAMIC THERAPY IN FOOT ULCERS OF PEOPLE WITH DIABETES

Maria Girlane Sousa Albuquerque Brandão, STUDENT, Universidade de São Paulo, Brazil; Soraia Assad Nasbine Rabeh, Professor, Universidade de São Paulo, Brazil; Idevania Costa, RN, NSWOC (S), Ph.D., Nursing, Lakehead University, Thunder Bay, ON, Canada.

### • Introduction

- Microorganisms colonization in diabetic foot ulcers (DFUs) can lead to poor healing outcomes.<sup>1</sup>
- The standard of care includes cleansing, debridement, dressings, and circulation management. However, it has not been enough to promote healing in a satisfactory time.<sup>2</sup>
- Identifying the microorganisms helps in choosing the right therapy.
- Photodynamic therapy can reduce microorganisms in ulcers without inducing microbial resistance.<sup>3</sup>

### • Objective

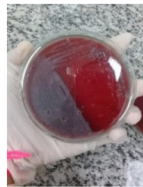
- To evaluate the presence of a microbial population in foot ulcers of people with diabetes, and the effectiveness of photodynamic therapy treatment of such lesions.

### • Procedure/Methods

- The presence of microbial organisms in foot ulcers in 3 men and 1 woman (45 to 59 years old) who had DFU for over eight months.

### Evaluation of microorganisms in the lesion

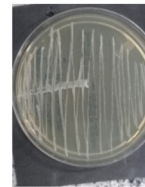
- Samples collected in duplicate (sterile swab)
- Laboratory - seeded on blood agar and incubated for 24 hours at 35°C
- Presumptive identification - Gram stain, catalase test and ChromID CPS<sup>®</sup> chromogenic culture medium (BioMérieux<sup>®</sup>)



Sowing on Blood Agar



Catalase test



ChromID CPS<sup>®</sup>

### Photodynamic therapy treatment

- Weekly application
- Parameters (9J/cm<sup>2</sup> + Methylene Blue 0.01%)
- Primary lesion occlusion with calcium alginate

### • Outcomes

- Three Gram-negative bacilli and one Gram positive cocci were identified.
- Presumptive analysis: *Klebsiella pneumoniae* (n=2), *Pseudomonas aeruginosa* (n=1), and *Staphylococcus* sp. (n=1).

- After 40 days of initiating the photodynamic therapy two patients had their wound completely healed and two had a significant reduction in the size of the wound, in addition to improvement in gait, local pain and odor.

### Conclusion

- Gram positive and negative bacteria can be found colonizing diabetic foot ulcers and preventing from achieving the desired outcomes. Photodynamic therapy has the potential for eliminating the colonization, foul odor, pain and hence improves quality of life.

### References

1. Goh, T. C., Bajuri, M. Y., C Nadarajah, S., Abdul Rashid, A. H., Baharuddin, S., & Zamri, K. S. (2020). Clinical and bacteriological profile of diabetic foot infections in a tertiary care. *Journal of foot and ankle research*, 13(1), 1-8.
2. Ananian, C. E., Davis, R. D., Johnson, E. L., Regulski, M. J., Reyzelman, A. M., Saunders, M. C., & Danilkovitch, A. (2019). Wound Closure Outcomes Suggest Clinical Equivalency Between Lyopreserved and Cryopreserved Placental Membranes Containing Viable Cells. *Advances in wound care*, 8(11), 546–554.
3. Panto, F., Adamo, L., Giordano, C., & Licciardello C. (2020). Efficacy and safety of photodynamic therapy with RLP068 for diabetic foot ulcers: a review of the literature and clinical experience. *Drugs in Context*; 9 (1), 10-13.



# Creating a Community of Practice for Wound Care Leadership

Darren Levine EdD, Cathy Burrows RN, BScN, MScCH, Wound Prevention and Care, Mariam Botros, DCh, CDE, IAWCCAN, Heather Orsted BN ET MSc,

<p><b>28</b> Leader-Participants</p> <p>Registered Nurses Patients and Advocates Podiatrists Physicians and Surgeons Physiotherapists Occupational Therapists Chiropodists</p> <p><b>7</b> Geographic Areas</p> <p>Ontario Saskatchewan Quebec Alberta Manitoba Nova Scotia Iran</p> <p><b>6</b> Mentors</p> <p>Joel Alleyne, BSc, MA, MIST Sunita Coelho, RN, BSN, IAWCC Patricia Coutts, RN, IAWCC Janet Kuhnke, RN, BA, BScN, MS, NSWOC, PhD Andrew Springer, BSc, D.Ch, FRSH Marlene Varga, RN, BScN, MSc, IAWCC</p> <p><b>1</b> Community</p> <p>Listening Support Learning Collaboration Co-Creation Innovation Leadership</p> <p><b>2021 Cohort</b></p>	<p><b>A Shared Vision for Wound Care Leadership</b></p> <p>Together, leader-participants and mentors co-created a guiding vision for, and definition of, leadership in wound care:</p> <p><i>“Leadership is about adopting an individual, team, collaboration, and possibility focused mindset, while simultaneously remaining self-aware and adaptable, effectively managing processes, and empowering beyond job titles”</i></p>	<p><b>Roadmap to Strengthening Leadership</b></p>  <p><b>Identify</b> wound care leaders in clinical practice, education, policy, research, and advocacy</p> <p><b>Assist</b> leaders to improve the lives of people at risk or living with wounds</p> <p><b>Engage</b> leaders in Wounds Canada initiatives to meet evolving needs of all Canadians</p>
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**Wound care experts ...**


- Expressed feeling a **disconnect** from the broader community
- Individually demonstrated leadership qualities but had **limited means to further develop these skills**
- Reported receiving little support** from the disconnected community
- Described facing **professional and institutional barriers**
- Highlighted the importance of a space for **connection, learning and knowledge generation**

**What has been most meaningful to you?**

- “Supporting fellow wound care leaders in helping me to learn to be a leader.”
- “Hearing the challenges both the patients and the support staff have.”
- “Collaboration and relationship are the most meaningful issues.”
- “Getting to know the wound care community across the country.”
- “Hearing the patient/family experience and perspective.”
- “Connecting with others, learning and reflecting on leadership, developing my leadership skills.”

**Why has this experience been meaningful to you?**

- “I struggle to stay motivated and meeting others who are trying to lead helps me.”
- “Wound care is challenging today, so leadership skills are needed more than before, at all levels. Leadership takes place in the context of relationships.”
- “As a clinician, sometimes we forget how our actions, and the system can impact the person receiving the care. A common theme has been the communication and transparency.”
- “Understanding I'm not alone in my struggle with bureaucracy. I feel connected to something instead of drowning in my own fears and practices.”
- “We are all in this together. I have gained clarity and a deeper understanding of leadership in health care to ultimately improve patient outcomes.”
- “It helps me think about solutions to my potential barriers.”



**Implications to Practice**

Individually and collectively participants are exploring how they can step forward as agents of change in Canada’s wound care / health-care system through...

- Individual leadership**
- Organizational leadership**
- National leadership**

...all aimed towards reducing the prevalence and incidence of wounds, and improving wound care across Canada and beyond.

## Using a contralateral shoe lift to reduce gait deterioration during an offloading fast-walk setting in diabetic peripheral neuropathy: A Feasibility Study

**Nikolas Beauchesne<sup>1</sup>, Yassin Andoulsi<sup>1</sup>, Alice Wagenaar<sup>1</sup>, Magali Brousseau-Foley<sup>1,2</sup>, Gabriel Moisan<sup>1</sup>, Vincent Cantin<sup>1</sup>, Virginie Blanchette<sup>1,3</sup>**

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### Background

- Diabetic peripheral neuropathy (DPN) affects 28% of individuals with diabetes and is approximately 11 times more likely to lead to a diabetic foot ulcers (DFU).<sup>1,2</sup>
- Offloading is an important part of DFU management.
- Physical activity (PA) prevents complications but can be difficult to introduce because of the increased mechanical stress.<sup>3</sup>
- Including non-weight-bearing activity in DFU management plan might ↓ wound size without negative consequences.<sup>4,5</sup>
- Sedentary behavior is an independent predictor of DFU development, it is important to gather knowledge and develop tools to get the DPN population moving.<sup>7</sup>

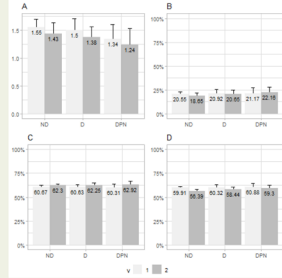
### Aim

**Principal objective :**  
Investigate spatiotemporal gait pattern changes during a 20-minute fast walk in individuals with diabetic peripheral neuropathy (DPN) while wearing an offloading boot and a contralateral shoe balancer.

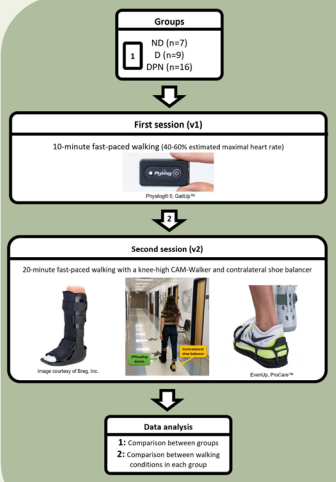
**Secondary objectives :**

- 1) Compare gait outcomes between nondiabetic controls (ND), diabetic controls (D) and DPN groups
- 2) Compare gait outcomes between walking conditions
- 3) Verify feasibility of the intervention in this population.

**Hypothesis :**  
The activity is feasible and does not cause harmful gait pattern changes. DFU risk is not increased in the DPN population while using an offloading device and contralateral shoe balancer.



**Figure 3.** Comparison between group participants: ND, D or DPN. A) Gait speed; B) Double-support %; C) Contralateral stance %; and D) Offloading stance %



**Figure 2.** Experimental summary

### Methods

**Design:** Descriptive comparative study (Figure 2).  
**Sample size:** 16 DPN, 9 D and 7 ND  
**Inclusion criteria:** 35 to 74 yo, Presence of DPN for Group A (10g Semmes-Weinstein Monofilament and 128Hz Tuning fork).  
**Exclusion criteria:** <1-year DFU history, Cardiac medical history, Peripheral arterial disease (Monophasic Doppler waveforms), Charcot neuroarthropathy.  
**Measures:** Demographics, foot types and deformities, activity level (IPAQ)<sup>6</sup>, gait outcomes (gait speed, stride length, gait cycle time, double-support %, minimal toe clearance, minimal toe clearance limp, step length limp, stance % and swing width) and feasibility outcomes (Perceived effort using Borg scale, comfort scale, adverse events and direct feedback).  
**Data analysis:** ANOVA 1-way (comparison); 2-way (interaction). Significance : p<0.05.

### Results

**Gait outcomes between groups**

- Gait speed and stride length ↓ in D and DPN groups (v1 and v2)
- +17% Double-support % ↑ in DPN (v2)

**Gait outcomes between conditions (v1 vs. v2)**

- Gait speed ↓ in v2 for ND and DPN groups
- Double-support% ↓ in v2 for ND group, but ↑ in DPN group
- Step length limp ↑ in v2 for all three groups
- Stance gait % ↓ in v2 on offloading device's side for all groups

**Level of activity (IPAQ) interaction**

- +6% Gait speed ↑ and -8% Double-support % ↓ for moderate IPAQ score compared to low IPAQ score
- +7% Gait speed ↑ and -12% Double-support % ↓ for high IPAQ score compared to low IPAQ score

**Feasibility of the physical activity interaction**

- Borg scale value is 1.70 (v1) and 2.15 (v2)
- Overall mean value for comfort is 6.47/10
- Adverse events : Uncomfortable pressure on the tibia (6%), calf discomfort during activity (19%), heat related to the offloading device (9%), difficulty with the activity due to mask related to Covid-19 protocols (6%) and hip pain (6%)
- 91% of patients reported the activity to be feasible daily

### Discussion

- Further gait deterioration in D and DPN groups while using the offloading device and contralateral shoe balancer;
- Asymmetry in gait parameters ↑ and walking speed ↓ with the use of the offloading boot and contralateral shoe balancer (compared to the participants' own shoes);
- Minimal gait deterioration in all groups when comparing this study's results to other unilateral offloading gait analysis studies;<sup>8</sup>
- The IPAQ interaction suggests an inverse correlation between gait deterioration and physical activity level, which supports the integration of daily PA to keep the at-risk DPN population moving;
- This study proposes a simple and easy to integrate in daily life PA to promote a sustainable health care system.

### Implications

- While minor adverse events were reported, participants stated that fast walking is feasible with the provided devices;
- Keeping individuals with DPN active while using an offloading device (e.g., active Charcot, foot ulcer) is a highly relevant issue. These results show that a 20-minute pressure-protected weight-bearing physical activity intervention, which is consistent with the 150 minutes per week of PA recommended by Diabetes Canada, is feasible.<sup>9</sup>
- Plantar pressures will be investigated in the next phase of the study.

**Table 1. Participants' characteristics**

	Control ND (n=7)	Control D (n=9)	DPN (n=16)	p-value
Age in years, mean (SD)	63.43 (1.81)	57.11 (13.04)	63.44 (6.11)	0.163
Female, n (%)	2 (29)	4 (44)	5 (31)	0.768
BMI in kg/m <sup>2</sup> , mean (SD)	24.33 (4.06)	30.06 (6.73)	33.73 (4.87)	0.024*
IPAQ Score, mean (SD)	2.29 (0.76)	2.44 (0.88)	2.19 (0.86)	0.762

Legend and abbreviation:  
 \*Statistically significant  
 SD: Standard deviation

**References :** <sup>1</sup>Gregg, E. W., et al. (2004). "Prevalence of lower-extremity disease in the US adult population: 40 years of age with and without diabetes: 1999-2000 national health and nutrition examination survey." *Diabetes Care* 27(7): 1591-1597. <sup>2</sup>Abdissa, D., et al. (2020). "Prevalence of Diabetic Foot Ulcer and Associated Factors among Adult Diabetic Patients on Follow-Up Clinic at Jimma Medical Center, Southwest Ethiopia, 2019: An Institutional-Based Cross-Sectional Study." *Journal of diabetes research* 2020: 4106383-4106383. <sup>3</sup>Fernando, M. E., et al. (2021). "Dosing Activity and Returning to Pre-Ulcer Function in Diabetic Foot Remission: Patient Recommendations and Guidance from the Limb Preservation Consortium at USC and The National Rehabilitation Center at Rancho Los Amigos." *Journal of the American Podiatric Medical Association*. <sup>4</sup>Tran, M. M. and M. N. Haley (2021). "Does exercise improve healing of diabetic foot ulcers? A systematic review." *Journal of foot and ankle research* 14(1): 19. <sup>5</sup>Brousseau-Foley, M., et al. (2021). "Physical Activity Participation in People with an Active Diabetic Foot Ulceration: A Scoping Review." *Canadian journal of diabetes*. <sup>6</sup>Caulfield, A. P., et al. (2009). "Psychometric properties of the IPAQ: a validation study in a sample of northern Franco-Ontarians." *J Phys Act Health* 6 Suppl 1: S54-60. <sup>7</sup>Orlando, G., et al. (2021). "Sedentary behaviour is an independent predictor of diabetic foot ulcer development: An 8-year prospective study." *Diabetes research and clinical practice* 177: 108877. <sup>8</sup>King, E., et al. "The impact of diabetic foot ulcers and unilateral offloading footwear on gait in people with diabetes." *Clin Biomech (Bristol, Avon)*, 2020. 73: p. 157-161. <sup>9</sup>Ivers, N. M., et al. (2019). "Diabetes Canada 2018 clinical practice guidelines: Key messages for family physicians caring for patients living with type 2 diabetes." *Canadian family physician / Médecin de famille canadien* 65(1): 14-24.





## Are You Following the Newly Revised (2022) Clinical Practice Guidelines for Prevention of Radiation Dermatitis? A Case Series Presentation

Rosemary Hill, BSN CWOCN WOCC (C), Lions Gate Hospital – Vancouver Coastal Health

### Statement of the Clinical Problem/Challenge

- In the United States, Canada, Europe and Australia, 50% of patients diagnosed with cancer will receive radiation therapy (RT) and 95% of them will experience some degree of skin reaction.
- Nearly all women who receive RT for breast cancer experience some degree of radiation dermatitis (RD).<sup>1</sup>

### Past Management

- In 2014 the use of a soft silicone film dressing during radiotherapy was explored and patients reported reduced symptoms from the skin with the film in place.<sup>2</sup>
- Severe RD is distressing, may have long term effects and might lead to treatment interruptions which may increase the risk of recurrence.
- More recent research (2020) at hospital in Canada, concluded that the soft silicone film completely prevented grade 3 RD and their rates of moist desquamation and grade 2 RD were lower with the film versus studies using aqueous cream.<sup>3</sup>

### Current Clinical Approach

This case series occurred in a hospital located on the Westcoast of Canada. Within 24 hours of RT commencement, a soft silicone film dressing was applied to the breast area on 14 women ages 29-69. RT varied from 15-25 cycles, including one case of 5 and one of 10 treatments. Typically, the film was left in place up to two weeks following the treatment regimen.

### Data Collection

Pt ID	Age (years)	Radiation Treatment (number)	Skin Breakdown
1	44	20	nil
2	69	20	nil
3	60	25	nil
4	29	25	nil
5	54	20	nil
6	48	25	nil
7	55	25	nil
8	50	15	nil
9	57	16	nil
10*	36	25	Removed during workout
11	53	5	nil
12	46	10	nil
13*	47	15	Removed in 24hrs
14	34	25	nil

### Soft Silicone Film Dressing Appearance



### Highlighted Case Study from Series

**44-year-old female who previously had a left mastectomy, axillary dissection, right prophylactic immediate breast reconstruction with tissue expander. She is classified as T2N1 Invasive Ductal carcinoma. ER Positive, PR Negative, HER2 Positive. Radiation commenced in October for 15 treatments.**



### Outcomes

- The outcome for the women was positive, with 12 out of 14 women avoiding skin breakdown.
- One case was withdrawn 24 hours post application and the other case included repeated removal of soft silicone film during frequent exercise regimen.

### Conclusion

- The benefits of utilizing a soft silicone film dressing were the ability to stay on for weeks, while the transparency allowed skin reactions to be assessed without removing the film.
- The positive results from this small case series, along with the recently updated clinical practice guidelines from MASCC, challenges clinicians to examine current clinical practice and further explore the utilization of a soft silicone film dressing for people receiving radiation treatment for breast cancer.

### References

- Fernandez-Castro M. et al., Effectiveness of semi-permeable dressings to treat radiation-induced skin reactions. A systematic review. Eur J Cancer Care 2017;26:e12688
- Herst PM, Bennett NC, Sutherland AE, Peszynski RI, Paterson DB, Jasperse ML. Prophylactic use of Mepitel Film prevent radiation-induced moist desquamation in an intra-patient randomised controlled clinical trial of 78 breast cancer patients. Radiother Oncol. 2014;110:137-143.
- Yee C. et al. A Feasibility Study of Mepitel Film for the Prevention of Breast Radiation Dermatitis in a Canadian Center. Practical Radiation Oncology. 2021;11, e36-e45.
- Behroozian, T. (2022, June 23-25). MASCC 2022 Clinical practice guidelines for the prevention and management of radiation dermatitis: Delphi consensus-based recommendations [Conference session] Multinational Association of Supportive Care in Cancer, Toronto, Canada. [https://MASCC\\_OD\\_Thurs02\\_Disparities\\_in\\_Supportive\\_Care\\_for\\_Radiation\\_Dermatitis\\_\(splivesteam.com\)](https://MASCC_OD_Thurs02_Disparities_in_Supportive_Care_for_Radiation_Dermatitis_(splivesteam.com)).

**Did you know?**

**Newly Revised (2022) Clinical Practice Guidelines**

At the Multinational Association of Supportive Cancer Care (MASCC) meeting June 2022, newly revised clinical guidelines for prevention of radiation dermatitis recommended the use of a soft silicone film dressing.<sup>4</sup>

## Clinical Outcomes Using New Hybrid Drape with Negative Pressure Wound Therapy for Various Wound Types in Difficult Anatomical Locations: Case Study



Rosemary Hill, BSN, CWOCN, WOCC (C)  
Lions Gate Hospital, North Vancouver, BC, Canada

### Clinical Problem

- **Negative pressure wound therapy (NPWT) is traditionally applied using an adhesive acrylic drape, which can present challenges for patients and clinicians.**
- **Removal of the standard drape can harm surrounding tissue and cause pain and discomfort for patients.<sup>1,2</sup>**
- **Additionally, applying the drape can be cumbersome, and it cannot be re-positioned after placement.**

### Past Management

- Since the introduction of NPWT, a standard acrylic adhesive drape, included in all dressing kits, has been applied over the foam dressing for all wounds managed with NPWT at our hospital.

### Current Clinical Approach

- Recently, we began using a new hybrid NPWT drape with a low tack acrylic adhesive and silicone perforated layer as a first line NPWT drape for complex wounds, primarily in difficult anatomical locations.
- We present outcomes with the acrylic-silicone hybrid NPWT drape utilized in five complex wound cases (**Cases 1-5**): (1) deep abdominal wound close to an ostomy; as a bolster over split- or full-thickness skin grafts in the (2) forearm, (3) groin area, and (4) lower leg; and (5) a diabetic foot ulcer.
- Demographics and wound etiologies are shown in **Table 1**.
- Dressings were changed every 2-3 days for wounds and removed after 5 days for grafts.
- The drape was repositioned as necessary upon dressing application.

### Patient Outcomes

- In all cases, a tight seal was maintained between dressing changes and until dressing removal over the graft.
- Neither replacement nor repositioning of the drape was required during therapy.

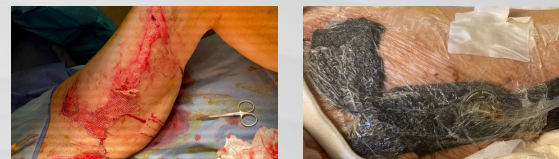
### Results

**Case 1.** A 71-year-old female with deep abdominal wound with ostomy.



**A.** Presentation post total abdominal colectomy, lysis of adhesions and end ileostomy. **B.** Hybrid drape applied over NPWT foam dressing, achieving a seal despite abdominal creases and close proximity to ostomy.

**Case 3.** A 67-year-old female with split-thickness skin graft (STSG) following a thermal burn.



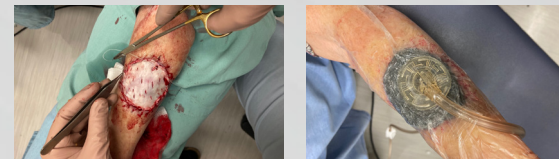
**A.** STSG placed over left medial thigh and groin. **B.** Hybrid drape applied over NPWT dressing used as bolster over STSG. Seal remained intact for 5 days despite challenging groin location.

