DIGITAL POSTER LIBRARY

2025 WOUNDS CANADA NATIONAL HYBRID CONFERENCE

Table of Contents

3 — 0001
Improving The Odds: Free and Accessible Podiatry for Low-Income Individuals With Diabetes

4 — 0002
Beyond The Wound: A Qualitative Review of How People Live With and Manage Diabetic Foot Ulcers

5 — 0003
Analysis of Pressure Injury Risk Factors in Hospitalized Elderly Patients

6 — 0004
Extravasation in Acute Hospital and Nurses' Knowledge and Attitude Toward Extravasation

7 — 0005
Stories in Sketch: Visualizing Patients' and Care Partners' Journeys in Wound Care

8 — 0006
Movement Monitoring Devices to Aid The Prediction of Pressure Ulcer Risk — A Systematic Review

9 — 0007
A Systemic Review on The Impact of Sub-Epidermal Moisture Assessments on Pressure Injury Care Delivery Pathways

10 — 0008
Improving Incontience Care Through Measurement: The Regional Continence Program Initiative

11 — 0009
Hypochlorous Acid in The Managed Healing of Fournier's Gangrene: Results of A Prospective Study

12 — 0010
Exploring Physiological Differences in Injury Response By Skin Tone: A Scoping Review

13 — 0011
The Impact of Machine Learning on The Prediction of Diabetic Foot Ulcers — A Systematic Review

14 — 0012
The Impact of Pressure Ulcer Prevention Education on Health Care Professionals' Knowledge

15 — 0013
Enhancing Deep Tissue Injury Detection:
The Role of Near-Infared Spectroscopy in Early Diagnosis Across Skin Tones

16 — 0014
Cutaneous Management of Pressure Ulcers and Superficial Infections Post-Cardiovascular Procedures

17 — 0015
Catalyzing Healing Outcomes for Chronic Wounds With Canadian-Made Innovation:
A Case Series

18 — 0019
The Impact Dressings on Pressure Ulcer Prevention — A Cochrane Systematic Review

19 — 0020
"Voices into Action": Co-Creating a Patient Bill of Rights and Responsibilities to Advance Equity in Wound Care in Canada

20 — 0021
Effects of A 12-Week Supervised Exercise Program on Patients With Peripheral Artery Disease:
A Retrospective Cohort Study

21 — 0023
Autoflourescence to Assess Bacterial Burden in Wounds: Preliminary Results From A Prospective Study

22 — 0024
The Number and Costs of Wounds in Canada and Its Provinces and Territories in 2024

23 — 0026
The Pressure is On: Game-Based Strategies for Wound Care Excellence

24 — 0027
Evaluating The Health Economic Value of Implementing An All-In-One, Extended-Wear Negative Pressure Wound Therapy Dressing

25 — 0028
Nursing Roles in Diabetic Foot Care: An Interpretive Description Study

26 — 0029
Topical Hydrogen Sulfide As A Novel Pharmacotherapy for Frostbite Injury

27 — 0030
Therapeutic Effect of Sodium Thiosulfate in Frostbite Injury

28 — 0032
The Impact of Dermatillomania on Wound Healing: A Systematic Review on Wound Care Strategies

29 — 0033
Optimizing Wound Care Procurement Across Long-Term Care Factilities Through Provincial Strategies

30 — 0036
Breaking Barriers:
Impact of Virtual Wound Care Nurse Practitioner Consultations in Home Care

31 — 0037
Advancing Wound Healing and Trust in Vulnerable and Insecurely House People With Catalytic Treatment Matrix Technology

32 — 0038
Assessing The Effectiveness of A Charged Silver-Infused Fiber Dressing With Mico-Adherent Healing Matrix and Polyabsorbent Fiber

33 — 0039
Waste Comes in Many Forms:
The Geko™ Device Mitigates

34 — 0041
How Often Is Too Often: A Survey of Dressing Change Practices Across Care Settings

35 — 0043
Evaluating The Integration, Impact, and Scalability of Mimosa: A Mixed-Methods Assessment of Non-Invasive Wound Imaging in Nova Scotia

36 — 0044
Evaluating Optimal Shieh Score Cut-Offs for Predicting Pressure Injury Risk in ICU Patients

37 — 0047
Ignite The Team, Ignite The Culture: Reducting Pressure Injuries At Heritage Green Long-Term Care

38 — 0050
Building Skin Health and Wound Care Capacity Among Personal Care Providers in Long-Term Care (LTC)

39 — 0051
Enhancing Skin Health, Wound Care Knowledge and Skill Among Regulated Care Providers in Ontario LTCH's

40 — 0052
Insights and Impact of an Innovative Wound Care Champion Program in Nova Scotia

41 — 0054
Cost-Analysis of Universal Decolonization with Pure Hypochlorous Acid (pHA*) and Mupirocin to Prevent Infections in Burn Patients

42 — 0055
Use of a Negatively Charged Fiber Based Dressing* on Painful Atypical Wound Patients to Deslough as an Adjunct to Sharp Debridement

43 — 0056
Patient and Family-Centred Pressure Injury Prevention and Management in Acute Care

44 — 0058
Use of Decellularized Dermal Matrix* to Heal Pilonidal Sinus Wounds When Standard of Care Fails

45 — 0059
Healing Hard to Heal Diabetic Foot Ulcers Using An Advanced Regenerative Matrix*: A Large Multi-Site Case Series

46 — 0061
Evaluation of The Geko™ Device in The Treatment of Sacral Pressure Injuries and Below-Knee Amputation Sites

47 — 0062
Implementation of A Transparent Dressing Protocol for Pressure Injury Prevention in Moderate to High-Risk Patients

48 — 0063
Varicose Vein Sclerotherapy Post-Procedural Complications:
A Systematic Review

49 — 0064
Driving Health Equity:
An Ai-Powered Imaging Technology for Early Detection of Pressure Injuries

50 — 0065
Keeping Patients Home:
Nurse Practitioner Avert Emergency Visits for Minor Skin and Wound Infections

51 — 0066
Offloading Strategies for The Diabetic Neuropathic Foot

52 — 0067
Innovative Wound Care Delivery

53 — 0069
Using Smart Glasses for Virtual Wound Care in Northwestern Ontario

54 — 0070
Cost Effectiveness of Muscle Pump Activation in Treating Venous Leg Ulcers

55 — 0073
Cleansing and Antimicrobial Efficiency of A Novel Antimicrobial Skin and Wound Cleanser

56 — 0075
Case Report: Healing Chronic VLU Using A New Protease, pH, Moisture, and Bioburden Control Gel

Improving The Odds:
Free and Accessible Podiatry for Low-Income Individuals With Diabetes

Caroline Leverett MSc, FFPM RCPS (Glasg), ABMPi, PGCE, CPSNS; Christopher Stone PhD, MD, CPSNS
Annapolis Family Practice Associates, Annapolis Royal. NS. Canada

ABSTRACT

Diabetes Centre staff at the Annapolis Community Health Centre, NS observed a high incidence of patients with diabetes, moderate to high-risk feet, low socio-economic status and no private health plan to cover uninsured healthcare costs. An innovative collaboration between primary care, a diabetes specialist podiatrist and the local Health Foundation was developed to deliver podiatry services to this high-risk group. From an initial budget of $5000 and 23 patients, this service has grown to $20000 and 70 patients annually. The cost of providing the program is significantly less that costs associated with one major lower limb amputation.
Patients without insurance coverage have increased risk of major lower extremity amputation[1]. A combination of expert podiatric services, self-management support and education resulted in 50% of patients each year with risk reduction and discharge from the program. We conclude that provision of necessary health services currently insufficiently resourced by the Health Authority, may be delivered locally with unique community partnerships to reduce the cost and societal burdens of diabetic foot disease. Barriers include reluctance to refer, limited clinical sessions and communication.

INTRODUCTION

It is known that neuropathy, callus, absent pulses, previous ulceration, foot deformities and diabetes glycaemic control are all risk factors for ulceration and amputation in patients with diabetes [2]. However, there is increasing evidence that alongside traditional risk factors, such as ischemia, neuropathy and structural anomalies, social deprivation (SD) plays a significant role in developing [3,4,5,6,7]. Social determinants of health may be defined as the conditions into which people are born, grow, age, work and live; they can include several and varied factors such as education, employment, income, housing, social support and access to healthcare [8]. According to WHO [9] the socioeconomic circumstances in which individuals are born, live and work is the single most significant predictor of good or poor health [10] found that age and socioeconomic status were significantly associated with a previous diabetic foot ulcer.
Low income may adversely affect access to healthcare services and uptake of preventative measures as it incurs out of pocket costs. Exposure to deprivation is associated with increased risk of DFU, LEA and mortality through delays in seeking health assessment, financial pressures to maintain income and avoid cost of care advice and expertise, self care, nutrition and footwear [11,12] Leese et al [11] determined that social deprivation was clearly associated with foot ulceration which remains significant even after adjustment for history of previous foot ulceration, glycaemic control and cardiovascular risk factors.
Insurance coverage is critical for medical care affordability [5]. Being uninsured and without a usual source of care, such as Family Doctors, is associated with three to five times lower odds of adults receiving an HbA1c screen, blood pressure check or access to urgent care when needed [13]. On average, health care costs of people with diabetes are 2-3 times those of people without diabetes and having insurance is the single strongest predictor of whether people with diabetes are likely to meet individual quality measures of diabetes care [13]. Interruption of commercial coverage increases risk of lower extremity amputation with a 77% increased risk of major amputation [1]. Patients may hesitate to seek out preventative care, continue pre-existing medical care or undergo surgical procedures given the cost associated with loss of insurance coverage.
With a health care shift towards greater emphasis on population health outcomes and care based care, social determinants of health have risen to the forefront as well as initial intervention targets to achieve health equity. [13]

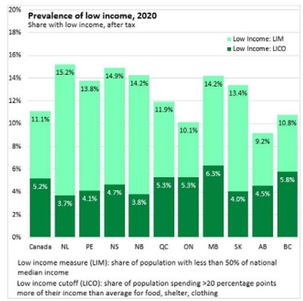
METHODS

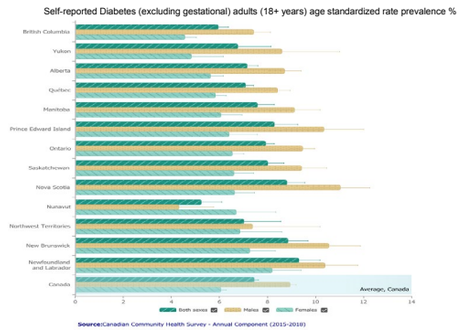
A collaboration between primary care, a diabetes specialist podiatrist and the Healthcare Foundation was formed to deliver specialist podiatry services. A budget of $5000 was provided to develop and implement a pilot project to treat patients with diabetes without private health insurance, identified by Primary Care. Weekly appointments were offered to manage chronic, existing foot ulcers until closure was achieved and intervals between visits could be extended.