**Case 5.** A 68-year-old male with a diabetic foot ulcer.



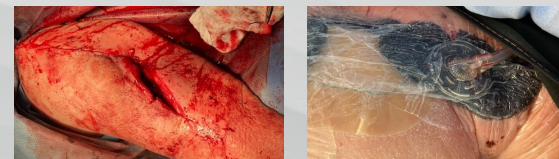
**A.** Left foot abscess following irrigation and debridement. **B.** Osteomyelitis was treated and NPWT applied.

**Case 2.** A 78-year-old female with skin graft after surgical excision of squamous cell carcinoma.



**A.** Full-thickness skin graft (FTSG) reconstruction post wide excision for carcinoma. **B.** Hybrid drape applied over NPWT dressing as bolster over FTSG. There was no evidence of epidermal stripping at drape removal.

**Case 4.** A 78-year-old male with arm abscess secondary to pathological fracture and removal of hardware.



**A.** Abscess following failed fixation of left midshaft humerus and removal of hardware. **B.** Hybrid drape applied over NPWT foam dressing.



**C.** To ensure suitable offloading, the foam dressing was bridged to the dorsal aspect of the foot and secured. **D.** Hybrid drape was applied over the entire foam dressing, including tubing connector pad and 4 cm foam bolster.

### Results (Cont'd)

**Table 1.** Patient demographics, wound type, comorbidities and procedure prior to negative pressure wound therapy.

Case	Age	Sex	Wound Type	Comorbidities	Procedures prior to NPWT
1	71	F	Deep abdominal wound with ostomy	Morbidly obese; abdominal dehiscence; MRSA positive	Total abdominal colectomy; lysis of adhesions; end ileostomy
2	78	F	Skin graft after surgical excision of squamous cell carcinoma	—	FTSG reconstruction post wide excision (6 x 6 cm) for carcinoma of left dorsal forearm
3	67	F	Thermal burn and skin graft	—	STSG to left medial thigh and groin
4	78	M	Failed fixation of left midshaft humerus	Hypertension; diabetes; multiple myeloma; MSSA positive. Failed hardware post fall; left arm abscess with osteomyelitis secondary to pathological fracture	ORIF of proximal humerus fracture; removal of all hardware, subsequent to revision ORIF left IM nail fixation
5	68	M	DFU	Type II diabetes (20 years)	Irrigation and debridement of left foot osteomyelitis with abscess

NPWT = negative pressure wound therapy; MRSA = Methicillin-resistant *Staphylococcus aureus*; FTSG = full-thickness skin graft; STSG=split-thickness skin graft; MSSA= Methicillin-sensitive *Staphylococcus aureus*; ORIF = open reduction internal fixation; IM=intramedullary; DFU=diabetic foot ulcer

### Conclusions

- **In our experience, dressing application and removal were simplified with the new hybrid NPWT drape versus the standard drape.**
- **At dressing changes, all patients experienced improved comfort due to easier removal of the hybrid drape.**

### References:

1. Collier M. Minimising pain and medical adhesive related skin injuries in vulnerable patients. *Br J Nurs.* 2019; 28(15): S26-S32.
2. Fumarola S, Allaway R, Callaghan R, et al. Overlooked and underestimated: medical adhesive-related skin injuries. *J Wound Care.* 2020; 29 (Suppl. 3): S1-S24.
3. Fernández LG, Matthews MR, Benton C, Buresch R, Sutherland A, Tillson N, Brooks J. Use of a novel silicone-acrylic drape with negative pressure wound therapy in anatomically challenging wounds. *Int Wound J.* 2020; 17(6):1829-1834.

## COVID-19 and Hospital Acquired Pressure Injuries (HAPIs): A Systematic Review

\*Adrienn N. Bourkas<sup>1</sup> (MSc), \*Michele Zaman<sup>1</sup> (MScPH), R. Gary Sibbald<sup>2</sup> (MD, MEd, FRCPC, MACP, FAAD, MAPWCA, DSc (Hons))

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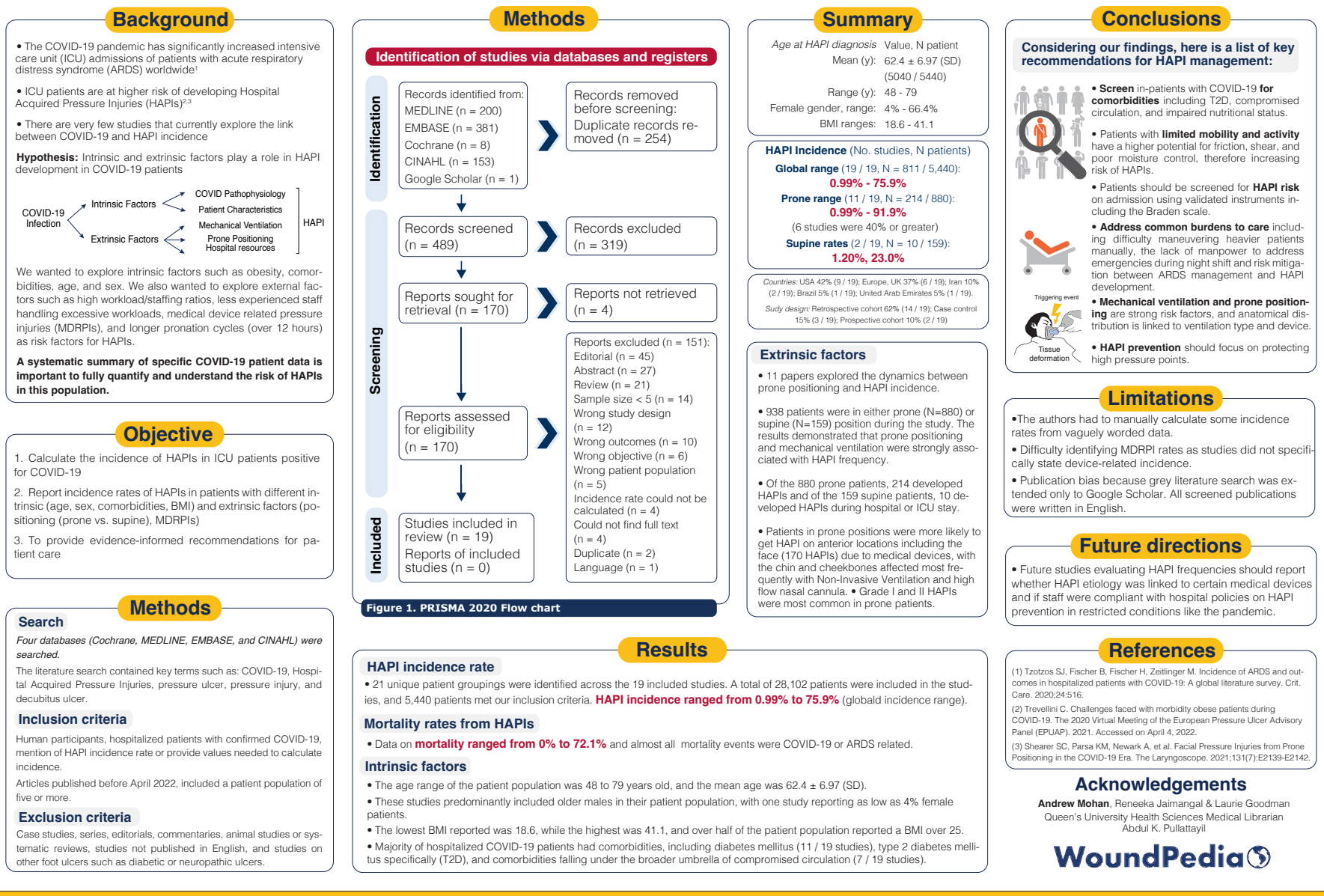


Figure 1. PRISMA 2020 Flow chart

## Achieving wound bed preparation with the use of continuous diffusion of topical oxygen on a patient with a limb threatening vasculitic wound

Maria Becerra RN, BScN, MCISc-WH, Eliana Sutton RN, BScN, MCISc-WH, Alexandra Saltman BA, MD, FRCPC, Rahul Joshi MD, CCFP, Balram Sukhu, PhD, Laura Teague, NP-Adult, PhD

### OBJECTIVE

Continuous Diffusion of Oxygen (CDO) is characterized as moist wound healing with a constant infusion of 100% oxygen generated from room air. CDO has been shown to stimulate wound healing by increasing angiogenesis, collagen production and cell metabolism<sup>1,2,3,4</sup>. This case study describes an interdisciplinary approach and the use of CDO in combination with wound care best practice for the wound bed preparation of a patient with complex skin loss due to vasculitis.

### METHODS

We present a case of an 83-year-old male with a complex medical history including, Polymyalgia Rheumatica, that was being treated with high dose prednisone. During this treatment, the patient was admitted to the hospital with septic shock secondary to left leg cellulitis. Leukocytoclastic vasculitis was later confirmed with biopsy. The lower left leg deteriorated to full thickness skin loss extending from the dorsal aspect of the foot and circumferentially to the mid-calf area. Skin grafting was not recommended and below the knee amputation was offered and declined by the patient. The interdisciplinary team suggested medical reconditioning in a rehabilitation institute.

Weekly bloodwork was then performed to monitor for inflammation and infection. Modified compression therapy to control edema was employed for the first eight weeks. When no wound healing progress was achieved, CDO was applied with two units at 15ml/hr. with three times weekly dressing changes. At each dressing change, wound cleansing with 1% acetic acid and conservative sharp debridement was performed. In addition to local wound care, the patient was being followed by an interdisciplinary team to ensure a holistic approach to his wound healing and rehabilitation.

### RESULTS

Initial Presentation at Rehab  
November 4, 2021



Initial CDO Application  
December 14, 2021



January 26, 2022  
(Week 6)



Initial Amnion Application  
February 2022



March 2022



April 2022



May 2022



### FINDINGS

The topical oxygen cleansed the wound by enhancing the wound's autolytic capabilities. It also decreased the patient's pain thus allowing adjunctive clinical debridement which further optimized the oxygen diffusion and therapy effect. After 6 weeks of treating the left lower leg with CDO, the wound bed progressed from 100% dry eschar to granulation tissue. The wound bed was deemed appropriate for amniotic membrane allograft (amnion) application to continue the healing process.

### IMPLICATIONS

This case demonstrates the importance of interdisciplinary collaboration and treatment of a complex wound with advanced therapies to promote healing. As well, this case is an example of how CDO therapy can aid with wound bed preparation, which is required prior to the application of amnion. Use of CDO therapy research for other wound etiologies is warranted.

### REFERENCES

- Edge, R., & Frey, N. (2020). *Continuously Diffused Oxygen Therapy for Wound Healing: A Review of the Clinical Effectiveness, Cost-Effectiveness, and Guidelines*. Canadian Agency for Drugs and Technologies in Health.
- Frykberg RG, Franks PJ, Edmonds M, et al. A multinational, multicenter, randomized, double-blinded, placebo-controlled trial to evaluate the efficacy of cyclical topical wound oxygen (TWO2) therapy in the treatment of chronic diabetic foot ulcers: the TWO2 study. *Diabet Care*. 2020;43(3):616-624
- Gottrup, F., Dissemond, J., Baines, C., Frykberg, R., Jensen, P. Ø., Kot, J., Kröger, K., & Longobardi, P. (2017). Use of Oxygen Therapies in Wound Healing. *Journal of wound care*, 26(Sup5), S1–S43. <https://doi.org/10.12968/jowc.2017.26.Sup5.S1>
- Niederauer, M. Q., Michalek, J. E., & Armstrong, D. G. (2017). A Prospective, Randomized, Double-Blind Multicenter Study Comparing Continuous Diffusion of Oxygen Therapy to Sham Therapy in the Treatment of Diabetic Foot Ulcers. *Journal of diabetes science and technology*, 11(5), 883–891. <https://doi.org/10.1177/1932296817695574>

## The geko™ Wound Therapy Device: A Case Study of a Radiation Induced Lower Leg Ulcer

Authors: Lyver, M., MD, FRCPC, FCFP



### Aim

To evaluate the geko™ wound therapy device in the treatment of a non-healing lower leg ulcer secondary to radiation therapy.

### Procedure/Method

- A 90-year-old lady who has been co-followed in Hyperbaric and Wound management clinics for a non-healing wound of the left lower leg.
- A biopsy was taken in 2019 which indicated a squamous cell carcinoma.
- Treatment modalities over the past have included best practices, surgery, radiation therapy and a failed skin graft.<sup>1</sup>
- In 2020 she was referred to Hyperbaric Oxygen clinic.
- The wound was located on the lateral aspect of the left lower gaiter area and measured 14cm x 8 cm with exposed tendon.
- She was unable to tolerate many therapies due to contact dermatitis.
- In 2022 it was approved to implement the geko™ wound therapy device as an adjunctive therapy.
- The geko™ wound therapy device is placed over the fibular head to stimulate the common peroneal nerve which activates the calf and foot muscle pumps.<sup>2</sup>

- This improves venous return, reduces edema, and increases bloodflow, velocity and pulsatility, and microcirculation to the wound and peri-wound.<sup>3</sup>

### Findings/Results

- The wound responded positively to the geko™ wound therapy device following an 8 week course of treatment.
- There was improved granulation tissue, the tendon was no longer visible, and the wound size reduced to 11 cm x 6cm.
- The wound continued to show progress using the geko™ wound therapy device.

### Implications/Applications

- The outcome and potential application of the geko™ wound therapy device as an adjunctive therapy in conjunction with Hyperbaric Oxygen therapy demonstrated that early intervention with the geko™ wound therapy device offered this patient improved healing outcomes in treating her radiation-induced wounds.

### References

1. Wei J, Meng L, Hou X, Qu C, Wang B, Xin Y, Jiang X. Radiation-induced skin reactions: mechanism and treatment. *Cancer Manag Res.* 2019;11:167-177. Online available: <https://www.dovepress.com/radiation-induced-skin-reactions-mechanism-and-treatment-peer-reviewed-fulltext-article-CMAR>
2. Manufacturer User Information Guide. Firstkind Ltd. Online available: [geko User Information](#)
3. Bosanquet D, Ivins N, Jones N, Harding K G. Microcirculatory Flux and Pulsatility in Arterial Leg Ulcers is Increased by Intermittent Neuromuscular Electrostimulation of the Common Peroneal Nerve. *Elsevier: Clinical Research* 2020 <https://pubmed.ncbi.nlm.nih.gov/32768540/>



March 18, 2020



May 25, 2020



May 4, 2022



June 8, 2022



# Creation of a Wound Care Curriculum and Teaching Enabler

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## Introduction

- Wound care management is an important clinical topic for both physicians and interprofessional clinical teams.
- Significant morbidity, mortality and economic costs are associated with increasing numbers of chronic wounds, anticipated in growing elderly populations, as well as people living with diabetes, vascular deficits, and obesity.
- Literature reviews suggest that more structured wound management education programs are needed.<sup>1,2</sup> Medical learners have few opportunities to learn wound care topics in clinical settings, as electives in this field are less common and often taught informally.
- Physician teachers and learners at an academic interdisciplinary downtown Toronto wound care clinic identified this learning gap.

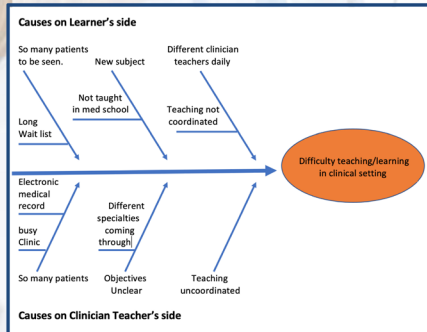


Figure 1: Fishbone diagram identifying challenges for formal wound care education.

## Aim

- The aim of this project was to create a succinct and comprehensive wound care curriculum and a teaching enabler with high yield topics.
- This would serve as a tool to provide standardized and structured teaching to medical learners rotating through an academic interdisciplinary wound care clinic.

## Methods

*Designing, Piloting, and Iterating the Wound Care Curriculum and Enabler*

- A tool was created by one of the authors, ensuring that rotation objectives and CanMEDS roles were covered.
- Learners and staff physicians reviewed and revised the enabler until the majority were satisfied.
- It was trialed with learners in clinic, with subsequent modifications based on feedback.
- The enabler went through a total of nine revisions and was reviewed by six learners and three staff members.

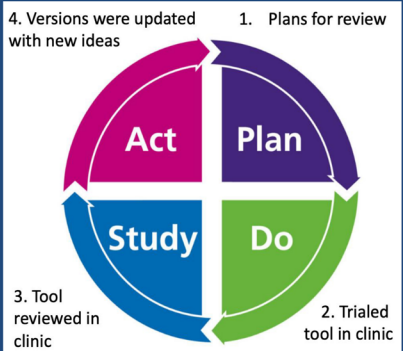


Figure 2: Plan-Do-Study-Act (PDSA) cycle that was used to improve the wound care curriculum and teaching enabler.

## Results

- This project resulted in the creation of a two-page handbook that can be used to facilitate the teaching of general wound care principles in clinic and taken home for future reference by the learner.

## The Wound Care Curriculum and Enabler

Figure 3. Most recent wound care teaching enabler.

## Conclusion

- The wound care curriculum and enabler have been well-received by the learners and teachers in a variety of clinical settings
- Learners were happy to have a tangible resource to reference and found it helped with making treatment decisions
- Wound care physician teachers found this helpful, as it ensures teaching of a wide range of wound care principles and cases.

## Implications/Future Plans

- This represents the first step for larger wound care education projects, including:
- Formal testing of this tool using pre- and post-evaluation studies
  - Trialing this tool in other settings such as rehabilitation, complex continuing care, and long-term care settings
  - Expanding to multi-disciplinary teaching and learning opportunities

## References

- Welsh L. Wound care evidence, knowledge and education amongst nurses: a semi-systematic literature review. *Int Wound J*. Feb 2018. 15(1):53-62. doi:10.1111/iwj.12822.
- Kielo E, Salminen L, and Stolt M. Graduating student nurses' and student podiatrists' wound care competence – an integrative literature review. *Nurse Educ Pract*. Mar 2018. 29:1-7. doi:10.1016/j.nepr.2017.11.002.

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## Triple Skin Challenges for Wound Ostomy Continence Nurses: Consider a Cyanoacrylate Liquid Skin Protectant for the Treatment of Peristomal Skin Damage, Incontinence Associated Dermatitis and Skin Tears Type 1: A Case Series

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### Introduction

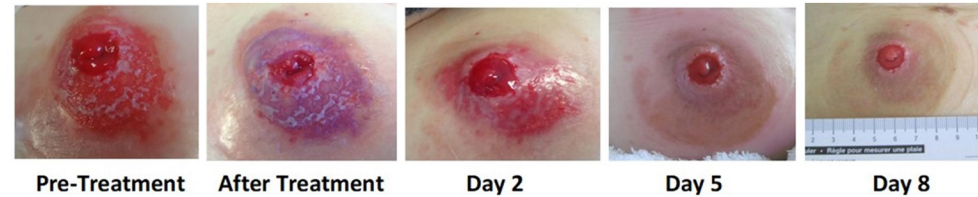
- Referrals to nurses specialized in wound, ostomy and continence, encompass skin issues including: Peristomal Skin Damage (PSD), Incontinence Associated Dermatitis (IAD), and Skin Tears Type 1 (ST-1) that are often accompanied by patient suffering.<sup>1</sup>
- Peristomal skin complications are experienced by up to 80% of patients with an ostomy within two years of surgery.<sup>2</sup>
- In a survey conducted in the US and Canada, nearly one out of five incontinent patients had documented IAD.<sup>3</sup> ST-1 are classified as: “no skin loss with skin flap that can be repositioned to cover the wound” and occur more frequently in elderly patients.<sup>4</sup>

### Aim

- The purpose of this study was to evaluate a cyanoacrylate liquid skin protectant (CLSP) for the treatment and healing of PSD, IAD, and ST-1.

### Procedure/Methods

- Thirteen patients were evaluated in this case series.
- Five of the 13 patients had ileostomies or urostomies and pain associated with PSD.
- These five patients received one CLSP application prior to applying the pouch apparatus.
- Four out of 13 patients had IAD and were evaluated following 1-2 applications of CLSP.
- Four out of 13 elderly patients with ST-1 were evaluated for closure and healing following one CLSP application.



**Case 1.** An 85-year-old female with Ileac conduit as a result of bladder cancer. Medical history of coronary artery disease, peripheral vascular disease, and cardiac dysrhythmias. Presented with leakage issues, frequent changes, and worsening peristomal skin. Images shown at-pre-treatment, immediately after treatment, days 2, 5, and 8 following CLSP treatment.



**Case 2.** 73-year-old with diarrhea, weak anal sphincter, and medical history of cervical cancer and hypertension. Presented for a flex sigmoidoscopy and acute IAD. Images shown: Pre-treatment, post-treatment, day 1: Considerable improvement in symptom management – much relieved from burning symptoms. Cleaned and reapplied CLSP and provided patient with a silicone barrier to apply after cleaning for bowel movement. Week 1: Patient stated “my whole quality of life is 99% improved”



**Case 3.** An 80-year-old healthy male fell and sustained a skin tear type 1. Images shown: Pre-treatment and immediately after treatment, Day 11, and day 18 following CLSP treatment

### Findings/Results

- For the five patients treated for PSD, complete healing was observed at 2-8 days following pouch apparatus replacement and CLSP application. (Example Case 1). QOL was improved by all recipients as their skin improved, pain diminished, and increased pouch security was established.
- For the four patients treated for IAD, complete healing was observed at 5-8 days with patients reporting improved QOL. (Example Case 2)
- For the four patients treated for ST-1, closure was observed 3-5 days after CLSP application with complete healing at 14-18 days. (Example Case 3)

### Conclusion

- Based on this case series of 13 patients, we determined that CLSP is an advantageous approach for the treatment of patients suffering from PSD, IAD, and ST-1.

### References

1. LeBlanc K, Whiteley I, McNichol L, Salvadalena G, Gray M. Peristomal Medical Adhesive-Related Skin Injury: Results of an International Consensus Meeting. J Wound Ostomy Continence Nurs. 2019 Mar/Apr; 46(2):125-136
2. Burch J. Peristomal skin care and the use of accessories to promote skin health. Br J Nurs. 2011 Apr 14-27;20(7):S4, S6, S8 passim. doi: 10.12968/bjon.2011.20.Sup3.S4.
3. Kayser SA, Phipps L, VanGilder CA, Lachenbruch C. Examining Prevalence and Risk Factors of Incontinence-Associated Dermatitis Using the International Pressure Ulcer Prevalence Survey. J Wound Ostomy Continence Nurs. 2019 Jul/Aug; 46(4):285-290.
4. LeBlanc, K and Christensen, D. Evaluation of a cyanoacrylate liquid skin protectant for the treatment of type 1 and 2 skin tears at a long-term care facility. Wounds International 2020 Vol 11 Issue 2 pp.40-46.

## OPTIMIZING BIOFILM MANAGEMENT OF HARD-TO-HEAL WOUNDS USING A PURE HYPOCHLOROUS ACID (pHA) PRESERVED WOUND CLEANSER

MICHELE LABBIE,  
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### AIM

Purposeful cleansing of the wound and the area 10-20 cm around the wound is the first step in performing wound hygiene and is an important part of a biofilm management strategy. The use of anti-microbially preserved wound cleansers containing a surfactant and/or pH-balanced solution with low toxicity are encouraged. In fact, some very recent guidelines strongly suggest the use of cleansing agents such as those based on safer antimicrobial preservative ingredients, for example pure Hypochlorous Acid (pHA). Guidelines also discuss the toxicity of agents such as sodium hypochlorite that is present in some products such as Dakin's solution which has 5000 ppm of the toxic hypochlorite agent, also present in bleach. It is now known that even 5 ppm of hypochlorite is cytotoxic, and thus to be completely avoided. Therefore, choosing a recommended wound cleanser was an important consideration in optimizing wound hygiene practice in our ambulatory wound clinic.

### PROCEDURE

Pure Hypochlorous Acid (pHA) solution is a non-cytotoxic, non-irritating, non-sensitizing wound solution which is evidence based, and which uses a formulation containing the same molecule (hypochlorous acid) present in the human immune system to kill pathogens. As a wound cleansing solution or soak, it exerts rapid and selective removal of germs and necrotic debris, thereby helping to address biofilm and bacterial burden. With a pH range of 3.0-5.5, it is skin and wound friendly. The pHA wound solution was chosen for evaluation over a three-month period in February 2021. It was used on hard-to-heal wounds with signs of biofilm colonization, and with a delayed wound healing trajectory. It was applied as a wound soak for 10-15 minutes after initial cleansing and after conservative sharp debridement. It was also used to actively cleanse the peri wound area.

### RESULTS

Clinical signs of reduced bacterial load in the wound were evidenced by a healthier granular wound tissue and decreased redness and irritation. Peri wound health stabilized or improved. pHA was implemented as a standard component of wound hygiene practice following the trial.

Four diverse case studies are presented. Positive results are evidenced through pictorial sequencing.

### CONCLUSIONS AND IMPLICATIONS

Pure Hypochlorous Acid (pHA) wound solution provides clinicians the opportunity to optimize wound cleansing and wound bed preparation when combined with the concepts of wound hygiene and comprehensive patient care. In ambulatory circumstances, it is not unusual that some wound treatment will not be optimal, for example pHA cleanser use may not be regular as it could be. Our experience, and some of the cases show, that coupled with other standard wound improvement techniques, once the pHA use is resumed on a regular schedule, wound health may be salvaged though it may have suffered due to inconsistent treatment previously.

The ease of use of pHA is notable, as is the high amount of patient acceptability and lack of adverse episodes.

### CASE 1

44-year-old male with history of Type 1 diabetes and previous foot ulcerations presented with acute infection with new onset wounds related to footwear. Appropriate antibiotics was initiated with wound culture & sensitivity indicative of poly-microbial infection including presence of pseudomonas aeruginosa. Optimized plantar offloading and an individualized wound management plan including topical antimicrobially preserved cleansing was implemented. This included use of pHA preserved wound cleanser as a 10 minute soak with each dressing change. This was continued in the home setting. Pseudomonas aeruginosa colonization temporarily returned when pHA preserved wound cleanser was stopped during wound management, but with resolution of this pathogen when pHA preserved wound cleanser application resumed.

Initial implementation



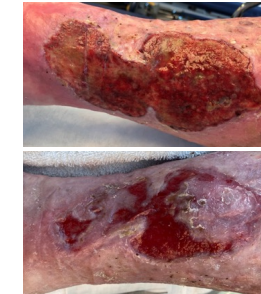
6 Weeks



### CASE 2

57 year-old female with with chronic venous insufficiency and long history of leg ulceration, presented with wounds >1 year old. Recurrent wound infections with chronic wound biofilm was the history. Optimized therapeutic compression and an individualized wound plan including a topical antimicrobial preserved cleanser were implemented. Therapeutic wound cleansing with pHA preserved wound cleanser including a 10 minute soak to the wound and peri wound was performed with each dressing change.

Initial implementation



6 Weeks



### CASE 3

10 year-old male with numerous complications related to H1N1 at age 8, including right below knee amputation and amputation of left 5th toe. Presented following surgical remodelling of left 5th toe amputation site to facilitate wound healing and minimize callus build-up in the area. Active and independent. Ongoing infection concern by care team and parents. Optimized offloading and an individualized wound plan were implemented. Thorough wound cleansing of the wound and peri wound was implemented with daily dressing changes using pHA based wound cleanser. This was performed by the parents in the home setting. Parental feedback was that the "wound stayed clean without getting gunky or infected and that he (the patient) had no discomfort". The wound went on to close.

Initial implementation



4 Weeks



### CASE 4

59 year-old female with traumatic injury to left leg with edema and chronic venous insufficiency. Presented for acute care of the injury. Optimized compression therapy and individualized wound management including an topical antimicrobial based cleanser were implemented over a course of 5 weeks. Wound developed friable hypergranulation tissue which bled easily when the pHA preserved wound cleanser had been used sporadically. However, this was resumed with every dressing change with a soak to the wound and peri wound x 10 minutes. No additional interventions or changes in care were made other than this addition. Hypergranulation tissue subsided with improvement in peri wound. The wound went on to close.

Initial implementation



4 Days



Poster was created with support from Urgo Medical North America

### REFERENCES

- International Wound Infection Institute (IWII) Wound Infection in Clinical Practice. Wounds International. 2022.
- Eriksson E, Liu PY, Schultz GS, et al. Chronic wounds: Treatment consensus. Wound Rep Reg. 2022; 1-16. doi:10.1111/wrr.12994
- Murphy C, Atkin L, Swanson T, Tachi M, Tan YK, Vega de Ceniga M, Weir D, Wolcott R. International consensus document. Defying hard-to-heal wounds with an early antibiofilm intervention strategy: wound hygiene. J Wound Care 2020; 29(Suppl 3):S1-28.
- Asaadlan O, Kammerlander G, Geyrhofer C et al. Use of wet-to-moist cleansing with different irrigation solutions to reduce bacterial bioburden in chronic wounds. J Wound Care 2018;27:510-6.
- Niezgoda J, Sorrell P, Hemmons M. Evaluation of Vaseline wound therapy in the clinical management of patients with chronic wounds. Adv Skin Wound Care 2010;23(8):352-357
- Day A, Alkhalil A, Carney BC, Hoffman HN, Moffatt LT, Shupp JW. Disruption of biofilms and neutralization of bacteria using hypochlorous acid solution: an in vivo and in vitro evaluation. Adv Skin Wound Care. 2017;30(12):543-551.
- Harriott MM, Bhindi N, Kassis S, Summitt B, Perdiks G, Wormer BA, Rankin TM, Kaoutzani C, Sanaha M, Stratton C, Schmitz JE. Comparative Antimicrobial Activity of Commercial Wound Care Solutions on Bacterial and Fungal Biofilms. Ann Plast Surg. 2019 Oct;83(4):404-410.
- Robson MC. Treating chronic wounds with hypochlorous acid disrupts biofilm. Wound Prevention and Management 2020;66 (5):9-10.
- Harriott MM, Bhindi N, Kassis S, Summitt B, Perdiks G, Wormer BA, Rankin TM, Kaoutzani C, Sanaha M, Stratton C, Schmitz JE. Comparative Antimicrobial Activity of Commercial Wound Care Solutions on Bacterial and Fungal Biofilms. Ann Plast Surg. 2019 Oct;83(4):404-410.
- Huebert JM, Robson MC. The immediate and delayed post-debridement effects on tissue bacterial wound counts of hypochlorous acid versus saline irrigation in chronic wounds. Eplasty. 2016;16:e32.
- Alberto EC, Cardenas L, Cipolle M, Gallagher KE. Level 1 trauma center experience utilizing negative pressure wound therapy with instillation: hypochlorous acid versus normal saline solution in complex or infected wounds. J Med Sci Clin Res. 2020;8(6):414-420.
- Sakarya S, Gunay N, Karakulak M, Ozturk B, Ertugrul B. Hypochlorous acid: an ideal wound care agent with powerful microbicidal, antibiofilm, and wound healing potency. Wounds. 2014;26(12):342-350.
- Armstrong DG, Bohn G, Glat P, et al. Expert recommendations for the use of hypochlorous solution: science and clinical application. Ostomy Wound Manage. 2015;61(5): 32-519

## Increasing Pressure Injury Point Prevalence and Process Uptake and Action Planning in Continuing Care

Marlene Varga MSc & Charlene Brosinsky BScN  
Covenant Health & Alberta Health Services Collaborative

## Introduction

In 2018, Covenant Health participated in an industry sponsored pressure injury audit with 10 out of 12 Continuing Care/Long Term Care (LTC) site participation. Clinical champions audited the entire population (not a random sample). The prevalence rate across all LTC sites was 11%; the facility-acquired rate across all LTC sites was 8%. There were no action plans developed based on the results.

Pressure Injury Prevention (PIP) audits are essential to meet Accreditation Canada Required Organizational Practices, monitor the burden of pressure injuries within facilities (and those that develop in facilities), and inform policy and decision makers to improve planning and delivery of PIP.

An organization wide PIP program was established in 2018 and is grounded in the Promoting Action on Research Implementation in Health Services (PARIHS) framework (Kitson *et al* 1998). PIP audits are a part of the PIP program.

## Objectives

The objective of this quality improvement (QI) initiative was to establish and sustain processes to increase PIP audit uptake and action planning in LTC sites at Covenant Health.

## Methods

In 2020, a standardized, electronic provincial wide PIP Point Prevalence and Process audit tool was implemented to conduct audits. The process involved direct head-to-toe assessments and the evaluation of care processes for PIP. Provincial standards now recommend a minimum random sample of 20% of the population be included.

A standardized Audit Toolkit was developed in collaboration with the Accreditation Advisor, PIP Clinical Nurse Specialist (CNS) and Clinical Quality Metrics specialist to standardize content. An e-learning module was developed in collaboration with the PIP Provincial Committee and included audit methodology, staging, two-person consensus, and patient awareness information. Knowledge checks throughout the module were developed to summarize key learnings. The resources were posted on an internal learning platform on a workspace dedicated to PIP. A Post Audit Toolkit was developed to assist teams in data access, data review and QI action planning.

The PIP CNS engaged with operational leadership to involve them to ensure their sites are conducting audits and developing action plans as part of the standardized PIP program. Site operational leadership set an audit deadline.

## Results

A total of 6 of 12 Covenant Health LTC sites completed the audit from January-July 2022 (Fig 1):

- prevalence rate 18%
- facility-acquired rate 13%
- 9% facility-acquired were medical-device related
- most pressure injuries were Stage 2
- risk assessments on admission 88%



Fig 1

All sites developed action plans using the Post Audit Toolkit. The priorities were to validate the results in the online provincial dashboard by comparing online results with raw data and communicate the results to the site teams, patients and families.

QI activities related to standardization of clinical practice including ensuring risk and skin assessments are completed on admission and at regular intervals. A priority for patient and family education involved prioritizing the SSKIN Bundle (Skin assessment, support surfaces, keep moving, incontinence and nutrition) with the use of a standardized leaflet.

Action plan strategies involved communication, keeping it small, conveying influence and concern and learning by doing (Tuijl *et al* 2020).

## Application to Practice & Conclusion

Conducting standardized audits using a standardized provincial tool can inform organizations about the state of pressure injuries compared to unreliable administrative data (Houghton 2021, Backman *et al* 2016).

The PARIHS framework highlighted the importance of leadership, culture, context and facilitation to support uptake of evidence into practice. Collaboration with the PIP Provincial committee and mobilizing transformational leaders are additional enablers. A Continuing Care Community of Practice model has been established to sustain this uptake and action, communicate audit results to residents and families, and include residents and families in further action planning.

## References

- Backman, C. *et al*. 2016. Comparing physical assessment with administrative data for detecting pressure ulcers in a large Canadian academic health sciences center. *BMJ Open* 6.
- Houghton, P. 2021. Wound Prevalence in Canada: Reflection After 20 Years. *Wound Care Canada* 19 (1), pp. 46-57.
- Kitson, A. *et al*. 1998. Enabling the implementation of evidence-based practice: a conceptual framework. *Qual Health Care* 7 (3), pp. 149-158.
- Tuijl, A. *et al*. 2020. Development of a tool for identifying and addressing prioritized determinants of Quality Improvement initiatives led by healthcare providers: A mixed methods study. *Implementation Science* 1 (92), pp. 1-13.

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### Engaging and Educating Patients, Families and Caregivers in Pressure Injury Prevention (PIP): Stats, Gaps and Opportunities

# 2 2

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Covenant Health (CH) & Alberta Health Services (AHS) Collaborative

#### Introduction

**Pressure injury prevention (PIP)** has traditionally been largely practitioner led (Asimus 2011). The increasing need for patient control over their health processes suggests that people who are at risk of pressure injuries to be more involved in their care. Involvement in pressure injury risk assessment necessitates certain knowledge and skills on behalf of the patients requiring information provision or educational interventions. As pressure injuries are a key concern for the patient, their family and caregiver, involvement and education in PIP is important and recommended in current guidelines (NPIAP 2019).

O'Conner *et al* 2021 suggested two main types of education interventions for patient and caregiver education:

- provision of information on prevention
- use of different types of education programs

#### Objectives

To identify the level of patient/family/advocate education and involvement in PIP and develop and implement an action plan based on results.

#### Methods

A standardized provincial Pressure Injury Point Prevalence and Process audit tool was used to identify the level of patient education and involvement in PIP in acute and continuing care. A total of four questions in the standardized audit tool were related to patient and family education and involvement in PIP including:

1. Patient and family aware of risk and involved in PIP on admission
2. Patient and family were provided in person education
3. Patient and family were provided teaching materials
4. Patient and family were aware of existing pressure injuries

Data was entered into an electronic data collection tool and reviewed on the electronic provincial dashboard (Fig. 1).

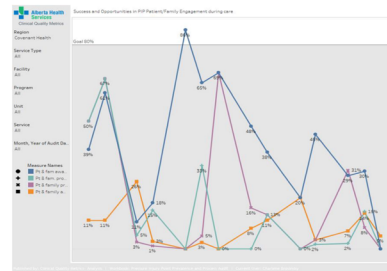


Fig.1

#### Results

From January 2021 to June 2022, a total of 1389 patients were included in the standardized audit.

- **7%-86%** patients were aware of pressure injury risks or involved in care
- **0%-36%** were provided in person PIP education
- **1%-57%** were provided PIP teaching materials
- **2%-24%** were aware of existing pressure injuries

In collaboration with a Provincial PIP committee, provincial sub-group, and one community advisor, a one-page SSKIN Bundle Safety Card was developed and adapted (Arrowsmith *et al* 2021) to provide a resource for clinicians to engage and educate patients and families in PIP (Fig. 2).



Fig.2

#### Application to Practice/Conclusion

There is a need to increase awareness of patient and family education in PIP, utilize resources and evaluate education approaches in PIP with patients and families. The SSKIN Bundle poster has been posted on the AHS and CH websites, on Continuing Care Connections, and in the annual World-wide STOP Pressure Injury Day awareness toolkits for patients and providers. Our community PIP advocate suggests that the SSKIN Bundle be posted in every continuing care room; work is underway to achieve this. Audit and feedback will be used to monitor application to practice.

#### References

Arrowsmith, M. *et al*. 2021. A novel method of preventing pressure ulcers: the pressure ulcer safety card. *Wounds UK* 17 (2), pp. 54-56.  
 Asimus, M. *et al*. 2011. Pressure ulcer prevention in Australia. *IWJ* 8 (5), pp. 508-13.  
 Durrant, L. *et al*. 2019. Health literacy in pressure injury: findings from a mixed methods study of community-based patients and carers. *Nursing and Health Sciences* 21 (1), pp. 37-43.  
 NPIAP 2019 Clinical Practice Guidelines.  
 O'Conner, T. *et al*. 2021. Patient and lay carer education for preventing pressure ulceration in at risk populations. *Cochrane Database of Systematic Reviews*. John Wiley & Sons.

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Covenant Health

SCCIN  
Skin Care  
Prevention

2 3  
**Development of Pressure Injury Prevention (PIP) Community of Practice (CoP) Model to Facilitate PIP Program Uptake in Continuing Care**  
Marlene Varga MSc

### Introduction

Covenant Health has identified pressure injury prevention (PIP) as a strategic priority and developed a PIP program in 2018. The strategies and objectives within the program include (Sullivan and Schoelles 2013):

- Simplification and standardization of pressure injury specific interventions and documentation
- Involvement of multidisciplinary teams and leadership
- Designated skin champions
- Staff and patient/family education
- Sustained audit and feedback

Despite the availability of clinical practice guidelines and an established PIP program, pressure injuries continue to develop among adults in continuing care facilities. Integrating the PIP into operational practice has been a provincial challenge therefore after a review of the literature and conducting local research into the existing local barriers related to PIP, the PIP program shifted to focus on factors to facilitate an organizational culture of prevention in continuing care with a Community of Practice (CoP) model.

### Objectives

The objective of this quality improvement initiative was to facilitate the uptake and standardization of an organizational PIP Program in Continuing Care with a CoP model.

### Methods

Based on current PIP program uptake in continuing care, gaps in education and practice were identified through standardized audits and local site needs assessments. The PIP program had a Steering Committee in place from 2018-2020 for organizational structure however this was discontinued in 2021. The Clinical Nurse Specialist (CNS) identified that a CoP model could bridge the gap and provide structure to bridge the gap, standardize processes translate evidence into practice and improve outcomes.

A CoP is defined as a group of people who share a common concern, a set of problems, or interest in a topic and who come together to fulfil both individual and group goals. As a learning health organization this model aligns with the model for connecting people in the spirit of learning, knowledge sharing, and collaboration as well as individual, group and organizational development.



Fig 1

JOURNAL OF WOUND CARE OF NORTH AMERICAN SUPPLEMENT, VOL.27, NO.7, JULY 2018

### Results

A review of the PIP audit results from February 2021-June 2022 taken from the provincial electronic dashboard identified practices based on current clinical practice guidelines (NPIAP 2019) were implemented at a moderate to low level with no consistent practices including:

- risk assessments on admission 74%
- risk assessments at regular intervals 39%
- documentation of PIP care planning 38%
- resident family involvement 42%

The factors identified to facilitate the implementation of the CoP model are identified in **Figure 1** adapted from Hartmann *et al* 2016, Stadnyk *et al* 2018.

With direction from senior leadership, including the Senior Operating Officer of Continuing Care, approval of a PIP CoP model was obtained in April 2022 and the first meeting occurred in September 2022.

A terms of reference was developed to guide this process and membership included senior leaders, managers, educators and multi-disciplinary teams to identify PIP priorities for the CoP to work on in Continuing Care. The priority of the CoP was to set a deadline for all Continuing Care sites to complete a standardized audit and share results with teams, and residents and families with standard communication.

### Application to Practice

Care variations may lead to poor resident outcomes because of harmful or ineffective interventions. The implementation of a CoP model to bring groups together who share a common concern, build relationships, learn and develop practices, and take action as a community and generate and discover new knowledge and strengthen our culture of prevention. The CoP can inform operations of the opportunities to improve outcomes and quality of life for older adults, decrease costs and improve engagement of PIP in continuing care.

### References

EPUAP/NPIAP/PPPIA Prevention and Treatment of Pressure Ulcers/Injuries: Clinical Practice Guideline. 2019.  
 Etinne, W. *et al*. 2002. Cultivating Communities of Practice. Boston, MA: Harvard Business School Press.  
 Haavisto, E. *et al*. 2022. *Advances in Skin and Wound Care* 35, pp. 1-10.  
 Stadnyk, B. and Martin, D. 2018. *Journal of Wound Care* 27 (7), pp. S4-S10.  
 Sullivan, N. and Schoelles, K. 2013. Preventing in-facility pressure injuries. *Annals of Internal Medicine* 158, (5), pp. 410-416.

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# 2 4

## Pressure Injury Point Prevalence and Process Audit Toolkit and Post Audit Evaluation

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### Introduction

The effectiveness of the implementation of current pressure injury prevention (PIP) clinical practice guidelines (NPIAP 2019) in preventing pressure injuries is measurable through well-designed quality improvement initiatives. These initiatives may rely on some measure of pressure injury frequency and are captured as a standardized provincial pressure injury point prevalence and process audit.

Audit and feedback is an established implementation strategy to summarize data over a specified time period and give to clinicians and administrators to monitor, evaluate, and modify behavior (Powell *et al* 2015). Monitoring facility-acquired pressure injury rates and prevention processes are a method for evaluating the success of the organization's PIP program (established 2018).

### Objectives

The objective of this quality improvement initiative was to evaluate two toolkits and one e-learning module developed to support the standardized provincial audit process and post audit action planning for quality improvement.

### Methods

An **Audit Toolkit**, **e-learning module** and **Post Audit Toolkit** were developed by subject matter experts, Accreditation advisors and members of the PIP Provincial committee. The toolkits were available online to support front line teams to complete the PIP Point Prevalence and Process Audit, review results and develop action plans. Two online evaluations were developed in RedCap to evaluate the **Audit Toolkit (Fig 1)** and the **Post Audit Toolkit (Fig 2)**

Fig 1 Audit Process/Toolkit evaluation

Fig 2 Post Audit Toolkit Evaluation

### Results

Four **Audit Toolkit** evaluations were retrieved. All respondents completed the audit on a sample of the population (28%, 20%, 61%, 20%). The time to complete audits ranged from 3-3.5 hours. At a minimum, 2 staff (Nursing, Clinical Safety Coordinator, Student, Occupational Therapist or Physical Therapist) completed the audits. Three respondents rated the e-learning module as 'very helpful', or "extremely helpful", one suggested "more clarification was needed for the audit process.

Three **Post Audit Toolkit** evaluations were retrieved. All participants utilized the Post Audit Toolkit and were able to access the audit results although not all were able to interpret the results and relied on facilitation support. The top areas for improvement were:

- patient and staff education
- patient assessments
- preventative care planning

Respondents identified specific quality improvement activities related to education of the SSKIN Bundle (Risk assessment, skin assessment, support surfaces, keep turning, incontinence management, nutrition) in collaboration with a Clinical Nurse Specialist and Accreditation Advisor who provided clinical leadership. Respondents identified a need for multidisciplinary engagement in PIP.