RESULTS AND DISCUSSION

Year	Appointments	Patients	New Patients
1*	27	23	23
2	196	70	57
3	281	67	31
4	329	68	30
5	366	70	24

* 3 month pilot only





In this very small cohort, fewer than 10% of patients required weekly appointments. 6% of patients were seen weekly in order to manage chronic ulcers present prior to inception of the study. Of the 70 patients enrolled in the program, no new ulceration occurred. 51% of patients require annual or 6 monthly review, indicating that the podiatrist can bridge the gap and assist in providing necessary health services that are insufficiently resourced by the health authority. 91% of patients are seen every 4-6 weeks (+/- 7 times a year). Access to this free specialist podiatry and self-management support resulted in 50% of patients able to be discharged from the program. An average of 30 new patients enrolled each year with patient numbers being limited by the number of clinical hours available. In the space of 4 years, the budget grew to from $5000 to $20000 and 70 patients annually.

Timely podiatric intervention for this high-risk cohort avoided chronicity of new ulceration and the high costs associated with lower limb amputation or hospitalization associated with foot ulcers. The cost of providing the program was significantly less that the costs associated with one major lower limb amputation. Barriers were identified through the course of this study and included reluctance of health professionals to refer, access to the podiatrist due to the limited number of clinical sessions being funded and communication issues.
We conclude that provision of necessary health services currently insufficiently resourced by the Health Authority, may be delivered locally with unique community partnerships. Despite the publication of strategies on commissioning specialist services for the management and prevention of diabetic foot problems in hospital [14]; 'Putting feet first' [15], there is variation in practice in the patient management of diabetic foot problems. Policy makers should be aware that diabetic foot complications are unevenly distributed in the population. Therefore, the provision of health care services and policies should be designed in such a way that inequalities do not hinder access to health care, thereby not contributing to increased complications among low-income groups or in disadvantaged areas. Better management through access to podiatrists, education, appropriate footwear and CV risk factor management might address the higher DFD risk in patients from socially deprived areas [7]. By focusing on screening as a preventative strategy in a high-risk population, health and economic burdens of DFD and type 2 diabetes would be reduced as well as health inequalities.

REFERENCES

1. Howell C, Lane A, Weinkauf C et al (2023) Interruption of insurance coverage and the risk of amputation in patients with pre-existing commercial health insurance and peripheral artery disease. Ann Vasc Surg 96: 284-91
2. Boulton, AJ, Vileikyte, L, Ragnarson-Tennvall G, Apelqvist J (2005) The global burden of diabetic foot disease Lancet 366 1719-1724
3. McDermot K, Fang M, Boulton AJM et al (2023) Etiology, epidemiology and disparities in the burden of diabetic foot ulcers Diabetes care (46)1: 209-21
4. Bonnet JB, Sultan A (2022) Social deprivation, healthcare access and diabetic foot ulcer: a narrative review J Clin Med 11(18) : 5431
5. Ahmed, MU, Tannous WK, Agho KE et al (2021) Social determinants of diabetes related foot disease among older adults in New South Wales, Australia: evidence form a population based study. J foot Ankle Res 14:65
6. Hurst JE, Barn R, Gibson, L et al (2020) Geospatial mapping and data linkage uncovers variability in outcomes of foot disease according to multiple deprivation: a population cohort study of PWD. Diabetologia, 63 pp. 659-667
7. Riley J, Antza C, Kempegowda P et al (2021) Social deprivation and incident diabetes-related foot disease in patients with type 2 diabetes: a population-based cohort study Diabetes Care 44(3) 731-9
8. Public Health Scotland (2021) The right to health available from: http://www.healthscotland.scot/health-inequalities/the-right-to-health (accessed January 12, 2024)
9. World Health Organization Diabetes Accessed 23rd February 2024 Available from https://www.who.int/news-room/fact-sheets/detail/diabetes
10. Lazzarini PA, Hurn SE, Kuys SS, Kamp MC, Ng V, Thomas C et al (2017) Foot complications in a representative Australian inpatient population J Diabetes Res 2017:4138095-12. https://doi.org/10.1155/2017/4138095
11. Leese GP, Feng Z, Leese RM et al (2013) Impact of health care accessibility and social deprivation on diabetes related foot disease Diabet Med 30(4): 484-90
12. Margolis DJ, Jeffcoate W (2013) Epidemiology of foot ulceration and amputation: can global variation be explained? Med Clin North Am 97(5): 791-805
13. Hill-Briggs F, Adler NE, Berkowitz SA et al (2020) Social determinants of health and diabetes: a scientific review Diabetes Care 44(1): 258-79
14. Diabetes Canada Clinical Practice Guidelines Expert Committee. Diabetes Canada 2018 Clinical Practice Guidelines for the Prevention and Management of Diabetes in Canada. Can J Diabetes. 2018;42(Suppl 1):S1-S325
15. Diabetes UK (2009) 'Putting feet first'

BEYOND THE WOUND: A QUALITATIVE REVIEW OF HOW PEOPLE LIVE WITH AND MANAGE DIABETIC FOOT ULCERS

Idevania G. Costa, Maria Girlane S. A. Brandão, Samantha Santorelli, Robert Strachan, Amanda Ross-White, Marian Luctkar-Flude, Maria del Pilar C. Plazas

INTRODUTION

- Diabetic Foot Ulcers (DFU) is a complication resulting from Diabetes Mellitus; [1]
- Managing DFU is a complex process influenced by patients' perceptions of their condition, emotional well-being, and social support; [2,3]
- It is essential to understand that individuals' experiences and perceptions play a crucial role in managing DFUs; [4]
- Understanding their lived experiences helps healthcare professionals develop personalized care plans;
- Despite advancements in treatment, patient-centred approaches remain underexplored.