### Application to Practice

Results will be shared with the Provincial PIP committee to inform and update the standardized audit process, identify support for teams to complete audits, plan and track quality improvement initiatives and support strategic planning around PIP. Evaluation, context and facilitation are important ingredients to support audit processes to improve practice (Harvey and Kitson 2016) and contribute to a culture of prevention.

Audit and feedback from end users/stakeholders is important to improve and sustain the process of PIP audits. Action plans may require further support to mobilize.

### References

Harvey, G. and Kitson, A. 2016. PARISH revisited. *Implementation Science* 11 (1): 33.  
National Pressure Injury Advisory Panel 2019 Clinical Practice Guidelines  
Powell, B. *et al*. 2015. A refined compilation of implementation strategies. *Implementation Science* 10 (1), 21.

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Covenant Health

SCCIN  
Pressure Injury Prevention

**2 5** Medical Device Related Pressure Injury (MDRPI) Awareness, Reporting, and Quality Improvement

Erica Kam RRT & Marlene Varga MSc

### Introduction

MDRPI's are considered an important yet underrecognized factor of overall facility-acquired pressure injury statistics. MDRPI's have a wide range of prevalence rates from 11% to 64% of reported pressure injuries (Dyer 2015).

Respiratory devices have been associated with up to 68% of all reported MDRPI's (Gefen *et al* 2022). **Figure 1:** MDRPI from mask. **Figure 3:** MDRPI from trach ties. **Figure 4:** MDRPI from nasal prongs



Figure 1

### Objectives

- Increase interdisciplinary awareness of MDRPI's
- Develop and implement routine practices for MDRPI prevention through creation of a MDRPI Protocol referencing the NPIAP 2019 clinical practice guidelines.
- Foster sustainability of MDRPI prevention through interdisciplinary knowledge translation and process improvement strategies.

### Methods

A standardized Provincial Pressure Injury Point Prevalence audit tool was conducted, and results obtained from a provincial dashboard.

A site-based survey was conducted with Nursing and Respiratory Therapists in adult critical care, to understand issues related to practice and awareness of MDRPI. Results demonstrated varied knowledge and inconsistent practices related to MDRPI (Figure 2).

A subsequent audit and survey will be conducted post trial protocol implementation and working group evaluation.

Q1 Do you assess skin under respiratory equipment?

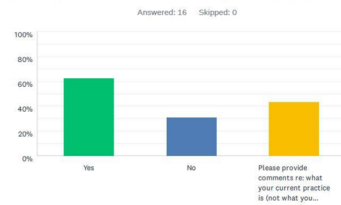


Figure 2: Example of a Survey Question Result



Figure 3

### Results

Between March 2021 and June 2022, a total of 623 patients were assessed with the standardized provincial audit tool. A total of 111 cases of pressure injuries were identified (Prevalence 18%) and 16 out of 111 cases had MDRPI's (14%).

Of the 16 identified MDRPI's:

- 7 (6.3%) were classified as 'other'
- 3 (2.7%) were from splint/cast/orthotics
- 2 (1.8%) were from endotracheal tubes
- 2 (1.8%) were from incontinence products,
- 1 (0.9%) was from a wheelchair
- 1 (0.9%) was from nasal prongs

A total of three mucous membrane pressure injuries were identified.

All the MDRPI are considered facility-acquired.



Figure 4

### Application to Practice

Audit results suggest awareness and education of MDRPI's is needed. Senior leadership endorsed a strategic initiative to address gaps in practice and reduce MDRPI development

A Quality Improvement project team (Respiratory Therapy Practice Lead, Pressure Injury Program Lead and Process Improvement Lead) formed a working group comprised of Respiratory Therapy /Adult Critical Care Nursing educators, clinicians and unit leaders. This working group, through process improvement methods and draft protocol creation, will implement and evaluate MDRPI prevention strategies.

### References

Dyer, A. 2015. Ten Top Tips: Preventing Device-Related Pressure Ulcers. *Wounds International* 2015 6 (1), pp. 9-13.

Gefen, A. *et al.* 2022. Device-related pressure ulcers: SECURE prevention. Second edition. *Journal of Wound Care* 31: 3 (Suppl 1): pp. S1-S72.

National Pressure Ulcer Advisory Panel and Pan Pacific Pressure Injury Alliance; Haesler, E, ed. Prevention and Treatment of Pressure Ulcers: Clinical Practice Guideline. Osborne Park, Western Australia: Cambridge Media; 2019.

### Contact

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# Removing Barriers to Wound Care, Applying Appreciative Inquiry to Improve Wound Management within the Matawa First Nations: The Inquiry Phase



Vida Maksimoka M.HSc., Ph.D (s) Margarita Elloso MD, M.HSc., DPBPRS. FPAPRAS

**Aim:** To report findings of the inquiry phase of appreciative inquiry (AI) set-out to understand the problem space of remote wound care within the Matawa First Nations Communities.

**Background:** Early identification and management can prevent the chronicity and complication of many wounds. Limited knowledge of wound care, decreased access to resources and remote living conditions in a number of First Nations Communities in North West Ontario, lead to complex wounds and amputations. Costs associated with managing these types of wounds or amputations can be a significant burden on patients, their families and the healthcare system. The burden in managing wounds in these Communities is increasing as this problem space is becoming increasingly complex. Research has shown that both patients and providers express unmet needs. To help bridge the gaps in wound care within these Communities, we need to understand and describe how health care providers manage wounds in these Communities.

**Methods:** AI is a method of dialogue focusing on positive experiences. This is useful in supporting change and is also a tool to appreciate negative experiences. AI has 4 phases inquire, imagine, innovate, and implement.

**Inquire:** Interviews with health team members to understand the barriers to wound care

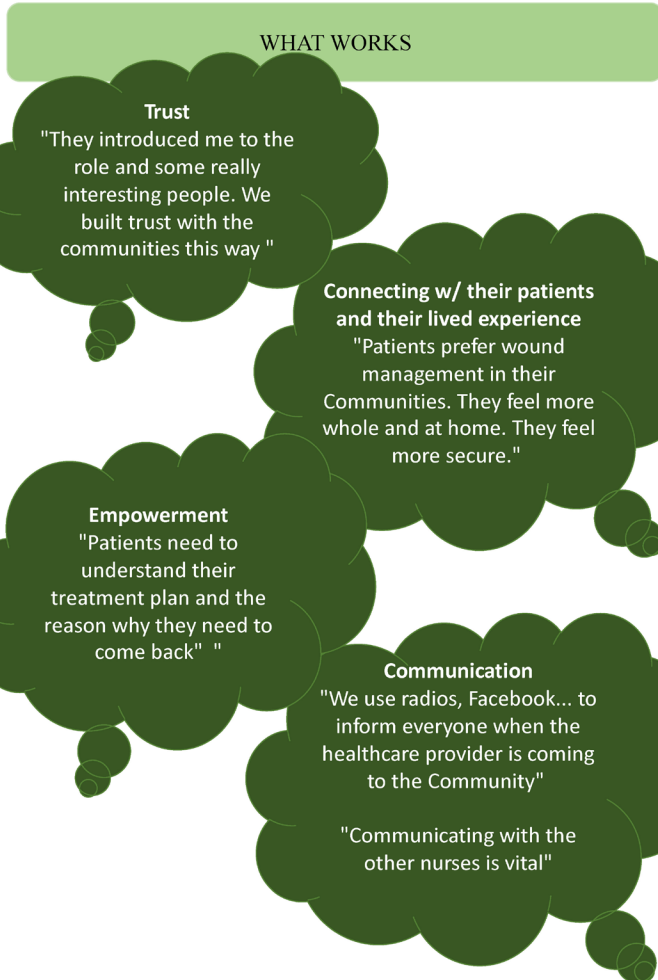
**Imagine:** Team brainstorming sessions to develop and ideate an intervention or resource.

**Innovate:** Create and prototype the intervention or resource with feedback from the communities

**Implement:** Carry out and evaluate the intervention with the help of the health team

AI was employed following a partnership with the Matawa First Nations healthcare team. They provide community-based support and care to nine remote First Nations Communities in Northwest Ontario. They are driven and dedicated to helping address remote wound care and overall health care in these Communities. The 'inquiry phase' of this study involved healthcare provider interviews focusing on understanding the current state of wound care. Interviews focused on providers' strengths and their ability to provide care for patients. Providers discussed strategies used to help augment the level of care provided. They also spoke about barriers and strategies employed to overcome these barriers.

**Findings:** Seven dominant themes were highlighted: importance of building trust, cultural unpreparedness, empowerment, patient connection and their lived experiences, open communication, discontinuity of care, and the lack of resources.



## BARRIERS

- Lacking government policy and support to improve First Nations Health
- Disconnected health care
  - Lack of wound care resources
  - Lack of infrastructure and clean water
  - Lack of provider cultural understanding
  - Environmental challenges
  - Distance from care staff

**Implications:** Challenges in providing wound care to the Matawa First Nations are evident as the remote nature of these regions complicates access to resources and providers. A strength-based, positive-interview approach uncovered strategies for treating wounds in remote Communities: empowering patients, giving them an active role in their care, and making them feel heard were adopted by healthcare providers. Barriers discovered leading to difficulty in providing care: disconnected health care, limited resources, insufficient infrastructure and clean water, limited cultural understanding and environmental challenges. To understand these barriers, it is important to recognize the social and historical impacts of colonialism. Also, there are complex systemic issues at work that aggregate and worsen how care is provided within these Communities. It is important to understand and acknowledge these fundamental issues while simultaneously helping augment the strategies that have been shown to improve wound care in the Matawa First Nations Communities.

**References**

Jarbrink et al. Prevalance and incidence of chronic wounds. 2016; 5(1): 152.  
Tripathy et al. Removing Barriers to fistula care. Care for Women International 2020; 41:5, 584-599  
Oosterveer et al. Primary Healthcare challenges in Indigenous Communities. Circump. Health. 2015;10: 74.  
Shah, Frymire et al. Peripheral arterial disease in Ontario First Nations people with diabetes: a longitudinal population-based cohort study. CMAJ open. 2019; 7(4)

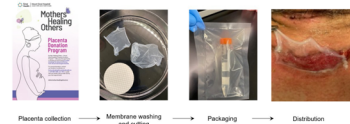


## The use of hydrated amniotic membrane allograft on difficult to heal surgical wounds in head and neck patients: A case series

Laura Teague, NP-Adult, PhD, Balram Sukhu, PhD, Joel Davies, MD, MSc, FRCSC, Eric Monteiro, MD, MSc, FRCSC, Sarabeth Silver, RN, MN, Ian Witterick, MD, MSc, FRCSC.

### Introduction

- Amniotic and/or chorionic membrane allografts (amnion) have been shown to promote wound healing through the recruitment of mesenchymal stem cells and the stimulation of cellular proliferation, differentiation, and epithelialization.<sup>1,2</sup> Here, we report our first four cases of patients who underwent head and neck oncologic surgery who received amnion for surgical wound complications
- The Amnion project was started in 2021 at an acute care hospital in Toronto that is one of the largest birthing centers in Canada. Donated placentas were acquired from planned C-sections on site; processed, packaged and approved for clinical use.



### Objective

The aim of this case series is to describe the use of hydrated amnion allograft to achieve wound closure in three patients with head and neck pathologies, including Ludwig's Angina and floor of mouth/neck squamous cell carcinomas.

### Methods

- Between August 2021 to August 2022, four consenting patients were offered amnion allografts to treat acute surgical site wounds in the head and neck region at a tertiary care hospital in Toronto, Ontario.
- The criteria for choosing patients included: (1) patients with a healable surgical wound diagnosis, and 2) patients whose wound bed were free of clinical signs of infection or known malignancy (3) patients who needed urgent adjuvant treatment (radiation and/or chemotherapy).
- Candidates were referred to the nurse practitioner for wound care and treatment options were discussed with the surgical team.
- Patients were considered candidates for amnion/chorion allografts with goal of rapid wound closure, discharge from hospital and proceeding with oncologic adjuvant treatment (n = 3).
- After informed consent, patients received wound bed preparation that included mechanical debridement, and thorough wound cleansing with 0.03% hypochlorous acid solution. Fluorescent imaging was taken to ensure adequate wound cleansing.
- Negative pressure wound therapy (n = 2), was employed following allograft placement to avoid displacement of the graft. In one patient, the chorion graft was sutured in place to avoid migration and potential airway obstruction. Silver impregnated foam dressings were applied over the allografts. Allografts were applied twice weekly.

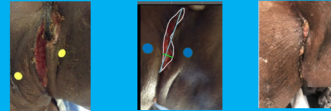
### Results

**Patient 1:** 35 year old male  
Wound: Transverse neck – extensive debridement of necrotic skin involving anterior neck  
Medical History: Ludwig's Angina (ontogenic infection with mediastinitis)  
Total amnion/chorion grafts received: 3



**Outcome:** Wound closure at 5 weeks – No further interventions required

**Patient 2:** 66 year old female  
Wound: Neck incisional dehiscence with oro-cutaneous fistula  
Medical History: Mandibular squamous cell carcinoma- tracheotomy, right neck dissection and resection of right mandibular maxilla, right parotidectomy, right fibular free flap with skin graft  
Total amnion/chorion grafts received: 4



**Outcome:** Closed at week 3 – able to proceed with adjuvant cancer treatments

**Patient 3:** 60 year old male  
Wound: Medical History: Left floor-of-mouth Squamous cell carcinoma- left neck dissection with forearm fasciocutaneous free flap with microvascular anastomosis; tracheotomy.  
Total amnion/chorion grafts received: 3



**Outcome:** Complete wound closure – able to proceed with adjuvant cancer treatments

**Patient 4:** 75 year old male  
Wound: Medical History: Recurrent laryngeal cancer – total laryngectomy with permanent tracheotomy and total thyroidectomy with left anterolateral free flap reconstruction  
Total grafts received: 3



**Outcome:** contraction and consolidation around tracheostomy site; laryngectomy tube removed

### Discussion

- Our first 4 head and neck surgery patients receiving amnion allograft achieved rapid wound closure.
- Application of the amnion or chorion allograft was straightforward and very well tolerated by the patients. No additional analgesia was required to apply the grafts.
- The rapid closure translated to shorter length of stay with minimal scarring.
- For the three patients with oral/tracheal carcinoma, they were all able to proceed with their adjuvant chemotherapy and/or radiation which is important from a survival perspective.
- One of the largest studies examining the impact of delays in adjuvant treatment used National Cancer Data Base data to examine the incremental effect of delays in 41,291 head and neck cancer patients demonstrated that there was a significant survival decrement with each week of delay in adjuvant radiation >7 weeks following surgery.<sup>3</sup>
- Shortening the time to wound closure is also important in decreasing the total duration of postoperative hospital admission. This has broader implications for a health care system with finite resources.<sup>4</sup>

### Conclusion

- This small case series confirms that the application of wet amnion allograft was effective in achieving wound closure of four patients with complex head and neck surgical wound complications.
- Accelerating closure of complex wounds is critical in avoiding delays to adjuvant treatment which has been shown to impact overall survival.
- Further research is suggested to determine the cost-effectiveness of amnion for a larger sampling of patients and quality of life for patients undergoing cancer treatments.

### References

- Svoboda, A., Horvath, V., Smeringaiova, I., Cabral, J. V., Zemlickova, M., Fiala, R., Burkert, J., Nemetova, D., Stadler, P., Lindner, J., Bednar, J., & Jirsova, K. (2021). The healing dynamics of non-healing wounds using cryo-preserved amniotic membrane. *International wound journal*, 10.1111/iwj.13719. Advance online publication. <https://doi.org/10.1111/iwj.13719>
- Murphy, C., Atkin, L., Swanson, T., Tachi, M., Tan, Y. K., de Ceniga, M. V., Weir, D., Wolcott, R., Cernohorska, J., Ciprandi, G., Dissemmond, J., James, G. A., Hurlow, J., Lázaro Martínez, J. L., Mrozkiewicz-Rakowska, B., & Wilson, P. (2020). Defying hard-to-heal wounds with an early antibiofilm intervention strategy: wound hygiene. *Journal of wound care*, 29(Sup3b), S1–S26. <https://doi.org/10.12968/jowc.2020.29.Sup3b.S1>.
- Tam M, Wu SP, Gerber NK, et al. The impact of adjuvant chemoradiotherapy timing on survival of head and neck cancers. *Laryngoscope*. 2018;128(10):2326-2332. doi:10.1002/lary.27152
- Graboyes EM, Garrett-Mayer E, Ellis MA, Sharma AK, Wahlquist AE, Lentsch EJ, Nussenbaum B, Day TA. Effect of time to initiation of postoperative radiation therapy on survival in surgically managed head and neck cancer. *Cancer*. 123(24): 4841-4850.

## The geko™ Wound Therapy Device: A Case Study Report on Treating Diabetic Foot Ulcers

Authors: Burrows, C., RN, BScN, MScCH (Wound Prevention & Care), Duong, R., RN, BScN, IIWCC, MHA



### Aim

To evaluate the impact of the geko™ wound therapy device to treat a Diabetic Foot Ulcer (DFU).

### Procedure/Method

- A 69-year-old male with a history of insulin dependent diabetes for 20 years, who had numerous co-morbidities (cardiac, renal, hematologic), developed DFU's secondary to a pressure injury from ill-fitting footwear.
- The left plantar foot ulcers over the 2nd, 4th, and 5th metatarsal heads started in August 2020, and the right plantar foot ulcer started in March 2021. The right foot wound advanced to osteomyelitis and required below knee amputation (BKA) in November 2021.
- The left leg was revascularized at the same time as the amputation and both incisions became infected. The infections were treated successfully with 3 courses of antibiotics. The patient was non-weight bearing and was fitted for off-loading footwear to accommodate a Charcot Foot.
- Homecare nurses then changed dressing 3x/week. Wound treatments included iodine based and silver dressings. In April 2022, the geko™ wound therapy device was added to the treatment plan to treat the DFU's on the left foot, the right BKA stump wound and the left medial calf incision.

### References

1. Williams KJ, Davies AH. The use of a novel neuromuscular electrical stimulation device in peripheral vascular disease. *Int J Case Rep Images* 2014;5(11):744-747.
2. Bosanquet D, Ivins N, Jones N, Harding K G. Microcirculatory Flux and Pulsatility in Arterial Leg Ulcers is Increased by Intermittent Neuromuscular Electrostimulation of the Common Peroneal Nerve. Elsevier: *Clinical Research* 2020 <https://pubmed.ncbi.nlm.nih.gov/32768540/>
3. Das SK, Dhooonmoon L, Chhabra S. Neuromuscular stimulation of the common peroneal nerve increases arterial and venous velocity in patients with venous leg ulcers. *Int Wound J*. 2020;1-7. <https://pubmed.ncbi.nlm.nih.gov/33236847/>

- The geko™ wound therapy device was placed over the fibular head to stimulate the calf and foot muscle pumps and worn for 12 hours per day, 7 days/week.
- The geko™ wound therapy device increases blood flow and decreases edema which promotes wound healing.<sup>1,2,3</sup> The primary caregiver (spouse) was able to apply the geko™ wound therapy device daily. Consent for photos and publication was obtained.

### Findings/Results

- The primary caregiver reported that there was pink tissue in the wounds within the first week of initiating the geko™ wound therapy device.
- In July 2022 the right BKA wound, the left medial calf incision and the left foot ulcers over the 4th and 5th metatarsal head ulcers closed following 8 weeks of geko™ wound therapy when added to standard care.
- The primary caregiver described the geko™ wound therapy device as "easy to use." While the patient reported "the geko™ wound therapy device was comfortable to wear, and they are very happy with the results."

### Implications/Applications

- The outcome and potential application of the geko™ wound therapy device in practice is to increase blood flow, reduce edema, decrease time-to-heel, and is user-friendly as described by the primary caregiver.

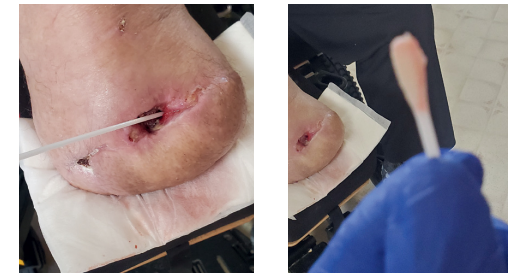


Left leg incision open

Left leg incision July 2022

Left foot April 2022

Left foot July 2022



Right stump: depth of hole



Right stump July 2022

Right stump September 2022



## The use of hydrated amniotic membrane allograft on difficult to heal diabetic foot ulcers: A case series

Eliana Sutton RN, BScN, MCISC-WH, Maria Becerra RN, BScN, MCISC-WH, Nely Amaral RN, BScN, VAQS, Paula Shing PT, MSCCH, Balram Sukhu, PhD, Laura Teague, NP-Adult, PhD

### Introduction

Diabetic foot ulcers (DFUs) are a complication of diabetes, that if not treated, can lead to infection, amputation, or death.<sup>1</sup> DFUs can both negatively affect the patient's quality of life as well cause a significant financial burden to the health care system.

Amniotic membrane (Amnion) allograft is an evidence-based treatment that promotes healing for DFUs.<sup>2,3,4</sup> Amnion is a membrane derived from human placenta and has a number of growth and chemotactic factors that are essential to promoting wound healing.<sup>4</sup> Amnion has also been shown to have anti-microbial, anti-scarring, and anti-inflammatory properties.<sup>4</sup>

The Amnion project was started in 2021 at an acute care hospital in Toronto that is one of the largest birthing centers in Canada. Donated placentas were derived from planned C-sections on site. The Amnion project was created to explore the feasibility and practical application of Amnion in the clinical setting as a treatment for hard-to-heal wounds.

### Objective

The aim of this case series is to describe the use of hydrated Amnion allograft to achieve wound closure in three patients with chronic hard-to-heal DFUs that failed to close with the use of best practice.

### Design and Methods

Between August 2021 to February 2022, the first three consecutive eligible consenting patients were offered Amnion allografts to treat chronic DFUs at a rehabilitation hospital in Toronto, Ontario.

The criteria for choosing patients included: (1) patients with a healable wound diagnosis whose wounds have failed to progress after 4 weeks of best practice interventions (2) patients whose wounds are free of clinical signs of infection or known malignancy. Candidates for the project were identified by members of the hospital's wound care team, comprised of two Clinical Nurse Specialists and one Nurse Practitioner for wound care. Approval from the patients' most responsible physician was obtained prior to proceeding with treatment.

Two patients were treated for University of Texas Grade 3B ulcers. The third patient was treated for a Grade 2B ulcer. Patients were medically (with antibiotics and diabetes optimization) and surgically (bone and tissue debridement) managed for osteomyelitis (OM) and soft tissue infections. Offloading was optimized for each patient. Negative pressure therapy was employed during allograft treatment for a portion of the treatment regimen for two of the patients and then discontinued. A handheld fluorescence imaging point of care device was used to guide wound cleansing/hygiene, debridement, and measurements. Wound hygiene is defined as a "structured method for overcoming the barriers to healing associated with biofilm".<sup>5</sup> Photographs were taken, with patients' consent, using the imaging device prior to each weekly amniotic membrane application to capture and assess for progress.