AIM

To explore the individuals' experiences of living and managing a DFU.

METHODOLOGY

Study type

Systematic review of qualitative evidence -- JBI PROSPERO (CRD42020193948)

Research question

How do individuals with diabetic foot ulcers describe their experience of living with and managing their ulceration daily?

Inclusion criteria

Studies published between 2000 and 2024, with language restrictions limited to English, Portuguese, and Spanish.

Databases

MEDLINE, Embase and PsycInfo, Scopus and CINAHL. For gray literature, we searched Google Scholar and ProQuest)

Screening and selection

Two reviewers screened studies on Covidence

Methodological quality

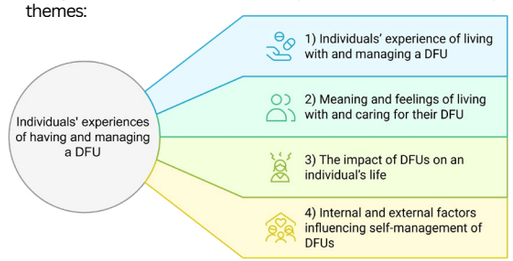
JBI Critical Appraisal Checklist for Qualitative Research

Data Synthesis

Data extraction followed the JBI qualitative tool, and meta-aggregation synthesized key themes.

RESULTS

- The comprehensive literature search identified 996 records in several databases. However, only 25 were included, as they met the eligibility criteria and answered the research question.
- The 25 included studies produced 51 findings, grouped into 12 categories. These were further synthesized into four key themes:



1) Individuals' experience of having and managing a DFU

Finding	Patient's attitude
Illustration	I did not go to see doctor, even though I'm supposed to. It's self-destructing. I totally like gave up on myself.
Finding	**Self-management knowledge about diabetes and foot care**
Illustration	I'm a bad diabetic. I didn't pay any attention to it.

2) Meaning and feelings of living with and taking care of their DFU

Finding	Perceived deterioration of health and quality of life
Illustration	Now I half-live, previously I was very active, played tennis two or three hours a week, I was out and about a great deal'. 'I think I have poorer quality of life.
Finding	**Fear of amputation**
Illustration	I'm afraid to lose my foot or leg.

3) The impact of DFUs on an individual's life

Finding	Physical impacts of DFU
Illustration	The wound interferes with job, interferes with travel. It interferes with a whole bunch of things.
Finding	**Psychological effects**
Illustration	I was stressed out because of the foot wound. I started to get angry over the smallest thing. I was so cheerful and vivacious before.

4) Internal and external factors influencing self-management of DFUs

Finding	Delayed secondary referral
Illustration	It was so bad I went to the hospital. They kept me there for about a week and only after that long did they send me to the foot clinic.
Finding	**Lack of information on foot care**
Illustration	Nothing was explained to me properly... I didn't get the proper information- what could happen...

CONCLUSION

- DFUs impact daily life, affecting psychological, social and physical well-being;
- Improving adherence requires patient-centered strategies, cultural awareness, education, and support;
- Healthcare professionals must reduce stigma, promote prevention and address concerns and experiences to optimize management.

REFERENCES

1. Zhu X, Lee ES, Lim PXH, Chen YC, Chan FHF, Griva K. Exploring barriers and enablers of self-management behaviours in patients with diabetic foot ulcers: A qualitative study from the perceptions of patients, caregivers, and healthcare professionals in primary care. Int Wound J. 2023 Sep;20(7):2764-2779.
2. Costa IG, Camargo-Plazas P. The Impact of Diabetic Foot Ulcer on Individuals' Lives and Daily Routine: A Qualitative Study Informed by Social Constructivism and Symbolic Interactionism Frameworks. J Wound Ostomy Continence Nurs. 2023;50(1):73-77.
3. Selçuk Tosun A, Akgül Gündoğdu N, Taş F, Ateş S. Experiences, thoughts, and feelings of patients with a diabetic foot ulcer in Turkey: A qualitative descriptive study. J Vasc Nurs. 2022 Sep;40(3):140-147.
4. Costa I, Tregunno D, Camargo-Plazas P. Patients' Perceptions of Reasons Contributing to Delay in Seeking Help at the Onset of a Diabetic Foot Ulcer. Journal of Wound, Ostomy and Continence Nursing. 2022; 49 (5): 481-487.

Analysis of Pressure Injury Risk Factors in Hospitalized Elderly Patients

Jung Yoon, KIM
Certified wound care nurse, CWCN, RN, Ph D
Seoul National University Hospital, Korea
Severance Hospital, Korea

Introduction

This study aimed to identify comprehensive risk factors for pressure injury development in older adults by considering medical, functional, nutritional, cognitive, and emotional conditions. The ultimate goal was to inform the development of a geriatric-specific pressure injury risk assessment tool and provide data for educational purposes.

Method

A retrospective observational study was conducted using anonymized electronic medical records of older inpatients who underwent comprehensive geriatric assessments at a university hospital. Data included demographics, clinical assessments, and pressure injury-related reports.