### Results

**Patient 1:** 71 year old male  
Wound: University of Texas 3B DFU  
Medical History: Type 2 diabetes mellitus (T2DM), diabetic foot ulcer of the fifth metatarsal head with cellulitis, bacteremia, and osteomyelitis (OM)  
Total grafts received: 1

	Non-fluorescent image	Pre-debridement	Post-debridement
Week 0 Size: 2.46 cm <sup>2</sup> Treatment: graft #1 applied			
Week 1 Size: 1.49 cm <sup>2</sup> (39%) Treatment: conventional dressing			* Debridement was not performed

4 months later: self-reported closed (100%)  
\* No photo available

**Patient 2:** 60 year old male  
Wound: University of Texas Grade 2B DFU  
Medical History: includes end stage renal disease, T2DM, peripheral vascular disease (PVD), previous right forefoot amputation  
Total grafts received: 6

	Non-fluorescent image	Pre-debridement	Post-debridement
Week 0 Size: 4.71 cm <sup>2</sup> Treatment: graft #1 applied, NPWT			
Week 3 Size: 1.43 cm <sup>2</sup> (70%) Treatment: graft #4 applied, foam dressing			
Week 5 Size: 0.1 cm <sup>2</sup> (98%) Treatment: graft #6 applied, foam dressing			
Week 8 Size: 0 cm <sup>2</sup> (100%) Treatment: none		* Fluorescent image was not take due to re-epithelization	* Fluorescent image was not take due to re-epithelization

**Patient 3:** 70 year old male  
Wound: University of Texas 3B DFU  
Medical History: includes heart failure, T2DM, peripheral neuropathy, right foot OM, PVD  
Total grafts received: 8

	Non-fluorescent image	Pre-debridement	Post-debridement
Week 0 Size: 6.59 cm <sup>2</sup> Treatment: graft #1 applied, foam dressing			* Thorough debridement was not required
Week 3 Size: 0.33 cm <sup>2</sup> + 0.5 cm <sup>2</sup> (87%) Treatment: graft #4 applied, sharp debridement to tunnel, foam dressing			
Week 9 Size: 0 cm <sup>2</sup> (100%) Treatment: foam dressing, graft #8 applied		* Fluorescent image was not take due to re-epithelization	* Fluorescent image was not take due to re-epithelization

### Discussion

Participation in the Amnion project has led to several findings:

- Treating the selected patients with chronic DFUs with Amnion led to wound closure
- The use of a handheld fluorescence imaging device was very helpful for guiding wound hygiene and wound bed preparation
- Wound bed preparation was an essential initial step to ensuring the success of the Amnion allograft.
- Having the coordinated manpower of multiple persons and advanced knowledge of wound healing principles was necessary for successful treatments
- Interprofessional communication (occupational therapy, physician, nursing, etc.) and thorough documentation was crucial to ensuring that there were no variations in protocol

### Conclusion

This small case series confirms that the application of wet Amnion allograft was effective in achieving wound closure of three complex diabetic foot ulcerations after routine best practice therapies failed. The results of the case series align with the Ontario Health Technology assessment report supporting the use of cellular and acellular skin substitutes to encourage the healing of DFUs.<sup>3</sup> In addition, the case series confirms the importance of wound hygiene to manage bacterial burden and promote wound healing.<sup>5</sup> Further research is suggested to confirm the effectiveness of Amnion for DFUs and investigate its usefulness for chronic wounds of other etiologies.

### References

1. Hopkins, R. B., Burke, N., Harlock, J., Jegathiswaran, J., & Goeree, R. (2015). Economic burden of illness associated with diabetic foot ulcers in Canada. *BMC health services research*, 15, 13. <https://doi.org/10.1186/s12913-015-0687-5>
2. Hughes, O. B., Rakosi, A., Macquhate, F., Horvath, I., Fox, J. D., & Kirsner, R. S. (2016). A Review of Cellular and Acellular Matrix Products: Indications, Techniques, and Outcomes. *Plastic and reconstructive surgery*, 138(3 Suppl), 138S–147S. <https://doi.org/10.1097/PRS.0000000000002643>
3. Ontario Health Technology Assessment Series (2021). *Skin Substitutes for Adults With Diabetic Foot Ulcers and Venous Leg Ulcers: A Health Technology Assessment*. Ontario health technology assessment series, 21(7), 1–165.
4. Svobodova, A., Horvath, V., Smeringaiova, I., Cabral, J. V., Zemlickova, M., Fiala, R., Burkert, J., Nemetova, D., Stadler, P., Lindner, J., Bednar, J., & Jirsova, K. (2021). The healing dynamics of non-healing wounds using cryo-preserved amniotic membrane. *International wound journal*, 10.1111/iwj.13719. Advance online publication. <https://doi.org/10.1111/iwj.13719>
5. Murphy, C., Atkin, L., Swanson, T., Tachi, M., Tan, Y. K., de Cenijs, M. V., Weir, D., Wolcott, R., Cernohorska, J., Ciprandi, G., Dissemont, J., James, G. A., Hurlow, J., Lazaro-Martinez, J. L., Mrozikiewicz-Rakowska, B., & Wilson, P. (2020). Defying hard-to-heal wounds with an early antibiofilm intervention strategy: wound hygiene. *Journal of wound care*, 29(Sup3b), S1–S26. <https://doi.org/10.12968/jowc.2020.29.Sup3b.S1>

### Acknowledgements

The Wound Care Team gratefully acknowledges the contributions of the Tissue Bank for developing the Amnion Allograft technology and the Women's and Infants' Health program for supporting the placenta donations.



## Case Study: An Evaluation of a Muscle Pump Activator (MPA) device

Cathy Burrows RN, BScN, MScCH (Wound Prevention & Care)



### Aim

To evaluate the impact of the newest version of the geko™ wound therapy device.

### Case History

- J.B. is a 77 year old non-diabetic
- 20 year history of recurrent venous leg ulcers (VLU)
- Visible atrophie blanche
- General good health
- Wears compression as tolerated (Tubular mesh stockinette)
- APBI's within normal range (Lt=1.0 Rt= 0.96)
- Pain 10/10, treated with gabapentin
- November 2019, presented to wound clinic with open VLU in the left medial malleolar area
- Over the course of 15 months did not respond to best practice and multiple treatment modalities

### Procedure/Method

- March 2021, the patient was introduced to the newly launched geko™ device to evaluate its impact
- Consent was obtained
- The geko™ device was placed over the fibular head of the left limb, was worn 12 hours/day for seven days/week<sup>1</sup>
- Stimulation of the common peroneal nerve, activated the calf and foot muscles pumps
- This action decreases edema and improves microcirculatory flux and pulsatility to the wound and periwound
- Patient's caregiver was able to apply the user friendly device

### Implications/Applications

Using the geko™ wound therapy device in patients with VLU significantly improves wound healing outcomes, reduces the number of nursing visits, and improves quality of life<sup>2</sup>. There was also significant cost saving seen. The wound was open for 15 months prior to the application of the geko™ device and was healed with 10 weeks of therapy.

### Findings/Results

- July 2021- following a 10 week course of the geko™ wound therapy, wound closed
- Gabapentin discontinued
- Described an improved quality of life
- March 2022 - wound remained closed

1) March 8 2021



3) June 21 2021



2) April 30 2021



4) July 22 2021



### References

1. [Geko User Information](#)
2. [Patients-Perspectives-of-Pain-Time-and-Hope-When-Living-with-Venous-Leg-Ulcers-and-Using-the-geko](#)

# Educational Development of Clinical Modules for AI-powered Remote Wound Care

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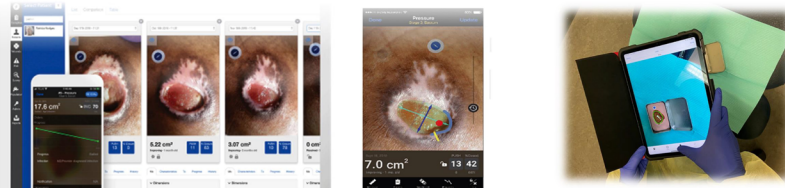


## INTRODUCTION & BACKGROUND

An education institute has been working collaboratively with an AI-Powered wound management solution as part of a health care consortium. The focus was on integrating technology into wound care practice during the COVID-19 pandemic, to address the challenges faced by patients with chronic all types of wounds. Specifically, those who require wound care in remote, and rural areas with inconsistent healthcare

During the first year of the collaboration, the implementation process and learning management system for the digital wound management solution were evaluated<sup>1</sup>. Clinical knowledge of wound care assessment and documentation were identified as gaps by the consortium. To address this issue the educational partner was selected to lead the development of wound care education modules that could be easily accessible via the learning management system for clinicians using the digital wound management solution on-demand.

### SWIFT\* App screenshots



## PROCEDURE & METHOD

Learning modules are being developed to enhance educational resources for wound care providers and address gaps in wound care training due to low wound education rates<sup>2</sup> and staff turnover<sup>3</sup>.

Module one was successfully piloted with key stakeholders (6 clinicians and 4 students). A feedback survey was disseminated upon module completion. The data collected provided guidance on staff education needs, levels of engagement, and continual development in wound education and resource needs.

Key stakeholders included students with 0-1 years of experience and clinicians with an average of 20 years of experience. Module development is ongoing and consists of 6 modules. Modules 1, 2, and 3 are complete. Modules 4, and 5 are in development.

### Modules:

1. Tissue wound bed types
2. Wound edges
3. Identifying infection
4. Drainage types, amounts, and when to elevate
5. Wound-specific evaluation and risk scoring
6. Dressing types

### Module 1: Tissue wound bed types

#### MACERATION

Click the hotspots to learn more.



BACK TO PERIWOUND

## RESULTS & IMPLICATIONS

Feedback from stakeholders explores the receptiveness of nurses, wound care providers, and students to access on-demand education and enables educators to better meet their needs in a constantly evolving industry.

### User satisfaction

1. Usability
  - 100% completed the module in one sitting and felt that the suggested time for the modules was realistic
  - 75% of student respondents noted that they were able to complete the module earlier than the recommended time
  - 73% strongly agreed the module instructions were clear, it was easy to navigate, and the Industry\* academy technology was easy to use
2. Feasibility
  - 100% were able to complete the assessment at the end of the module
  - Module was not difficult, and learners achieved the objectives for the module with the information provided
  - 100% would recommend the training modules to other clinicians

### Qualitative feedback

- Descriptions helped learners understand the complexity of wound types and evaluate if an infection is present
- Visual images identified were clear and relevant to identifying the type of tissue
- Module interactivity has made learning easier by breaking it down into smaller pieces

### Recommendations for enhanced learning objectives

- Recommended for clinicians and nurses who may not be used to describing tissue type
- Suggested inclusion of additional visual examples of wound complications as there may be many different presentations
- Suggested inclusion of additional content on addressing clinical findings

### Implications

Educational gaps identified at the initial stages of this project could easily be bridged through content created and distributed across the LMS learning platforms. Those practicing in the field of wound care would benefit via increased theory and knowledge to manage complex wounds in remote, rural settings, benefitting patient care, and outcomes.

## REFERENCES

- 1 C. Gray, A. Galati, N. McNaughton, S. Hussain (2022), Swift Telewound Care Canada Project: Digital solutions for addressing wound care remotely, SAWC Spring2022, <https://acrobat.adobe.com/link/review?uri=urn:aaid:scds:US:224347a7-1ba9-32c4-9a70-e2dfe94413ae>
- 2 C. Gray, A. Galati, N. McNaughton, S. Hussain (2022), Swift Telewound Care Canada Project: Digital solutions for addressing wound care remotely, SAWC Spring2022, <https://acrobat.adobe.com/link/review?uri=urn:aaid:scds:US:224347a7-1ba9-32c4-9a70-e2dfe94413ae>
- 3 Kuhnke, J. L., Jack-Malik, S., Botros, M., Rosenthal, S., & McCallum, C. (2021). Early COVID-19 and the experiences of Canadian wound care clinicians: Preliminary findings. Clinical Practice, 12(2), 6.

WoundsCANADA  
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0033

## Epidemiological-clinical and evolutionary profile of the diabetic foot in an Algerian population



**Aim**

Diabetes mellitus is spreading around the world at an epidemic rate, which will significantly increase the prevalence of its complications. The diabetic foot, which causes significant morbidity and severe disabilities, has a significant negative impact on society and has developed into a genuine public health issue. The objective is to describe the epidemiological, clinical, and evolutionary profiles of patients with diabetic foot infections.

**Method**

This is a prospective analytical study carried out in the internal medicine department and the microbiology laboratory. It extended over a period of 16 months, involving 59 diabetic feet among 384 hospitalizations.

**Results**

Prevalence of the diabetic foot

15.36 %

**Discussion**

Due to the severity and prevalence of diabetic foot ulcers, they pose a threat to the public's health. In the later stages of our investigation, they are frequently diagnosed. A very large proportion of patients are concerned about the disease's tendency to worsen because of treatment delays, a lack of understanding, education, and patient awareness of the condition. A multidisciplinary team must be formed to develop curative care.

**References**

- [1] American Diabetes Association Professional Practice Committee, and American Diabetes Association Professional Practice Committee. "12. Retinopathy, Neuropathy, and Foot Care: Standards of Medical Care in Diabetes—2022." *Diabetes Care* 45, Supplement 1 (2022): S185-S194.
- [2] Richard, J. L., & Schuldiner, S. (2008). Épidémiologie du pied diabétique [Epidemiology of diabetic foot problems]. *Rev. Med. Interne*, 29(Suppl. 2), S222-S230.
- [3] Frykberg, Robert G. "Comment on Löndahl. Number Eight in the Service of Diabetic Foot Ulcer Healing." *Diabetes Care* 2020; 43: 515–517." *Diabetes Care* 43.9 (2020): e116-e117.
- [4] Saseedharana S, Sahub M et al. Epidemiology of diabetic foot infections in a reference tertiary hospital in India. *Brazilian Journal of Microbiology* 2018; 49:401-406.
- [5] Entred study 2007-2010. Main epidemiological results of Entred-metropolis. Available from url : <https://www.santepubliquesfrance.fr/maladies-et-traumatismes/diabete/documents/rapport-synthese-etude-entred-2007-2010>
- [6] Yazidi, Meriem, et al. "Pratique des soins des pieds chez les diabétiques à haut risque podologique dans un centre hospitalo-universitaire." *Education Thérapeutique du Patient-Therapeutic Patient Education* 7.2 (2015).

Mustapha OULD KHAOUA<sup>1,2</sup>, Ahmed ZENATI<sup>3</sup>, Redha BOUHEDDA<sup>4</sup>, Houssein Boumediene<sup>5</sup>, Mariem ENNEHAS<sup>5</sup>, Aïcha Laisaoui<sup>6</sup>

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**Distribution of patients according to the Texas classification**

Classification	Number of Patients
1a	1.60
1b	30.51
2b	1.60
2c	11.86
2d	28.81
3d	25.42

**Distribution of patients according to type of lesion**

Type of Lesion	Percentage
Infection gangrene	40.68%
Ischemic necrosis	25.42%
Ulceration	22.03%
Perforating plantar ulcer	6.78%
Osteitis	5.08%



WoundsCANADA  
2022 National Conference

## Therapeutic education of patients around the diabetic foot in in Algeria





**Aim**

Foot problems are a major complication of diabetes. Diabetic foot is one of the most important reasons leading to amputation. The objective of this study is to assess the impact of foot health education in diabetic patients.

**Method**

This is a prospective analytical study carried out in the internal medicine department, involving 59 diabetic feet among 384 hospitalizations. During this study, therapeutic patient education (TPE) was carried out in collaboration with a multidisciplinary team and in accordance with a program (Fig 1) aimed at lowering the risk of chronic wound and amputation. The field of therapeutic education was practiced in 45.76% of patients (27/59 voluntary patients) versus 32 patients who did not want to participate in the program, and they were considered as a placebo in this study. At the intervention, a questionnaire evaluating the practice of foot care was given to the patients.

**Results**

Age of the participants ranged from 52 to 89 years (mean: 61.28±10.04 years), the sex ratio of diabetic feet was 2.04 to the risk of men. 74.07% of patients had moderate to severe anemia and presented with severe lesions, grade 4 or 5 according to the Wagner classification in 33 cases. Gangrene accounted for 40.68% of foot lesions, followed by ischemic necrosis (25.42%), ulcer in 22.03% of patients, perforating plantar ulcer in 6.78%, osteitis in 5.08% cases.

In multivariate analysis, the factors associated with poor foot care practice were, in decreasing order of importance, age (OR = 3.6), medical follow-up (OR = 2.1), daily foot self-monitoring (OR = 1.55) and therapeutic inertia (OR = 1.07). The impact of TPE on the reduction of ulceration (intensive lifestyle adjustments [6 months] & regular foot monitoring by a healthcare professional) was noted (-2%) in patients observed compared to those who did not want to participate in the TEP program.

**Discussion**

With targeted foot health education, diabetic foot ulcers can be avoided, and the incidence of ulceration can be decreased. This action is crucial in slowing the growth and spread of diabetic foot ulcers. In fact, the multidisciplinary team's job is to help patients learn how to take care of their feet on their own by creating programs to prevent diabetic foot complications and performing an examination of the lower limbs to find any potential risks. Daily foot care self-monitoring, self-efficacy, foot care knowledge, and expected foot care and hygiene outcomes have been shown, through statistically significant data, to show the positive impact of the TEP program.



**1 Inclusion in the program**  
Diabetic patients at high risk of foot wound

**2 Initial educational diagnosis**  
Development a personalized program negotiated with the patient

**3 foot health education**

- Session 1: Let's get to know each other
- Session 2: Living well with your diabetes
- Session 3: Taking care of your feet
- Session 4: Wearing the right shoes
- Session 5: Good gestures

**4 Individual summary interview**

**5 Coordination**

**Fig 1 . Foot health education program**

Mustapha OULD KHAOUA<sup>1,2</sup>, Ahmed ZENATI<sup>3</sup>, Redha BOUHEDDA<sup>4</sup>, Houssein Boumediene<sup>5</sup>, Mariem ENNEHAS<sup>5</sup>, Aicha Laissaoui<sup>6</sup>

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## 0035 Offloading booties: Perhaps time for a new model?

Grace Ott<sup>1</sup>, Cathy Meles MSc.OT. Reg (Ont.)<sup>2</sup>

<sup>1</sup>Leaside High School, <sup>2</sup>Baycrest Health Sciences

### What is the Issue?

- Some patients remain in bed for long periods of time with longstanding pressure on the backs of their heels which can lead to pressure injuries.
- Heels and malleolar bones are pressure points. This is where there is bony prominence and pressure being put on by the body part.
- The pressure weakens the tissue leading to the injury, which can be caused due to a combination of shear, friction and pressure.
- Offloading boots redistribute pressure across the foot helping to prevent and heal pressure injuries.
- There is a limited use of adequate preventive interventions for pressure ulcers in hospitals, which reflects a rather low quality of preventive care. <sup>1</sup>
- Sometimes these boots are given out by hospitals, asked to be paid for by patient or are not used. The cost is approximately \$200 per pair. These boot work well but often not used due to price.
- In Canada the minimum cost for treating:
  - A deep-tissue/Stage 1 or 2 wound is \$2,450 per month.<sup>2</sup>
  - An uncomplicated Stage 3 or 4 is \$3,616 per month.<sup>2</sup>
  - Pressure injuries complicated by osteomyelitis can cost \$12,648 for treatment.<sup>2</sup>
- A study published in 2003 by Wounds Canada found that across healthcare setting in Canada:
  - There was a 26% prevalence of pressure injuries on the feet.<sup>3</sup>
  - Within this percentage approximately 70% were preventable.<sup>3</sup>



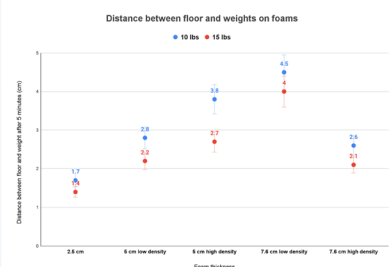
Aim

- Off loading booties are used for prevention and treatment of heel pressure injuries.
- They may not be universally available or there may be some changes that may make them better as the same boot does not work for all people.
- **The goal is to make a boot that is lower in cost and that fits different sizes of legs.**

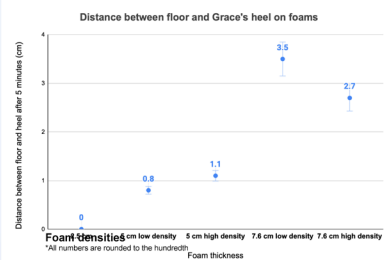
### Method

- Materials were purchased and several prototypes were made.
- Discussion occurred between the Occupational Therapist and the Student to find out what requirements of a good boot would be.
- Different trials with weights were done to see how much different leg weights would compress the foam, which helped to find foams that would be best for certain legs.

### Results



15 lbs and 10 lbs on 2.5 cm high density foam



Foam size	Weight (grams)	Dimensions (cm)	Volume (ml)	Density (g/L)
2.54 cm	175	2.54 x 41.38 x 43.82	4605.71	38
5.08 cm low density	250	5.08 x 45.72 x 45.72	10618.82	23.57
5.08 cm high density	400	5.08 x 45.72 x 45.72	10618.82	37.67
7.62 cm low density	375	7.62 x 44.45 x 50.8	17206.42	21.79
7.62 cm high density	400	7.62 x 45.72 x 45.72	15928.23	25.11

### Conclusion

- Creation of a new offloading boot was made using inexpensive materials.
- The materials were evaluated for their properties and two final products were produced.
- The final product was a boot that cost <\$25 each and had features such as a removable liner for washing.

#### Costs of making one tall and short boot for each foam

Foam boot type	Tall boot cost (\$)	Short boot cost (\$)
1 inch	9.88	9.75
2 inch low density	12.13	12
2 inch high density	20.61	13.54
3 inch low density	12.13	12
3 inch high density	21.26	18.25

- The boot could be easily customized for the patient's individual needs.

#### First design

- A foam boot that went from mid-calf to the ankle
- An elastic with rubber around the arch of the foot so that patients could get up if they needed to (i.e. to go to the bathroom) and have grip on the floor to prevent slipping
- A hole in the foam for the ankle



#### First prototype

- A foam trough shape ending at the ankle
- Three elastic straps around foam
- Simple pattern that can easily be made widely available
- Issue: The boot spun while lying in bed and could spin 180 degrees leading to no support for the heel



#### Second prototype

- A foam trough going past the ankle with a cutout around the heel for support
- Straps around the foam to hold it to the leg
- A strap going around the bottom of the foot, as patients lay down their feet begin to progressively point/fall further and further forward and down
- Foam is attached to the strap to provide cushioning to the foot as it is held in place
- Velcro is used to attach the strap under the foot to the boot, making the strap adjustable
- A cloth cover that can be thrown in the wash as foam can easily become a site for bacteria growth



### Implications

- This new boot could be an answer to prevention and treatment of heel pressure injuries both here in Canada but also in developing nations.
- The boot can be made easily and could be made and sold.
- An online downloadable pattern could be made available online.
- Or the strapping system that wraps around the foam could be sold and people go to their local fabric/foam store to buy the right size foam, making the boot widely accessible and provide maximal support for patients.

### References

1. Vanderwee, K., et al. "Assessing the Adequacy of Pressure Ulcer Prevention in Hospitals: A Nationwide Prevalence Survey." *BMJ Quality & Safety*, vol. 20, no. 3, 5 Jan. 2011, pp. 260-267, 10.1136/bmjqs.2010.043125. Accessed 29 Sept. 2019.
2. Norton L, Parslow N, Johnston D, Ho C, Afalavi A, Mark M, et al. Best practice recommendations for the prevention and management of pressure injuries. In: *Foundations of Best Practice for Skin and Wound Management*. A supplement of *Wound Care Canada*, 2017, 64 pp.
3. Woodbury, M Gail, and Pamela E Houghton. "Prevalence of Pressure Ulcers in Canadian Healthcare Settings." *Www.hqtoronto.ca*, vol. 50, no. 10, Oct. 2004, pp. 22-4, 26, 28, 30, 32, 34, 36-8.

### Contact

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Please let me know if you have any ideas!!

## Muscle Pump Activator Device: A Case Study in treating a Diabetic Foot Ulcer (DFU)

Authors: Parsons, A., RN, BN, IIWCC



### Aim

To evaluate the impact of the geko™ wound therapy device in treating a non-healing DFU.

### Procedure/Method

- A 91-year-old lady, living in a Long-Term Care setting with NIDDM and many co-morbidities.
- She developed a DFU secondary to wearing ill-fitting shoes resulting in a blister, then cellulitis/osteomyelitis and was treated with antibiotics.
- The resident was removed for 9 months in a wound care clinic.
- She was placed in an off-loading boot and the wound was managed with evidence-based treatment modalities such as iodine based products, silver dressings, and foam dressings, but the wound remained open. Due to positive healing outcomes in an LTC evaluation by Harris et al, it was decided to initiate the geko™ wound therapy device.<sup>1</sup> Vascular studies indicated vascular disease (ABPI Rt =0.61, Lt =0.46).
- Consent was obtained for photos and reproduction prior to starting the geko™ device.
- The device was used for 6 hours/day for 6 days/week, as per manufacturers instructions.<sup>2</sup>



September 27, 2019



Started geko™ December 5, 2019



December 16, 2019



January 6, 2020

- The geko™ device was placed over the fibular head to stimulate the common peroneal nerve which activated the calf and foot muscle pumps.
- The device was used to increase venous return, reduce edema, and increase microcirculation to the wound and peri-wound.

### Findings/Results

- Within 5 days of starting the geko™ wound therapy device the wound developed hypergranulation tissue and callous to the periwound area.
- This was debrided by the Nurse Practitioner. The wound was closed in 53 days. The final photo was not obtained due to COVID restrictions.

### Implications/Applications

- The application of the geko™ wound therapy device as an adjunctive therapy improves wound healing outcomes in DFU's by increasing blood flow to the wound and periwound area, reducing edema, and significantly decreasing the healing time.<sup>3</sup>
- The nursing staff reported "the geko™ wound therapy device was easy to use and they were very impressed with the results."

- Family members expressed that they were pleased with the outcome of using the geko™ wound therapy device.

### References

1. Harris C, Ramage D, Bolorchi A, Vaughan L, Kuilder G, Rakas S. Using a muscle pump activator device to stimulate healing for non-healing lower leg wounds in long-term care residents. *Int Wound J.* 2019 Feb;16(1):266-274. doi: 10.1111/iwj.13027. Epub 2018 Nov 20. PMID: 30460740; PMCID: PMC7379663. Online available: <https://pubmed.ncbi.nlm.nih.gov/30460740/>
2. Manufacturers Information for Use. Firstkind Ltd. Online available: [geko User Information](#)
3. Williams K. Section 7.3 NMES in the management of diabetic foot ulcers (ULCERS). *Neuromuscular Stimulation of the Leg.* PhD Thesis, Imperial College London for the degree of Doctor of Philosophy. April 2017. Pages 289-302. Available at: <https://spiral.imperial.ac.uk/bitstream/10044/1/49202/1/Williams-K-PhD-Thesis.pdf>



## Implementing Electrical Stimulation in Long Term Care in Ontario

Christina Sparling RN, BScN, Co-DOC Leacock Care Centre, Jarlette Health Services;  
Cathy Summers RN, MN, Regional Manager, Jarlette Health Services;  
Karen E Campbell RN, PhD, WOCC(C), Consultant Jarlette Health Services, Adjunct professor Western University

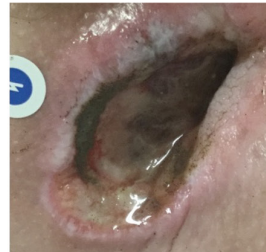


### AIM

The purpose of this project was to implement the use of electrical stimulation (ES) in long term care (LTC) for treating unresponsive healable pressure injuries (PI).

### PROCEDURE

- A consultant with the LTC chain, and had determined that negative pressure wound therapy (NPWT) was being used with PI
- Prior to implementing ESTIM into the organization, the wound lead for the LTC chain set a contract for mutually agreed expectations and pricing and support from senior leadership
- Then confirmed ordering of supplies was easily accessible
- This procedure involved knowledge to action practice change
- At the bedside the co-Doc provided the following:
  - Ongoing education of estim, how and why it works into easy to understand information bites for residents, families and staff
  - Real time troubleshooting and support for front line staff
  - Education for unregulated staff to maximize their involvement treatment process and to frontline staff as estim champions, and encouraging them to teach coworkers
  - Cost analysis between NPWT and estim for 1 month period showing cost saving with use of estim
- Education, research and Best Practice Guidelines (BPG) were provided to several wound leads, physicians and nurses within LTC over a period of 1 year
- This pattern was repeated several times
- The wound lead for the LTC chain was instrumental and with an innovative Co-DOC at one site in bringing ES onsite & providing support and information



Case 1-Male aged 83 with diagnoses of cauda equina, incomplete paraplegia

Case 2-Female aged 92 with diagnoses of dementia, osteoarthritis, peripheral neuropathy

### PROCEDURE CONT'D

- Electrical Stimulation was provided to 2 residents with significant improvement in their wounds
- This example was given to other sites to show that ES could be implemented
- Further education was given to all homes in the chain, now several sites have implemented ES.

### FINDINGS

- As wound consultations were completed and ES being recommended, initially there was hesitation by the physicians & some families with ES
- Further education, research and BPG was provided to physicians and families
- Two case studies will be reviewed.
- Case 1 - stage 4 PI, initially treated with NPWT with no success. Initial size 9.6 cm by 2.6 cm and 2.5 cm deep, current the wound is closed.
- Case 2 - stage 4 PI initially 6.7 by 2.7 by 2.5 cm deep 90% necrotic tissue, currently the wound is closed.
- ES is quickly becoming a first choice adjunctive therapy in non-responding healable PI in this LTC chain, in place of NPWT. There are now 4 homes using ES.

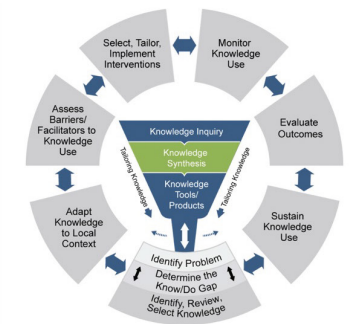
### IMPLICATIONS

Electrical stimulation, a best practice treatment for non-responding healable pressure injuries, is currently not widely used in LTC in Ontario. This poster offers alternative options to wound care in LTC by implementing ES to unresponsive, healable wounds.

### REFERENCES

1. Registered Nurses' Association of Ontario (2016). Assessment and Management of Pressure Injuries for the Interprofessional Team, Third Edition. Toronto, ON: Registered Nurses' Association of Ontario.
2. Norton L, Parslow N, Johnston D, Ho C, Afalavi A, Mark M, et al. Best practice recommendations for the prevention and management of pressure injuries. In: Foundations of Best Practice for Skin and Wound Management. A supplement of Wound Care Canada; 2017.

### Knowledge to Action



Source: Graham et al. (2006) - <https://www.ncbi.nlm.nih.gov/pubmed/16272702>

# Virtual Wound Care Clinic (VWCC) Pilot

## In Two Ontario Home and Community Care Support Services Areas

Virginia McNaughton, RN, BA, MPA, NSWOC, WOCC (C) • Lasha Keith, RN • Charmaine Lodge, RN, BScN, MN • Lore White, RN, NSWOC • Allison DaSilva, RN, BScN, NSWOC, WOCC (C)

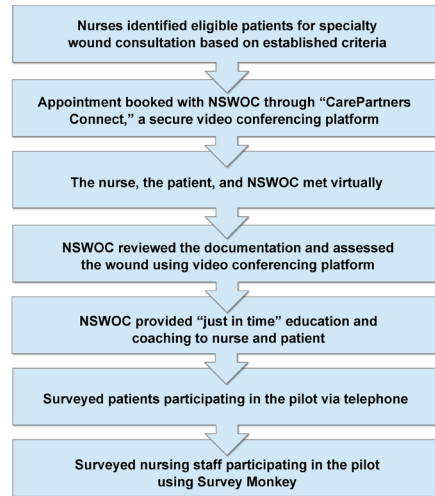
### INTRODUCTION

Servicing community-based, complex wound care patients is difficult due to a shortage of wound specialists and nurses with wound care experience. These issues lead to wait lists for patients, a lack of confidence and competence in nurses, and inefficient use of limited human resources. To build capacity, CarePartners piloted a VWCC in two Ontario locations.

### GOALS

- 1 Support Nurses' sense of competency/confidence through "just in time" collaboration with wound care specialists
- 2 Reduce patient wait times for wound care specialist in identified locations
- 3 Assess patient satisfaction with virtual access to wound specialist
- 4 Assess nurses satisfaction with virtual access to wound specialist

### METHOD



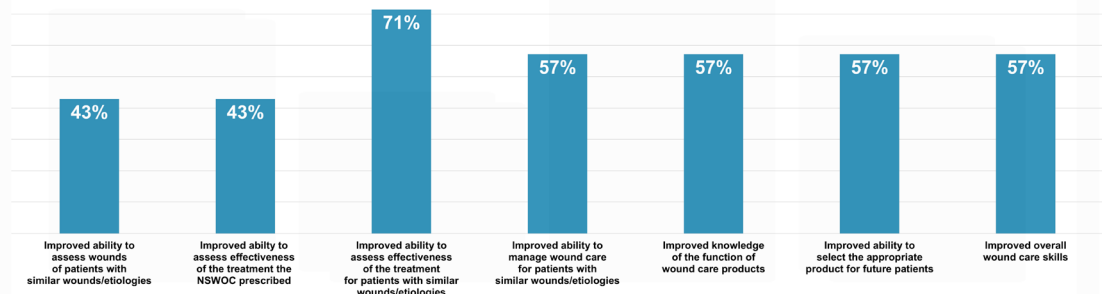
### CONCLUSION

Although the sample size was small, this pilot demonstrated the opportunity to leverage virtual care as a use case for providing specialty wound care services in areas where there is limited access to an in-person wound care specialist.



### RESULTS

#### 1 Building Competency and Confidence in Nurses through "Just in Time" Education and Collaboration with Wound Specialists N=7

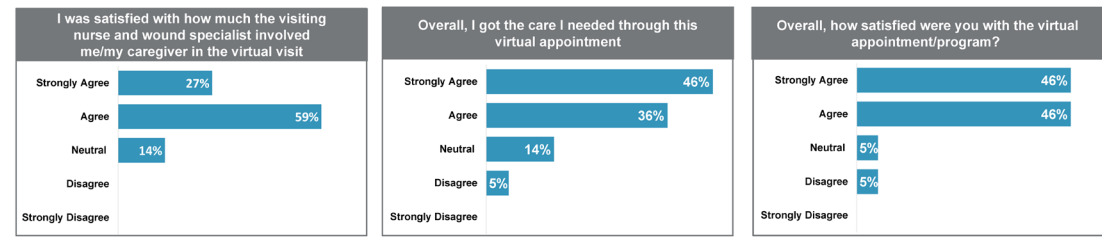


#### 2 Reduce Patient Wait Times for Wound Specialist Care

The two geographical areas participating in the pilot did not have any in-person NSWOC support available.



#### 3 Assess Patient Satisfaction with Virtual Access to Wound Specialist N=22



#### 4 Nurses Satisfaction with Virtual Access to Wound Specialist N=7



### WOUND CARE PILOT STATS

Patients Seen in 6-Week Pilot

## 38 Patients

- 3 patients via telephone
- 35 patients via secure video conference

Pilot Timeframe

- Dec 2021: Received funding from Ontario Health
- Jan 2022: Project team launch
- Feb 2022: First virtual wound care patient
- Mar 2022: Fine-tuning process
- Apr 2022: Evaluation

### FEASIBILITY OF USING A PURE HYPOCHLOROUS ACID (PHA)-PRESERVED CLEANSER IN REMOTE, INDIGENOUS COMMUNITIES

**JEREMY CAUL, RN CDE BScN MCLSc-WH**  
**SIOUX LOOKOUT FIRST NATIONS HEALTH AUTHORITY**

#### INTRODUCTION

In Canada, several health systems co-exist that dictate the need for clinicians to recognize and understand the environment of the communities that we work in. For remote Northwestern Ontario, that means utilizing the Federal Insurer, Non-Insured Health Benefits (NIHB) for the purposes of obtaining medical supplies and equipment in support of Indigenous populations. While NIHB can be comprehensive in coverage, navigation of this system can pose a particular challenge to frontline clinicians.

There is now adequate evidence to support the safe use of the preserved wound cleanser, pure hypochlorous acid (pHA), yet is not widely implemented in the Sioux Lookout region. Hypochlorous acid-based cleansers are also mentioned favorably by several very recent guidelines such as the International Wound Infection Guidelines (IWII) and the Chronic Wound Care consensus guideline recently published in the journal Wound Repair and Regeneration. These guidelines are particularly critical of the use of sodium hypochlorite which is present in bleach and Dakin's due to its relatively high cytotoxicity.

In this system, normal saline, chlorhexidine, and povidone iodine have been used by preferred wound cleansers as evidenced by the ordered treatment plans and product availability in community and in facility. Wound care expertise has limited availability, care is often remotely delivered through telehealth networks or patients must be flown out of their home communities to receive basic care. In a population suffering with the highest rates of limb loss at very young ages, clinicians need to be armed with any tool at their disposal to meet patients' needs in their home communities. The feasibility of implementing something new, as well as convenient, in this geographical location is of utmost importance; practice change is not easy in light of the above background information and a high turnover of care providers.

#### BACKGROUND

This study aimed to determine the feasibility of implementing a new wound cleanser in an isolated area where professionals working for numerous micro agencies are transient and keeping up the levels of best practice knowledge can be challenging.

#### METHOD

In stable, community-based patients with chronic and surgical wounds, pHA was offered as part of the treatment plan for all Primary Care Team patients in a 3-month period. After assessment by an advanced practice wound care clinician, patients were provided consultation by face to face, or remotely via telemedicine, and/or by proxy through a frontline nurse in their home community. Patients were informed of the cleanser's purpose, effect, and availability. Care was delivered by self-management, or by attending a clinic or nursing station for routine dressing changes. Wounds were documented using clinical photography and wound tracking technology, and care plans were faxed to the appropriate location for continuity of care. For the purposes of obtaining supplies, with consent: a prescription/recommendation and clinical documentation are shared with the NIHB authorized vendor (pharmacy) where prior approval is obtained, supplies are ordered and delivered to the patient or provider.

#### RESULTS

None of the patients in the study refused the treatment. Frontline providers who assisted patients with dressing changes were also satisfied with results and were adherent to the treatment protocols. Patients and providers reported common themes of satisfaction such as immediate improvement in wound odour, as well as confidence in receiving care remotely (avoiding travel out of home community). The pHA cleansing solution was well tolerated by the patients, having caused no harm nor pain.

#### DISCUSSION /IMPLICATIONS:

Non-Insured Health Benefits poses a unique opportunity to navigate through the benefits list and choose the right products for the right patient at the right time despite traditional nature of formularies and systemic barriers to health.

For the Indigenous population, these case studies highlight the need for more data to assess equitable care delivery and the competency of providers who must advocate for patients who are generally living with adversity. Given the safety and tolerance of the wound cleansing solution, and it's accessible nature more research may be warranted on the use of pHA in this population.

#### CASE HIGHLIGHTS

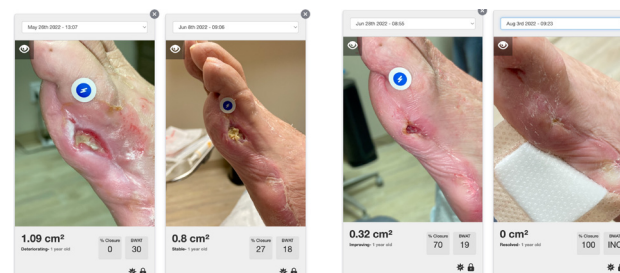
Case	Demographics	Pre-Treatment	Post-Treatment	Notes
1 (13166)	64yo male, non-healing surgical wound (9 months old), risk factors for delayed healing (Type II DM, Stroke with left sided weakness) Left foot digit 4&5 amputation site.	1.09 cm <sup>2</sup>	0 cm <sup>2</sup>	Chronic infected, multiple courses of IV abx over course of healing. Wound was closed almost 1 year to the date of the original surgery.
2 (13502)	52yo male, infected traumatic wound, risk factors for delayed healing (Type II DM, history of non-healing ulcers) Right Achilles	3.11cm <sup>2</sup>	0 cm <sup>2</sup>	Withdrawn early, wound healed in 3 weeks. Initial treatment of short course of oral antibiotics
3 (14343)	48yo male, non-healing surgical excision of sinus secondary to hidradenitis suppurativa Left Axilla	23.99 cm <sup>2</sup>	14.45 cm <sup>2</sup>	Wound remains clean, tissue quality is excellent (100% granular), wound has not become re-infected during the study period.
4 (23663)	65yo male with 2-year-old non-healing diabetic foot ulcer. Right plantar forefoot.	0.97 cm <sup>2</sup>	0.69 cm <sup>2</sup>	Complicated by intermittently accessible routine sharp debridement and consistent nursing support. Offloaded with removable cast walker.
5 (26570)	43yo male, chronic recurrent DFU. Risk factors for delayed healing including history of non-healing ulcers, Type II DM Right foot, 1st digit	1.2 cm <sup>2</sup>	0 cm <sup>2</sup>	Wound closed without antibiotics, without need to travel out of home community. Supported with basic offloading shoe and routine footcare to reduce callous post closure. Patient then prescribed and fitted for therapeutic footwear.
6 (26864)	48yo male, infected DFU. Risk factors for delayed healing including history of non-healing ulcers, Type II DM Right foot digit 3	6.57 cm <sup>2</sup>	2.01 cm <sup>2</sup>	Did not require antibiotics after the first course. Remains in community for healing with standard care.

Poster was created with support from Urgo Medical North America

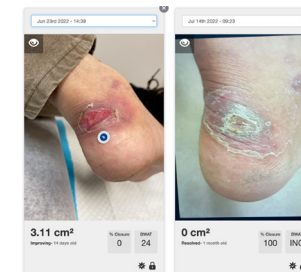
#### REFERENCES

1. Armstrong DG, Bohn G, Glat P, Kavros SJ, Kirchner R, Snyder R, Tettelbach W, Armstrong DG, et al. Expert Recommendations for the Use of Hypochlorous Solution: Science and Clinical Application. *Ostomy Wound Management* 2015 May;6(5): 52-519. <https://pubmed.ncbi.nlm.nih.gov/28692424/>
2. Block, Michael S, and Brian G Rowan. "Hypochlorous Acid: A Review." *Journal of Oral and Maxillofacial Surgery: official journal of the American Association of Oral and Maxillofacial Surgeons* vol. 78,9 (2020): 1461-1466. <https://europepmc.org/article/med/32653307>
3. Dissemont J. Wound Cleansing: benefits of hypochlorous acid. *Journal of Wound Care* Published Online:5 Oct 2020;https://www.karger.com/Article/Abstract/481545
4. International Wound Infection Institute (IWII) Wound Infection in Clinical Practice. *Wounds International*. 2022.
5. Eriksson E, Liu PV, Schultz GS, et al. Chronic wounds: Treatment consensus. *Wound Rep Reg*. 2022; 1-16. doi:10.1111/wrr.12994

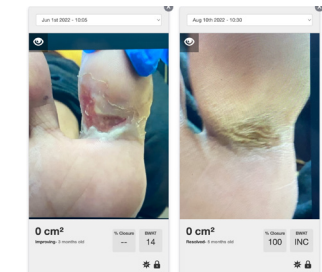
#### CASE 1



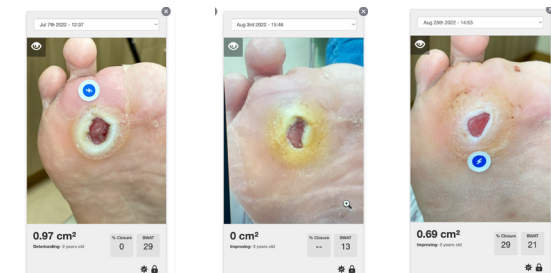
#### CASE 2



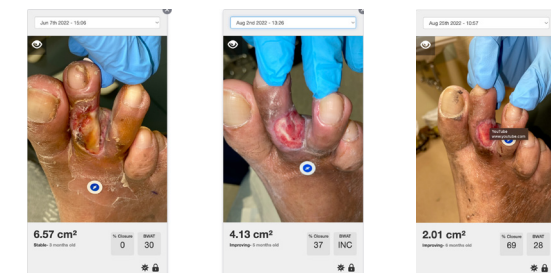
#### CASE 4



#### CASE 5



#### CASE 6





Karim Jack<sup>1</sup>, Diana Zhou<sup>2</sup>, Mariam Botros<sup>3</sup>, Robyn Evans<sup>4</sup>, Marlene Varga<sup>5</sup>, Crystal McCallum<sup>3</sup>, John Hwang<sup>6</sup>, Julien Bernatchez<sup>7</sup>, Patricia Coutts<sup>8</sup>, Sue Rosenthal<sup>3,9</sup>, David Keast<sup>10</sup>, Virginie Blanchette<sup>2</sup>

<sup>1</sup>McMaster University, <sup>2</sup>Université du Québec à Trois-rivières, <sup>3</sup>Wounds Canada, <sup>4</sup>Women's college hospital, <sup>5</sup>Covenant Health Canada, <sup>6</sup>Fraser Health Complex Wound Clinic, <sup>7</sup>Université Laval, <sup>8</sup>Toronto Wound Healing Center, <sup>9</sup>Caregiver, <sup>10</sup>Lawson Health Research Institute



# Development of an Interprofessional Wound Care Team Competency Framework: Preliminary Results

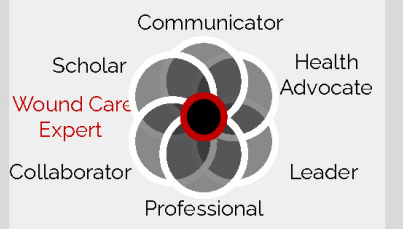
## Background

- An **interdisciplinary** health care **approach** is essential, especially in wound care [1].
- There is **no consistent framework** to support wound care teamwork in Canada.
- A **comprehensive** framework requires competencies that consider a **variety of stakeholders and lenses**.