Result

Pressure injuries developed in 400 patients, accounting for 20.7% of the study population. Significant differences were found in caregiver type, admission route, and length of stay. Medical factors such as dementia, use of vasopressors and antipsychotics, APACHE II scores, and ICU admission showed significant associations. Functional and mental assessments including ADL, IADL, fall risk, and delirium were also significant. Nutritional factors such as BMI, mid-arm and calf circumference, MNA scores, nutritional status, and use of enteral nutrition showed significant differences. Moisture-related and continence factors, including pre-existing pressure injuries, incontinence, and bowel/bladder control, were significantly associated with pressure injury occurrence. Length of stay and enteral nutrition were identified as key risk factors.

Conclusion

The study highlights the multifactorial nature of pressure injury risk in older adults and the need for tailored assessment tools. Due to its single-center design, generalizability is limited; thus, future multi-center studies with larger samples are warranted.

Extravasation in Acute Hospital and Nurses' Knowledge and Attitude toward Extravasation

Jung Yoon, KIM
Certified wound care nurse, CWCN, RN, Ph D
Seoul National University Hospital, Korea
Severance Hospital, Korea

Introduction

Extravasation of diagnostic and therapeutic materials might occur when the intravascular solution leaks into the surrounding tissues. Injury associated with extravasation depends on various factors. It may range from mild skin reaction to severe necrosis. However, the incidence rate for extravasation is largely unknown because of the limited reporting in Korea. Therefore, this study was conducted to identify the incidence of extravasation and nurses' attitude and knowledge of extravasation for providing high-quality nursing care.

Result

The incidence rate of extravasation was 0.5%. Extravasation commonly occurred in elderly patients aged 66 or older (59.9%) and internal medicine (48.2%), and it happened 13.73±20.68 days after hospitalization on average. It mostly occurred in the forearm site (52.9%) and was mainly caused by parenteral nutrition (33.6%). The mean scores of nurses' knowledge and attitude were 14.63±2.86 and 28.91±36.00, respectively. There was a significant negative correlation between the subjects' knowledge and attitude (r=-.11, *p*=.002).

Method

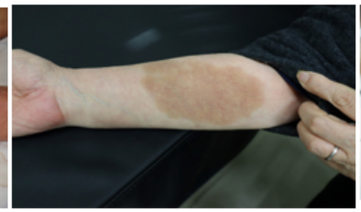
Three acute care hospitals were surveyed to estimate the occurrence of extravasation. Knowledge and attitude toward extravasation were investigated from 793 nurses working in six hospitals.

Conclusion

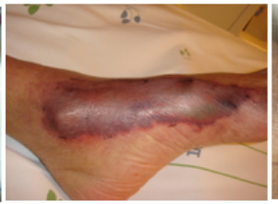
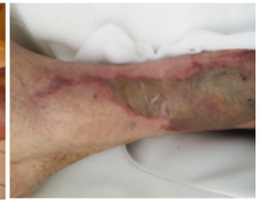
It is necessary to have a reporting system that can accurately monitor the occurrence of extravasation for patient safety management. In addition, it is necessary to develop a protocol that can be applied to clinical practice and a nurse education program.


[TPN extravasation]

[CT Dye extravasation]



[Ferric carboxymaltose extravasation]

[Norepinephrine extravasation]

Stories in Sketch: Visualizing Patients' and Care Partners' Journeys in Wound Care

Lakehead University

Catherine Phillips[1] (MA, PhD); Elena Powell[2] (BBA, BSW); Pilar Camargo Plazas[3] (RN, PhD) Idevania G. Costa[4](RN, NSWOC, PhD)

Lakehead University[1, 2, 4]; Queens' University[3]

EQUIP@Action

Background

Analytic sketching is a method that utilizes drawing, mapping, or visual representation to examine qualitative data [1].

Analytic sketches function as a research tool, helping researchers:

- establish patterns of experience within the data set;
- explore interpretive insights, such as emotions [2];
- capture the complexity of emotions and experiences that can not be captured through interviews alone.

Project Aim

To use analytic sketches to understand and document how individuals and care partners navigate daily life and the healthcare system while living with hard-to-heal wounds.

Methods

Analytic sketching was used to analyze digital narratives (n=11) from 'Our voices, Our Stories Initiative'.

Stage 1: Engaging the artist
The artist (Powell) did a sketch immediately after listening to each story. The artist then listened to the story a second time, viewing some parts several times and adding more details and the colouring as she listened.

Stage 2: Critical reflection & iterative analysis
The first researcher and artist (Phillips & Powell) reflected on each analytic sketch alongside the respective story for contextual understanding and interpretivistic depth.

Stage 3: Validating the analytic results
The sketches were reviewed by the storyteller / participant.

Stage 4: Reporting on the analysis:
Sketches were thematically sorted by: colours, strokes, lines & symbols.

This project was funded by: SSHRC CRSH

Results

The analytic sketches identified two central themes within the stories:

(1) communication challenges with healthcare professionals and (2) the vital role of social support in the healing process.

Communication: participants consistently described barriers in communication and difficulties accessing timely care from wound care specialists. Participants expressed emotions of chaos, fear, confusion and frustration with healthcare professionals and the health care system.

A care partner whose child developed skin lesions.

A participant who developed skin cancer on the scalp

A participant who had a diabetic foot ulcer.

Social support: participants routinely expressed the positive influence of family, friends, and community networks throughout their wound care journey. Care partners described the emotional and practical challenges of caring, as related to Theme 1.

A care partner whose loved one had a pressure injury.

A care partner whose loved one developed a pressure injury while recovering from surgery.

Digital stories are available at:
https://www.woundscanada.ca/patient-or-caregiver/patient-stories

Conclusion

Arts-based approaches offer researchers & professionals insight into patients' and caregivers' experience of wound care.

- Analytic sketching captures experiences of wound care that are not easily expressed in words.
- The findings highlight the need for improved communication and consistent assessment for social support.