## Aim

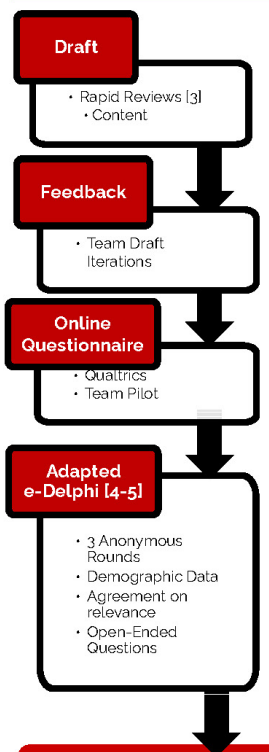
- Seek expert consensus** in Canada on core competencies to **prevent and manage** all types of wounds within a team.
- Create framework** with competencies **transferable** across different organizations, provinces, territories and wound types.

## Core Competencies Based on the 7 CanMEDS' Roles [2]



- Each competency was **categorized** to one of the **CanMED roles** and corresponds to an attribute that could be **found in at least one professional** in an adequate wound care team.
- These **roles** were defined **within the context of a wound care team**.
- The **definitions** of these roles **evolved** throughout the study as **feedback and multiple lenses were considered**.

## Method

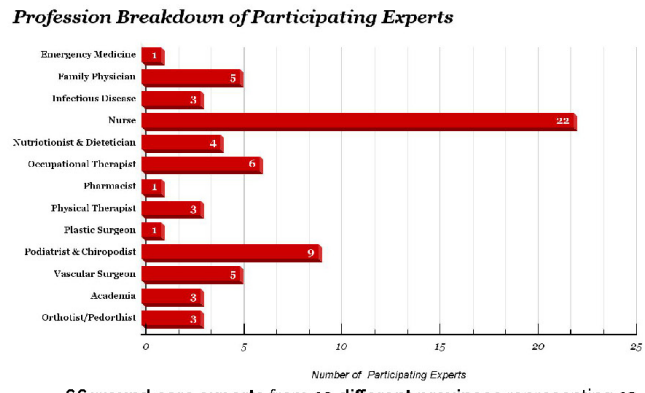


- Blind extraction** of potential competencies from Wounds Canada Best Practice Recommendations.
- Rapid review** of existing frameworks:
  - Medline
  - Grey literature
- Integration of information to create a **preliminary draft**.
- 8 Co-Is** provided **feedback on all competencies** of preliminary draft.
- Meetings to **address feedback, repetition, classification and definitions**
- Online questionnaire created using **Qualtrics software**.
  - Composed of **7 roles' definition, 156 core competencies and open-ended questions**.
  - Relevance of competency rated using **9-point likert scale**.
- Experts invited** to 3-round e-Delphi via emails and reminders to complete the questionnaire.
- 2-hour Virtual Workshop**

## Patients/Caregivers Perspective Captured

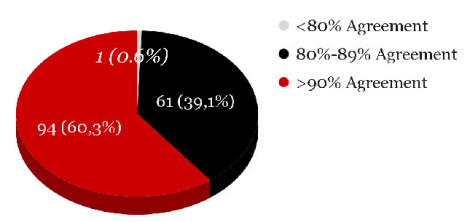
- 4 patients/ 2 caregivers** provided feedback on the framework:
- ✓ Evaluated 19 directly **patient-related competencies** and shared/explained opinions of agreement or disagreement.
  - ✓ **CanMED definitions** assessed.
  - ✓ Shared **challenges and obstacles** to be solved through framework.
  - ✓ Suggested **potential competencies** addressing areas missed.

## Round 1 Results



- 66 wound care experts** from **10 different provinces** representing **13 different stakeholders** participated in the e-Delphi study.
- Provinces/Territories included:** ON, BC, QC, MB, SK, AB, NS, NB, YT, NT
- Expert **experience** in limb preservation ranged from **2-16+ years**.

## Agreement of Core Competencies Round 1



- 155** out of the 156 competencies were **selected** to be kept as part of the **final framework** as they reached an agreement percentage **above the 80% threshold**.
- The **communicator role** was the **most agreed upon**, as 13/14 competencies reached 90% agreement
- 44% response rate** out of 149 invited experts.

## Implications

- Foundation** when beginning to **establish novel and adequate wound care teams**.
- Promote **consistent practices and team approach** across Canada when preventing and managing all types of wounds.
- Emphasize importance of **interdisciplinary health care** and **accessibility to different specialists** to provide patients the best care.
- Support **education** within wound care teams and patient/caregiver interactions.

## Next Steps

- Complete the **last round** regarding interprofessional **wound care team definition**.
- International **validation** of the framework.
- Developing **indicators for competencies**.
- Produce an **implementation tool**.

## Acknowledgement/ Declarations

The authors would like to thank the staff of Wounds Canada for their valuable assistance with recruitment and data collection. This project is funded by in-kind contributions from Wounds Canada and the Groupe interdisciplinaire de recherche appliquée en santé de l'Université du Québec à Trois-Rivières.<sup>1</sup>

## References

- [https://www.wma.org/fileadmin/user\\_upload/EWMA.org/Project\\_Portal/EWMA\\_Documents/AAWC\\_AWMA\\_EWMA\\_MappingWoundAsATeam\\_FINAL.docx](https://www.wma.org/fileadmin/user_upload/EWMA.org/Project_Portal/EWMA_Documents/AAWC_AWMA_EWMA_MappingWoundAsATeam_FINAL.docx)
- CanMEDS Framework: The Royal College of Physicians and Surgeons of Canada [Internet]. [Cited 2022 Oct 7]. Available from: <https://www.royalcollege.ca/roscite/canmeds/canmeds-framework.html>
- Khanjani et al. 2012 Systematic reviews
- Donohoe et al. 2012 Am J Health Education
- Okoli & Pawlowski 2004 Information & management

HOME AND COMMUNITY CARE SUPPORT SERVICES Central East

## Integrating thermography into an Inter-Professional Wound Care Team: An Educational Evaluation



Wanda Parrott<sup>1</sup>, Michelle Nurse<sup>1</sup>, Tamara Spice<sup>1</sup>, Lorrie Ann Scales<sup>1</sup>, Kayla Lambie<sup>2</sup>, Amy Cassata<sup>2</sup>, Robert D. J. Fraser<sup>2,3</sup>

<sup>1</sup> Home and Community Care Support Services Central East, Whitby, Canada <sup>2</sup> Swift Medical Inc. Toronto, Canada <sup>3</sup> Arthur Labatt Family School of Nursing, Western University, Londo, Canada

### INTRODUCTION

Half of all health care in Canada involves wound care, and many patients will receive that treatment at home. A Wound Care Inter-Professional Team (WC IPT) implemented an AI-Powered wound management solution to improve chronic wound care within community health care in Central East Ontario. Initial outcomes included high patient and provider satisfaction scores, as well as cost savings<sup>1,2</sup>. Additional technology, including wound thermography are being integrated into the WC IPT pathway. Wound thermography can identify areas of potential inflammation or poor perfusion<sup>3</sup>. To assess the educational supports for this new wound assessment modality an educational evaluation is being planned.

### METHODOLOGY

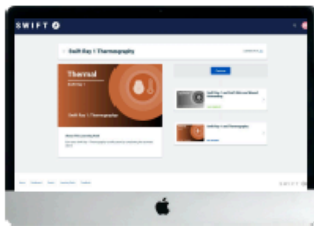
A quality improvement methodology approach was used to enhance the collaborative management of chronic wounds within Home and Community Care Support Services Central East. An integrated device that captures thermographic, bacterial fluorescence, and tissue oxygenation is being adopted in 2022 to enhance the virtual wound care program. The first users are being identified by Wound Champions at the Service Provider Organizations (SPOs) to begin using Thermography in Sept 2022. Training will include both asynchronous and synchronous sessions, with practical teaching on how to use the hardware device and implications of the captured thermography.

### ENABLING TECHNOLOGY



#### SMARTPHONE APP

Scientifically calibrated images. AI enabled measurement to help standardize data collection.



#### SWIFT ACADEMY

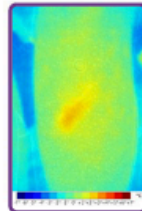
Learning management platform that delivers education to support the use of the technology in the virtual wound care model.



#### HYPERSPECTRAL IMAGING DEVICE

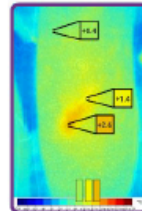
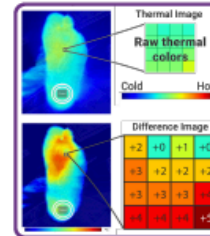
Medical imaging device that fits in your pocket. Enables home health team members to capture thermography images

### KEY EDUCATION



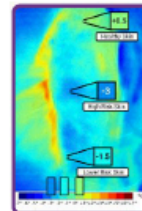
#### What is a thermogram?

Thermograph is a thermal image based on the radiant heat energy it receives. The temperature is represented as a specific colour. A more detailed image is created once a baseline point is selected.



#### Why learn to analyse thermal image?

Clinicians must review the colour patterns in the thermograms but many do not have the skills to effectively view them. Clinicians should be able to easily access content to learn these skills.

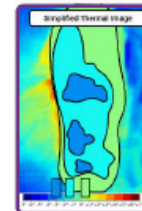
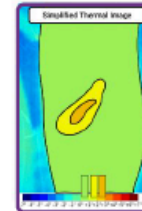


#### How was the educational content created?

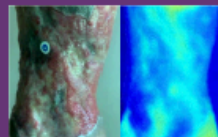
Case studies and examples should be explored to ensure clinicians understand the meaning of different colours. Real clinical images were used and adapted to show users how to identify regions of interest while keeping in mind key conditions.

Users were able to work through multiple examples of case studies at their own pace. Each section gave a summary of the condition then gave them an example to explore.

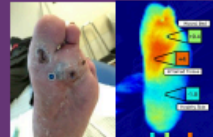
After learning to interpret images, clinical implications were provided based on research for various wound types. For example, identifying even distribution in healthy skin, where perfusion may indicate lowered blood flow, or burns may be at risk of non healing.



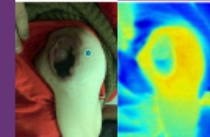
#### Venous Leg Ulcers



#### Diabetic Foot



#### Pressure Injury



### RESULTS

In total, 56 team members were invited to complete the thermography education. Before this conference 10 clinicians had completed the education module and the post-course survey. Participant's years of practice experience ranged from 5 to 25 and was on average 13.8 years.

Prior to completing the education only 50% of participants agreed that thermography could be integrated into practice, yet 65% did not understand how it could be used to assess different wound types. Only 12% reported they would be confident in reviewing a thermography image in practice before completing the course. Participants reported it took 30-60 minutes to complete on average.

All the participants were satisfied or very satisfied with the education and reported the instructions were clear with direct applicability to their practice. After completing the modules, 70% agreed it could be integrated into their practice and 30% strongly agreed. Four clinicians would strongly recommend the training to other clinicians and the remaining six clinicians would recommend it.

When asked how it could address gaps in their current practice, clinicians responded "catching risk areas earlier, accessibility, decrease delays in healing" and "takes the guesswork out of it." Participant suggestions for making education better included "less clicking, more flow... perhaps videos", "quizzes throughout", "more case studies would be great", and "clinical practice with technology."

### IMPLICATIONS

Thermography enables an objective, contactless temperature measurement from multiple points across the skin or wounded tissues. Recent development of medical grade devices that can be integrated into wound assessment provide an opportunity for clinicians to advance their assessments. In order to leverage this technology, clinicians require education that enables them to develop this new skill. Clinicians have a high demand on their time, meaning wound teams need efficient, effective and intuitive educational tools.

Clinicians provided positive feedback from the module that was developed. Practical applications to common wound types and direct explanations of how to integrate it with their assessment and clinical decision making. Participants indicated that additional case studies would be of interest, highlighting the interest in education that connects directly to patient care. Time was a factor when developing the content and this may indicate that additional clinical content could be thoughtfully added.

### APPLICATIONS

These clinical modules and feedback are part of the roll-out strategy for a hyperspectral imaging device that will enable the clinicians to add thermal imaging and bacterial fluorescence to the wound management solutions visible light images. The clinicians use these to determine if treatment plans are effective or if a consultation needs to be requested from system partners.

This initiative is a regional quality improvement program in Central East Ontario. Further evaluation of how this technology impacts patient care will be part of future research. These educational modules will help aid in the sustainability of the program as multiple service provider organizations are engaged and staff turn-over needs to be considered.

### REFERENCES

1. Barker, M., Ferron, M., Parrott, W., & Fraser, R. D. J. (2021). Inter-professional Virtual Wound Care Impact in an Integrated Health Care System during COVID-19. <https://doi.org/10.13140/RG.2.2.34715.18728>
2. Fraser, R. D. J., Parrott, W., Nurse, M., Spice, T., Scales, L. A., Mohammed, H. T., & Cassata, A. (2022). Supporting Patient-Centred Wound Care with a Digital Wound Evaluation Model: Exploration Into Chronic Wounds and perception of use of technology in wound care. <https://doi.org/10.13140/RG.2.2.23845.54724>
3. Ramirez-GarciaLuna, J. L., Bartlett, R., Arriaga-Caballero, J. E., Fraser, R. D. J., & Salko, G. (2022). Infrared Thermography in Wound Care, Surgery, and Sports Medicine: A Review. *Frontiers in Physiology*, 13, 838528. <https://doi.org/10.3389/fphys.2022.838528>

### HOME AND COMMUNITY CARE SUPPORT SERVICES South West

### Home and Community Care Support Services-South West Diabetic Foot Ulcer Offloading Initiative: Four Year Review

Lyndsay Orr, PT, MCISc-WH, PhD; Anne Shantz, RN, MCISc-WH



#### Introduction

- According to research, diabetic foot ulcer (DFU) healing occurs in 68% to 95% of patients treated with total contact casting (TCC), and 22% to 80% of patients treated with removable cast walkers (RCW).
- Our aim was to complete a four year evaluation of the South West Regional Wound Care Program (SWRWCP) DFU offloading initiative using the Health Quality Ontario (HQP) quality standards.

#### Methods

- A regional DFU offloading pathway was developed with input from various stakeholders in the South West region and implemented in 2018 (Figure 1).
- The DFU offloading pathway includes specialty site teams, education, cross sectoral collaboration with multiple providers and patient resources.
- A retrospective, descriptive review for patients receiving DFU offloading devices was completed from stakeholder data received between April 1, 2018 and March 30, 2022.
- The target for DFU closure is 12 weeks as per HQO quality standards.

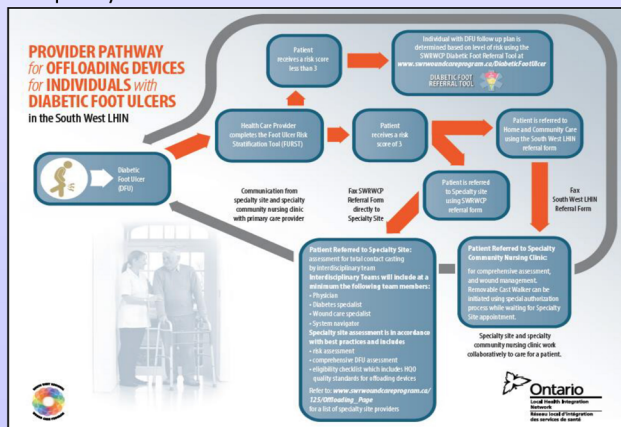


Figure 1: DFU offloading initiative regional pathway

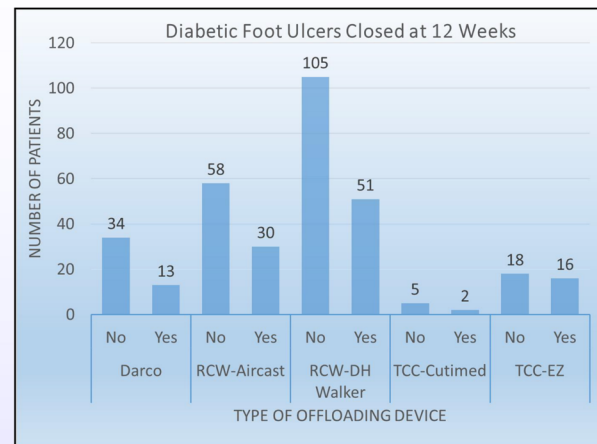


Figure 2: Type of DFU offloading devices received by patients and closure rates at 12 weeks

#### Results

- Seven community nursing clinics and ten specialty sites provided offloading devices across the South West region.
- Data for 332 patients with a DFU and offloading device was analyzed.
- 34% (112/332) of patients with DFUs closed their wound within 12 weeks.
- 74% (244/332) of patients received a removable cast walker (RCW), 12% (41/332) of patients received a total contact cast (TCC), and 14% (47/332) a Darco shoe for DFU offloading.
- A chi-square test of independence showed that there was no significant association between healing at 12 weeks and type of device used,  $\chi^2(4, N=332)=3.6, p=.46$ .
- Variables of patients being part of an interdisciplinary team, having a recurrent wound, or having the goal of DFU healing also did not significantly associate with healing at 12 weeks.

#### Implications

- Since the implementation of DFU offloading funding in 2017, the SWRWCP has been advocating for patients with DFU to receive offloading devices to prevent amputation.
- There has been a notable use of RCWs, with a small uptake of TCC which is the gold standard for healing DFUs.
- Of 332 patients evaluated, 34% closed at 12 weeks; research shows that a further 113-203 patients could achieve wound closure with use of TCC.

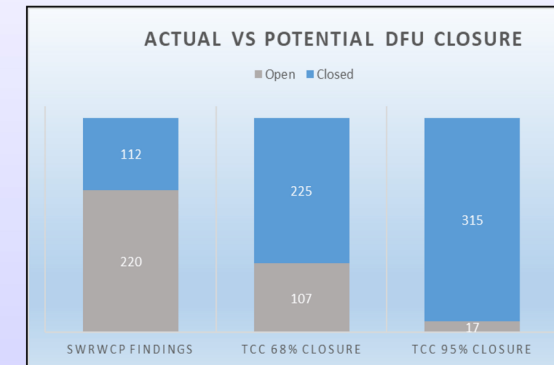


Figure 3: Actual and potential healing rates for patients with DFU

#### Conclusion

- More work needs to be done to identify appropriate patients for DFU offloading devices to ensure best practices are implemented to minimize the risk for further complications and amputations.

References:  
 1. Health Quality Ontario. Fibreglass Total Contact Casting, Removable Cast Walkers, and Irremovable Cast Walkers to Treat Diabetic Neuropathic Foot Ulcers: A Health Technology Assessment. Ont Health Technol Assess Ser. 2017 Sep 21;17(12):1-124. PMID: 28989556; PMCID: PMC5628703.  
 2. Health Quality Ontario. Quality standards for diabetic foot ulcer: care for patients in all settings. 2018. Available from <http://www.hqo.onario.ca/portals/0/documents/evidence/quality-standards/foot-ulcers-clinical-guide-1611-en.pdf>.

**HOME AND COMMUNITY CARE SUPPORT SERVICES**  
South West

**A Survey of Wound Care Knowledge for Health Care Professionals in the South West Region of Ontario**

Lyndsay Orr, PT, MCISc-WH, PhD; Anne Shantz, RN, MCISc-WH



**Introduction**

- To understand the need for basic skin and wound care education of health care providers in the South West region.

**Methods**

- Wound care modules were designed by the South West Regional Wound Care Program (SWRWCP) to provide basic knowledge and practical skills to regional healthcare providers.
- Modules include two levels of education with a focus on inter-professional teams: Level 1 (L1) includes basic skin care and level 2 (L2) includes basic wound assessment and treatment interventions.
- A pre-education survey was imbedded in each level to evaluate participant's knowledge and attitudes for wound care.

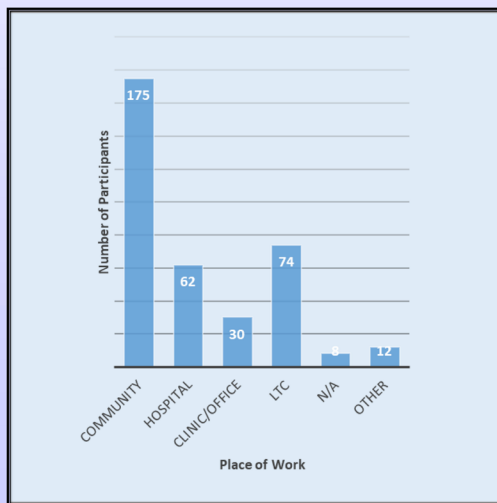


Figure 1: Wound care education participants place of work

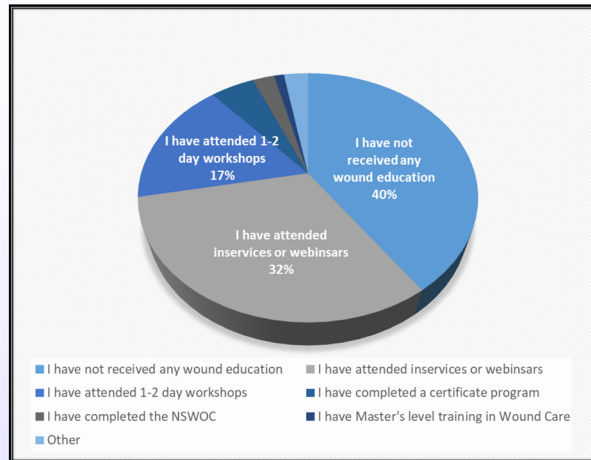


Figure 2: Wound care education participants level of wound care knowledge

**Results**

- Results were analyzed for surveys completed May 2019-June 2022.
- 449 participants responded to the L1 survey and 88 responded to the L2 survey.
- The majority of respondents were nurses for both levels (60%, 342/536) and worked in the community (51%, 222/434) (Figures 1 & 3).
- 69% of participants (301/432) reported they have not received any or minimal previous wound education (Figure 2), yet 62% (277/431) of participants had been working over 6 years, and 24% (106/431) over 20 years.
- 81% (339/419) strongly agreed that inter-professional teams are important for wound care.
- 20% (86/351) were not confident in their ability to educate patients on proper skin care techniques.
- 63% (43/68) of respondents for the L2 survey agree that dressings and antibiotics heal wounds.

**Implications**

- Complex wound care knowledge is not entry to practice education in Ontario despite reports that 30-50% of all health care involves wounds.
- Wound education tends to focus on wound exudate and local infection management, while wound cause and chronic disease management go overlooked.
- A task-based approach increases patient morbidity and mortality, as well as health care costs due to non-healing chronic wounds.

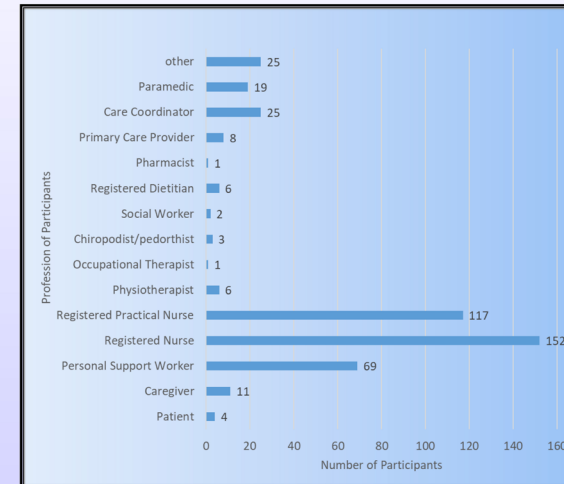


Figure 3: Profession of wound care education participants

**Conclusion**

- A strategic and innovative provincial approach to wound care focused on wound education is required to improve value-based care for patients in Ontario.

References:  
OHA and OACCAG. 2011. Four Pillars: Recommendation for Achieving a High Performing Health System. Retrieved July 15, 2022 from: <https://nih.ca/document/four-pillars-recommendations-for-achieving-a-high-performing-health-system-pdf>



## Our Journey to Implement a Provincial Wound Care Program

0047



 Northwood

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### Abstract

In 2018, the pressure injury initiative began. It was recognized that the current state of pressure injuries in LTC was not clear. Findings from provincial stakeholders identified the need for improvement. The Province then began a journey resulting in implementation of an evidence-based, standardized, prevention and management wound care program.

### Methods

- Environmental scan took place in 2018 and Wound Care Consultants visited several nursing homes; education on pressure injury prevention (PIP) was provided at each visit.
- Pressure Injury Prevention 2018 Resource and Reference toolkit and posters were provided to every licensed Long-Term Care (LTC) facility in NS, and access to an online version.
- Wound care education sessions were provided across the province with over 800 LTC staff in attendance.
- Licensed Nursing Homes and Residential Care Facilities began reporting pressure injuries (PI) each month, which was posted publicly on the Nova Scotia government website.
- A provincial Wound Management Policy was developed for LTC.
- The LTC wound product list was updated to include PIP devices: heel boots, wedges, slider sheets.
- The department invested \$2.5 million for LTC facilities to have better access to specialty mattresses, pressure reducing cushions and more lifts for residents in nursing homes across the province.

### Goals

The initial goal of the provincial Wound Care Initiative was to:

- Promote education to build capacity with the staff in LTC
- Improve client outcomes
- Improve accountability with reporting of pressure injuries
- Management of wound care supplies

### Discussion

The Department partnered with wound consultants from Northwood Care and Villa Saint Joseph Du-Lac to build knowledge and capacity in LTC.

It was recognized more work was required to build capacity and sustainability and funding was allocated to continue with this initiative to develop a fulsome wound prevention and management program. This project initially started with LTC; however, it was recognised that it needed to expand to provincially-funded home care.

On April 1, 2021, the department engaged HANS/Igility to implement the provincial wound program. The result was implementation of an evidence-based, standardized, prevention and management wound care program for licensed Nursing Homes and Residential Care Facilities along with provincially-funded Home Care.

The provincial wound care program includes:

- Coordinator and four wound-care consultants to work in the four provincial zones within Nova Scotia
- Consultation for complex, challenging wounds
- A team-based approach to implement best practices
- Sector education to prevent and manage pressure injuries
- Standardization of current evidence-based wound-care products

### Results

- Residents/clients have access to evidence-informed wound care where they reside, providing on-site consultation with the health care providers.
- In the 2021-2022 fiscal year, there was significant cost savings in the use of wound products in LTC.
- These savings resulted from the use of a provincially approved standardized product list. This led to appropriate utilization of products and reduction of product waste.
- Education of staff resulted in early identification and prevention of PI and subsequent correct classification of wounds as per wound etiology.
- Staff now have quick access of offloading boots, speciality mattresses, sliding sheets, and wedges.

### Conclusion

This journey has demonstrated that working with our sector, testing ideas and solutions, implementing a standardized current evidence-based product list, and implementing a comprehensive prevention and wound management program has collectively contributed to making a difference and improving outcomes for Nova Scotians.



#### References

1. Nova Scotia Department of Health and Wellness PI local data 2018
2. Nova Scotia Department of Health and Wellness Wound Management Policy for Nursing Homes and Residential Care Facilities
3. Wounds Canada Best Practice Recommendations for the Prevention and Management of Wound
4. Bernadette Mitchell McDonald: Wounds Canada Developing a Wound Care Program in Long-term Care: Changing the Focus from Products to Prevention In Wounds Canada; 2018



## Developing a process to establish consensus priorities for wound care research in Canada

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### Background

Wounds pose a significant burden on many patients and caregivers, impacting function and quality of life. The Canadian Institute for Health Information estimates that compromised wounds, including iatrogenic, infected, or chronic wounds, impact nearly 4% of acute care patients and 30% of patients in continuing care.<sup>1</sup> Compromised wounds also impact patients outside the hospital, with almost 7% of home care patients, and 10% of long-term care patients impacted.<sup>1</sup> Wounds are hugely costly to the healthcare system; in 2011, diabetic foot ulcers alone cumulatively cost Canadians \$547 million, and were associated with 16,883 hospital admissions, 31,095 emergency room and clinic visits, and 26,493 interventions including 6,036 amputations.<sup>2</sup> In total, wounds are estimated to cost the Canadian healthcare system approximately \$3.9 billion/year.<sup>3</sup> The need to improve wound care and outcomes is urgent, however despite prolific publications by Canadian researchers, no consensus exists among stakeholders on wound care research priorities.

### Aim

This project aims to develop and conduct a process to identify consensus priorities for wound care research in Canada, with input from all stakeholders.

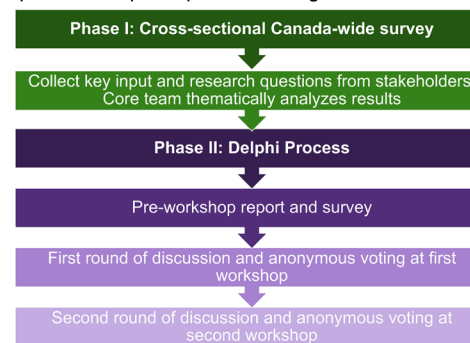
### Methods

The development of a research framework and research priorities was among the recommendations from the Canadian Association of Wound Care's Research Consultation Meeting in 2010.<sup>4</sup>

A review of published priority setting processes was conducted to examine methods and typical practices for designing and reporting priority setting processes. Our proposed process was developed in consultation with Wounds Canada stakeholders and wound patients.

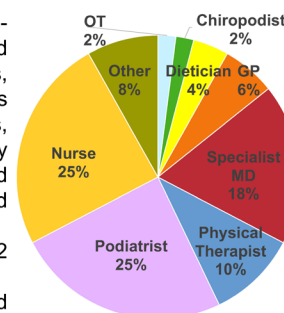
### Results

The project employs a mixed-methods approach with two key phases. Phase I is a pan-Canadian cross-sectional survey for idea generation in which specific research questions are collected from all stakeholder types, including patients, caregivers, clinicians, researchers, industry partners, and wound care leaders. Phase II consists of a three-step modified Delphi process, with an initial anonymous survey, and two virtually-delivered workshops, where an iterative approach is employed, and feedback from each round is provided to participants and to guide future rounds.



### Preliminary Findings

The phase I cross-sectional survey had 93 respondents, including patients and caregivers, researchers, industry partners, and wound care clinicians and leaders/decision-makers. A total of 52 multidisciplinary clinicians responded to the survey.



### Preliminary Findings

Clinicians included nurses (25%), podiatrists (25%), physical and occupational therapists (12%), family and specialist physicians (6% and 18%), dieticians (4%), chiropodists (2%), and others (educators, consultants, etc). Respondent clinicians practice settings included private practice (27%), academic hospital (25%), home care (10%), or community hospital (4%), and 19% practice in more than one setting type. Respondents were asked which wound care research topics were most relevant to them. The five most frequent were diabetes-related wounds (53%); pressure injuries/surgical wounds (45%); patient/clinician education (42%), new treatments or technologies (40%), healthcare costs/ models of care (35%).

Almost half of respondents believe that we should prioritize research that would have the greatest impact on patient's quality of life (45%), and research that focuses on cost-effectiveness of wound care (43%). Research that meets patients needs or that could rapidly transform care were felt to be priorities by 39% and 34%, respectively.

### Implications

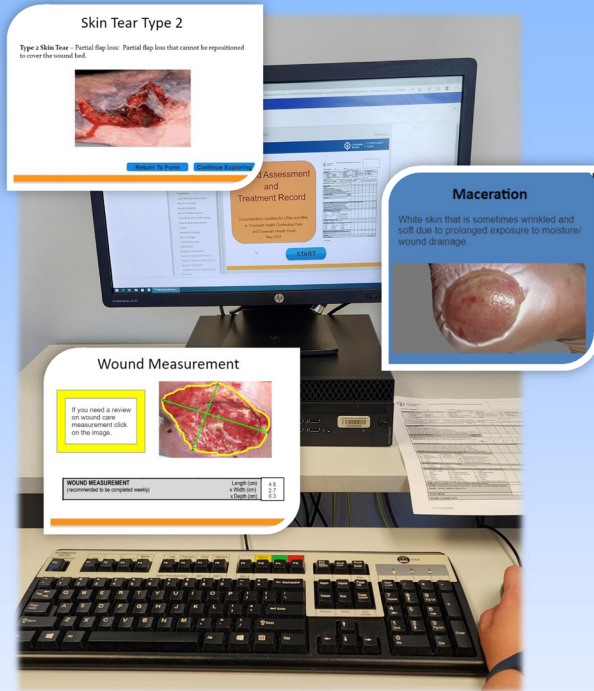
Developing a research framework and establishing consensus research priorities will support targeted research which in turn can be utilized to improve the quality of wound care provided and alleviate the burden of wounds on patients and healthcare system.

### References

1. Denny K, Lawand C, Perry SD. Compromised wounds in Canada. *Healthcare Quarterly*. 2014;17(1):7-10.
2. Hopkins RB, Burke N, Harlock J, Jegathisawaran J, Goeree R. Economic burden of illness associated with diabetic foot ulcers in Canada. *BMC Health Services Research*. 2015;15:13.
3. Society news: Diabetic Foot Canada to be Launched. *International Wound Journal*. 2013;10(3):242-243. doi:10.1111/iwj.12092
4. National Wounds Research Task Force - Canadian Association of Wound Care. *Research Consultation Meeting: Summary of Proceedings*. Canadian Association of Wound Care; 2010

### Create Your Own Adventure; Developing an Online Learning Module for Wound Assessment for Varying Knowledge Levels

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### Aim

To improve wound assessment through interdisciplinary collaboration in the development of a standardized wound assessment document and education to meet the needs of learners with varying wound care knowledge.

### References

- van Rijswijk L & Eisenberg M. Wound assessment and documentation. IN: Krasner DL, Rodeneaver GT, Sibbald RG, Woo KY, eds. *Chronic Wound Care: A Clinical Source Book for Healthcare Professionals*. Vol 1. 5<sup>th</sup> ed. Malvern, PA: HMP Communications; 2012: 90-115.
- Sibbald RG, Goodman L, Woo KY, et al. Special considerations in wound bed preparation 2011: an update. *Advances in Skin Wound Care*. 2011; 24(9): 415-436.

### Background

In 2014, a multidisciplinary team representing three long term care facilities in Alberta was formed to examine the approach to wound assessment. The approach in each facility was inconsistent and not in alignment with best practice. At the time, the expectation was that wounds would be documented on every 2 weeks or with a significant change. The team worked to update a form and practice. The implementation of the form was not consistent and in 2019, audits identified various concerns in wound assessment and documentation, prompting a new opportunity for review. An optimal wound assessment can aid a clinician in early identification of infection, assist in developing goals for the wound, and provide an evaluation for the effectiveness of the wound care interventions<sup>1,2</sup>. Standardized education was developed to ensure a consistent roll out of the new Wound Assessment and Treatment Record.

### Method

#### Wound Assessment and Treatment Record

- An interdisciplinary committee revised the wound assessment document and came to agreement on a standard for utilization using various best practice guidelines. Improvements included:
  - Order of assessment is based on a provincially accessible electronic reference on wound assessment
  - Correct terminology (ex: 'epithelization' rather than 'pink' as a descriptor)
  - Objective measures (ex: exudate amount based on dressing capacity)
- The form was reviewed and trialed at each of the sites and in 2020 a final version was produced based on front line user feedback

#### Online Learning Module

- In 2021, an online education module was developed
  - Adult Learning principles were taken into consideration
    - Includes rationales for changes and updates
    - The module builds on past knowledge of the learner
    - The module allows the learner to be self directed
    - Includes an interactive activity to allow the learner to apply their knowledge
- At a minimum, the education module would provide advanced learners with an update on the standard of practice, important areas of change on the document, and reminders about common misunderstandings
- The novice learner has opportunity to create their own adventure through the education module and expand on as many terms, definitions, or techniques as personally required
- Expanded terms include a written definition and a pictorial example

### Results & Implications

- Since the development of the wound assessment document, it has been adopted by all the organization's long term care sites and rural sites; extending well beyond the original intended 3 sites
- The education module has been utilized by 1051 staff members across the continuum of care
- The standardization of wound documentation within the organization has allowed for the integration of best practice with consistent access to resources and standardized education

## Pressure Injury Prevention in Long Term Care; Putting the Puzzle Pieces Together

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### Aim

To develop and implement multiple quality improvement projects that together contribute to pressure injury prevention in a large long term care facility.

### Background

Pressure injuries cause a burden to patients and their families with a negative impact on quality of life<sup>1</sup>. With legislated requirements lacking in the Alberta Health Continuing Care Health Service Standards, pressure injury quality improvement projects and pressure injury education are not required. In the literature, pressure injury development is still considered a preventable adverse event. The 2019 NPIAP International Guideline is over 400 pages in length<sup>2</sup>. Such guidelines can be daunting and puzzling to implement, especially in a large long term care facility. Through observation of care at the bedside, leaders and educators can identify gaps in practice including knowledge deficits, lack of equipment, lack of standardized practice, and gaps between care and best practice. Over 6 years, educators and leaders, in collaboration with vendors, worked to provide education and improve product utilization. Staff engagement inspired a culture of change. Numerous quality improvement projects came together like pieces in a puzzle. Each small piece was referenced against best practice, literature, and guidelines.



### Method: The Puzzle Pieces

#### Prevalence Audits

- Audit teams were comprised of educators, unit managers, frontline Nurses and frontline Health Care Aides
- The observations made by the audit team demonstrated areas for quality improvement, change in practice, and education opportunities  
Examples:
  - Mattresses in disrepair
  - Overuse of skin care products
  - Patient heels not being offloaded
  - Lack of repositioning equipment
  - Multiple layers of linens under the patient
- Data collected demonstrated further areas for consideration of review; such as particular units that had higher results of moisture associated dermatitis
- Improving prevalence audit data reinforced the benefits of the ongoing quality improvement projects

#### New Standards of Practice

- Removal of the cloth soaker pad
- Move towards single step incontinence skin care product
- Use of a hybrid mattress as standard for all patients
- Mattress decision making algorithm for the prioritization and use of specialty surfaces
- Use of repositioning equipment and techniques
- Risk assessment frequency and how the information is used in care planning

#### Patient Involvement

- Feedback on new products
- Education and printed material
- Demonstrations and presentations at resident and family council meetings
- Individualized approaches for the use of offloading equipment
- Patient involvement in local conferences to share their stories

#### Education

- Involvement of all clinical disciplines in standardized, interactive orientation
- Education to empower Health Care Aides; including terminology, and how everyday ADL tasks contribute to pressure injury prevention
- Annual staff education on products used in the facility (skin care, mattresses, offloading products, incontinence briefs, repositioning equipment)
- Hands on demonstrations in the classroom and at the bedside

#### Vendor Involvement

- Product demonstrations
- Product education; including participation at annual staff education events
- Product evaluation
  - How skin cleansing and protection products were being used at the bedside
  - Product trials with patient assessments and evaluations
  - Assistance with mattress evaluation and replacement planning
  - How fluid thickening products were being utilized to support nutrition and hydration
  - Assistance with developing patient specific incontinence management plans

#### Support at Various Organization Levels

- Development of a pressure injury policy
- Professional practice position dedicated to pressure injury prevention
- Aligning terminology and processes in care planning
- Support to initiate an interdisciplinary wound response team to lead quality improvement projects
- Patient advocacy for using donations and applying for grants used for new products and mattress replacement
- Site leadership support for continued focus on pressure injury quality improvement projects

### Results

- Over time, the continuous focus on quality improvement projects related to pressure injury prevention led to a trend in reducing facility acquired pressure injuries
- Data collected in an international pressure injury prevalence study showed a **reduction in facility acquired** pressure injuries
  - 2014: 17.9%
  - 2016: 13.2%
  - 2018: **6.5%**
- Preliminary data from a 2022 prevalence study demonstrates an increase in facility acquired pressure injuries

### Implications

- Standardized practices has led to sustainment of the quality improvement projects and consistency through a large long term care facility
- Outcomes and learnings have been shared and adapted by other long term care facilities in the organization and the region
- The impact of the COVID-19 pandemic is being considered as an influencing factor on the 2022 increase in facility acquired pressure injuries
  - The impact on COVID-19 on patient wellbeing
  - Reduced education opportunities for frontline staff due to cohorting, isolation, and gathering restrictions
  - Change in vendor involvement at the facility due to visitation restrictions
  - Redirection of focus on COVID-19 requirements and less on other quality improvement activities
- This data should influence Alberta Health to have an increased emphasis on pressure injury prevention in the Alberta Continuing Care Health Service Standards

### References

- RNAO (Registered Nurses Association of Ontario). (2011 Revision). Risk assessment and prevention of pressure ulcers. Nursing Best Practice Guideline; Shaping the future of nursing. Toronto, Canada: Registered Nurses' Association of Ontario.
- European Pressure Ulcer Advisory Panel, National Pressure Injury Advisory Panel and Pan Pacific Pressure Injury Alliance (2019). Prevention and Treatment of Pressure Ulcers/ Injuries: Clinical Practice Guidelines. The International Guideline 2019.



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## The Trial of Continuous Diffusion of Oxygen Therapy (CDO) in Integrated Home Care, resulting in successful implementation

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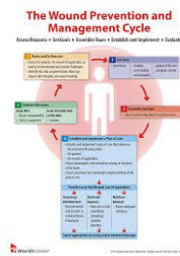


### BACKGROUND

The Consult and Treat Team in Integrated Home Care, Calgary, sees complex clients with complex painful wounds that are deemed healable but are difficult to treat. We wanted to trial an adjunctive therapy that would address pain and promote wound healing while maintaining a client centered approach to care that optimized client quality of life. We felt it important for a client to receive the CDO treatment in their home to minimize the challenges with transportation to the clinic, cost of parking and time required to treat these wounds in a clinic setting.

### OBJECTIVES

- To develop an easy, cost effective, client driven CDO program in the community
- Trial CDO on clients with complex painful wounds, assessed as healable.
- Incorporated Wounds Canada Wound Prevention and Management Cycle (WPMC) as basis for client management



### OUTCOMES

Wound Type N=5	PAIN	Quality of granulation Tissue
Trauma	↓	↑
Venous	↓	↑
Pressure	↓	↑
Mixed Etiology	↓	↑

### DISCUSSION

By incorporating CDO as an adjunctive therapy into the client's home and teaching clients how to use CDO, we have demonstrated:

- CDO decreased wound pain
- Better ability to provide pain free wound care
- Improvement in quality of granulation tissue
- Increase in client quality of life.

### CONCLUSION

- Independent, client administered CDO for wound healing in the home is possible for clients with painful wounds where etiology is known and wound deemed healable.
- In our clinic setting, CDO was cost effective for only a small number of clients where pain limited ability to provide care.
- Improved quality of life for client's living with a painful wound.
- Team approach needed to identify appropriate clients that would benefit from CDO. (Pain reduction / optimize wound care)

### LIMITATIONS

- Clients need to be independent in applying the oxygen dressing and charging the battery pack daily.
- Clients must be able to mobilize safely while carrying the machine and navigating around the oxygen tubing.
- Requires client motivation and engagement to heal wound.
- Need to manage anxiety/ concerns of initial increase in wound size due to increase in exudate.
- Home care Surveillance required to support client
- Note: Program was more successful when treatment initiated by the interdisciplinary team verses a physician order
- Not cost effective for long term pain management when cause of wound not addressed

### METHODS

Collaboration with Management, Physician group and both clinic and community interventionists	Explained reason and purpose of project. Identified barriers to care and need for home CDO treatment Obtained appropriate approvals for project Outlined inclusion and exclusion criteria Inclusion criteria: Home safe, client cognitive and able to understand treatment and risks. Able to preform / manage treatment independently Exclusion criteria- unknown etiology ,healable wounds that are on a good wound healing trajectory.
Education	Identify cause of wound and address barriers to healing. Collaboration with the interdisciplinary team. In person client education / hands on practice with CDO Handouts to clients on CDO Contact phone number for support
CDO machine and dressings provided to client	Biweekly wound measurements and administration of Visual Pain Analogue Scale

### NEXT STEPS

- Secure funding to purchase CDO unit
- Set up rental process