References:

1. Causey, A (2017) *Drawn to see: drawing as an ethnographic method*. University of Toronto.
2. Jellema, P, et al. (2022). Drawing the researcher into data: drawing as an analytical tool in qualitative research. *Qualitative Research*, *23*(5), 1398-1417**2.**

Movement monitoring devices to aid the prediction of pressure ulcer risk - a systematic review

Zena Moore[1], Pinar Avsar[1], Tom O'Connor[1], Aglecia Budri[1], Peter Worsley[2], Sylvia Caggiari[2], Declan Patton[1]

[1]Skin Wounds and Trauma (SWaT) Research Centre, School of Nursing & Midwifery, Royal College of Surgeons in Ireland, University of Medicine and Health Sciences, Dublin, IE;
[2] 2University of Southampton, Southampton, United Kingdom

RCSI DEVELOPING HEALTHCARE LEADERS WHO MAKE A DIFFERENCE WORLDWIDE

RCSI SKIN WOUNDS, and TRAUMA - SWaT Research Centre

1. Introduction

- Mobility is the physical ability to make postural changes and includes frequency and magnitude of the movement.
- Mobility is commonly assessed using a subjective approach, but is limited in accuracy.
- There has been a growing body of literature to quantify mobility using a range of devices.

2. Review Aim

- To explore whether movement monitoring devices can be used for the prediction of PU risk among adults, and how these technologies could be used to support PU prevention interventions in different healthcare settings.

3. Methods

- Systematic review methodology following PRISMA guidelines.
- Five databases searched.
- Quality appraisal undertaken using the Evidence-based Librarianship checklist (Glynn, 2006).
- Data analysed using a narrative synthesis.

4. Results

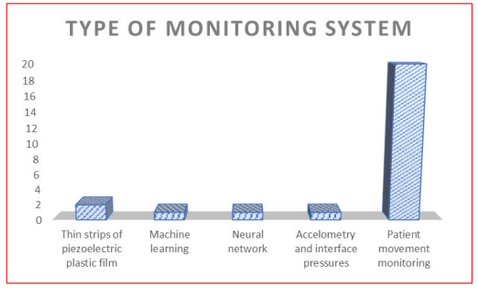
- 25 studies met the inclusion criteria.
- Most of the studies were from the USA and the UK (42%, N = 10; 30%, N = 7, respectively).
- The studies took place in hospitals, nursing homes and laboratory settings.
- Most studies (70%, N = 16) included patients, with others involving healthy participants alone, or both patients and healthy participants.
- 92% (23/25) of studies met the validity cut off score of ≥75%.

Key Messages

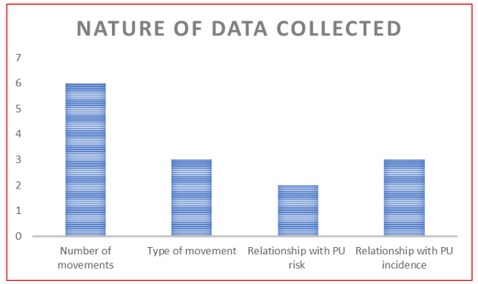
A range of physical sensors can be used to detect the frequency of movement

We need to further explore the relationship between objective assessment of patient movement and PU development, in terms of the frequency, magnitude, and protective nature of the movement

Type of monitoring system



Nature of the data collected



Reference

Moore Z, Avsar P, O'Connor T, Budri A, Bader DL, Worsley P, Caggiari S, Patton D. A systematic review of movement monitoring devices to aid the prediction of pressure ulcers in at-risk adults. Int Wound J. 2023 Feb;20(2):579-608. doi: 10.1111/iwj.13902. Epub 2022 Jul 30. PMID: 35906857; PMCID: PMC9885455.

Scan me!

RCSI DEVELOPING HEALTHCARE LEADERS WHO MAKE A DIFFERENCE WORLDWIDE

A Systematic Review on the Impact of Sub-Epidermal Moisture Assessments on Pressure Injury Care Delivery Pathways

Avsar P[1], Cuddigan J[2], Patton D[1], Moore Z[1].

[1]Skin Wounds and Trauma (SWaT) Research Centre, School of Nursing & Midwifery, Royal College of Surgeons in Ireland, University of Medicine and Health Sciences, Dublin, IE;
[2] University of Nebraska Medical Center, Omaha, Nebraska, United States.

RCSI SKIN WOUNDS, and TRAUMA - SWaT Research Centre

1. Introduction

- Elevated sub epidermal moisture (SEM) is an indicator of early-stage pressure injury (PI).
- Detection of SEM enables healthcare practitioners' to target anatomy-specific interventions for at-risk patients.

2. Review Question

- Does assessment using SEM measurement impact healthcare practitioners' delivery of PI care pathways, among adults at risk of developing PI?

3. Methods

- Systematic review methodology following PRISMA guidelines.
- Seven databases searched.
- Quality appraisal undertaken using the Evidence-based Librarianship checklist (Glynn, 2006).
- Data analysed narratively & meta-analysis.

4. Results

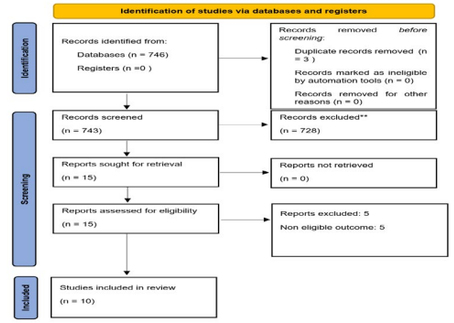
- 10 studies met inclusion criteria and 9 reported a change in practice arising from use of SEM measurement, with reference to:
  1. Impact on care delivery
  2. Changes to specific interventions offered to patients,
  3. Changes in care planning
- Meta-analysis of 7 studies showed an odds ratio of PU development of 0.36 (95% CI: 0.24-0.53; p<0.00001), for those cared for using SEM measurement and subsequent targeted PU prevention care planning.

Key Messages

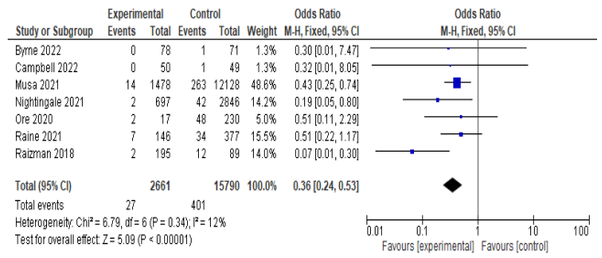
SEM assessment prompt targeted actions, leading to sustained reductions in hospital-acquired PIs.

Incorporating SEM assessment into care pathways is one method to drive consistent PI reduction across diverse patient populations and care settings.

PRISMA Flow Chart



PI Development: SEM directed care pathways vs usual care

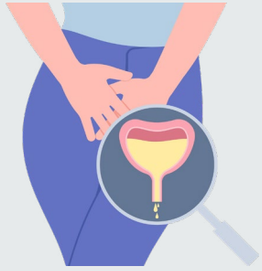


Reference

Avsar P, Patton D, Cuddigan J, Moore Z. A systematic review on the impact of sub-epidermal moisture assessments on pressure ulcer/injury care delivery pathways. Int Wound J. 2024 Jun;21(6):e14928. doi: 10.1111/iwj.14928. Erratum in: Int Wound J. 2024 Jun;21(6):e14951. doi: 10.1111/iwj.14951. PMID: 38832363; PMCID: PMC11148479.

Scan me!

IMPROVING INCONTINENCE CARE THROUGH MEASUREMENT: THE REGIONAL CONTINENCE PROGRAM INITIATIVE



AUTHORS

Mavis Knight, RN ,MSc-WH, MBA-IHM, NCA, NSWOC
Kathleen Llamzon, BN, RN, NCA
Joy Navaroj, MN, RN

AFFILIATIONS

Seniors Services, Trillium Health Partners

Trillium Health Partners

BACKGROUND

- Trillium Health Partners is one of Canada's largest community based teaching hospital with academic affiliation.
- The Regional Continence Program at Trillium Health Partners has been committed to serving older adults both in hospital, and across Mississauga-Halton region for over a decade.
- In 2024, the program supported 581 community patients and 66 inpatients.
- Measuring incontinence marked our first attempt to systematically measure the severity of incontinence among our patients, addressing a previously unassessed aspect of care.

OBJECTIVE

- To measure the severity of urinary incontinence among older adults in both hospital and community settings, as this has not previously been assessed within our program.

METHODOLOGY

- The Incontinence Severity Index (ISI) was utilized to measure the severity of urinary incontinence.
- The ISI is a standardized tool that quantifies incontinence based on two key patient responses.
- The ISI scores range from 0 to 12, with 0 representing no incontinence and 12 indicating severe incontinence.
- The team members of the program used this scale as part of their patient assessment between March and May of 2024.

Incontinence Severity Index (ISI)

How often do you experience urinary leakage?
- ☐ Less than once a month (=1)
- ☐ A few times a month (=2)
- ☐ A few times a week (=3)
- ☐ Every day and/or night (=4)

How much urine do you lose each time?
- ☐ A few drops (=1)
- ☐ A little; small splashes (=2)
- ☐ More (=3)

Score = (points for frequency) x (points for amount), then categorize as follows:

1-2 = Slight
3-6 = Moderate
8-9 = Severe
10-12 =Very Severe

Use the value of 0 for those who become continent

CONCLUSION

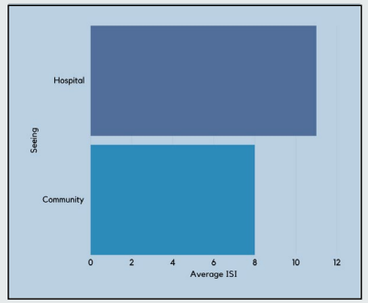
- The ISI has proved to be an effective tool for measuring the severity of urinary incontinence in older adults across both hospital and community settings.
- The ISI has provided a critical baseline for assessing patient outcomes and tailoring interventions to meet individual needs.
- These results underscore the importance of using standardized measures in the management of incontinence, which can ultimately inform clinical decision-making and improve the quality of care provided to this population.

IMPLICATIONS

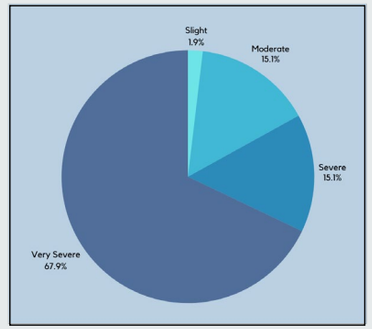
- The data highlighted a critical gap in early referrals, as many older adults were referred only after their symptoms had worsened.
- This underreporting of early-stage symptoms underscores the need for routine screening for incontinence in older adults by health care providers.

RESULTS

- Results from our assessments indicate notable differences in the incontinence severity between the inpatient and community older adults assessed.



- About 78% of the older adults were found to have severe to very severe incontinence during their first assessment.



REFERENCES:

- Murphy, M., Culligan, P.J., Arce, C.M., Graham, C.A., Blackwell, L., & Heit, M.H. (2006). Construct validity of the incontinence severity index. Neurourology and urodynamics, 25(5), 418-23. https://doi.org/10.1002/nau.20246
- Sharma, Jai Bhagwan; Kakkad, Vivek; Roy, K. K.; Kumari, Rajesh; Pandey, Kavita. Role of Incontinence Severity Index in Evaluating Severity and Impact of Treatment Of Stress Urinary Incontinence. Journal of Mid-life Health 13(2):p 139-144, Apr–Jun 2022. | DOI: 10.4103/jmh.JMH_113_20

Hypochlorous Acid in the Managed Healing of Fournier's Gangrene: Results of a Prospective Study

Anne-Marie Trudel, RN, BScN, NSWOC, WOCC(C) • **Jessica Larose,** RN, BScN, NSWOC, WOCC(C)
CHU de Québec-Université Laval, Québec (Québec), Canada

No monetary compensation was received, and no affiliation with a medical or pharmaceutical company was sough

INTRODUCTION

Fournier's gangrene is a necrotizing fasciitis of the genital area, characterized by rapid progression. Management with negative pressure wound therapy (NPWT) is the treatment of choice for surgical wound management in the postoperative period[1]. Other treatments documented in the literature include medical honey[2], maggot-assisted biological debridement, hyperbaric chamber therapy[3], surgical reconstructions including grafts and four flaps technique[4], and the use of solutions such as Dakin's solution, iodine, or chlorhexidine, some of which are cytotoxic[1].

OBJECTIVE

To present an alternative of choice to the classic treatments of Fournier's gangrene documented so far, when organizational, personal, and financial constraints are present.

NEW CLINICAL APPROACH

Hypochlorous acid[5], available within the establishment, was used to moisten woven gauzes placed on the wound bed to fill the cavities of these patients, which were then covered with an abdominal dressing. The dressings were changed daily until complete healing of the wound.

CLINICAL CASE

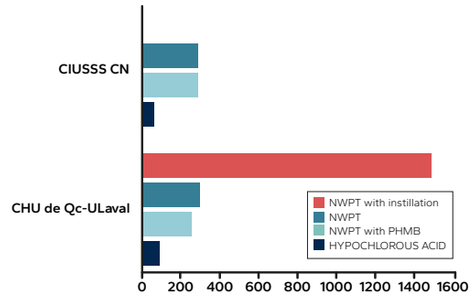
1 44-year-old man, NPWT from day 0 to 7. Hypochlorous acid from day 7 until ALT flap. NPWT was stopped to facilitate weaning from sedation and proceed with the patient's extubation. (Significant agitation related to pain caused by NPWT and easier setup for healthcare staff.) Day 44, almost complete closure. ALT flap considered for scrotum closure.

Day 0 | Day 7 (end of NPWT) | Day 21 | Day 44

2 68-year-old man. Hypochlorous acid from day 0 to 7. Refused any surgical treatment. Conservative management.

Day 0 | Day 7

Estimation of the weekly financial impact related to the use of hypochlorous acid solution compared to NPWT in hospital and community settings



RESULTS

Our case series highlights remarkable outcomes, with rapid healing, a reduction in costs associated with dressing changes, an improvement in patients' quality of life, and complete wound closure by secondary intention, within an average of 50 days.

CONCLUSION

Faced with challenges such as the loss of NPWT seal, anatomically difficult areas to dress, significant pain during dressing changes, repeated use of analgesics and sedatives, anxiety of the patient and staff during NPWT changes, limited access to the operating room, nursing staff shortages, and lack of material resources in the facility, we concluded that the adoption of hypochlorous acid-based wet dressings represented a very promising alternative. These case studies represent the individual experiences of wound care nurses and are not intended to suggest that such results will be observed in all patients benefiting from this therapeutic strategy.

REFERENCES

1. Ozkan OF, Koksal N, Altinli E, et al. Fournier's gangrene current approaches. Int Wound J. 2016;13:713–716. doi: 10.1111/iwj.12357.
2. De Groot T, Janssen T, Faro D, et al. Antifungal activity of a medical-grade honey formulation against candida auris. J Fungi. 2021;7(1):50.
3. Tanaka T, Minami A, Uchida J, et al. Potential of hyperbaric oxygen in urological diseases. Int J Urol. 2019;26(9):860–867.
4. Insua-Pereira I, Ferreira PC, Teixeira S, et al. Fournier's gangrene: a review of reconstructive options. Cent European J Urol. 2020;73(1):74–79.
5. Urgomedical. 2025. Vashe wound solution with pure hypochlorous acid. Page consultée le 20 février 2025 : Vashe Wound Solution – A Pure Hypochlorous Acid Solution

RCSI

RCSI DEVELOPING HEALTHCARE LEADERS WHO MAKE A DIFFERENCE WORLDWIDE

Exploring physiological differences in injury response by skin tone: A scoping review

Declan Patton[1], Zena Moore[1], Tom O'Connor[1], Lone Skoubo Bertelsen[1], Desmond J. Tobin[2], Giulio Brunetti[3] , Keryln Carville[4], Vignesh Iyer [5] , Hannah Wilson[1], Pinar Avsar[1]

[1]Skin Wounds and Trauma (SWaT) Research Centre, School of Nursing & Midwifery, Royal College of Surgeons in Ireland (RCSI), University of Medicine and Health Sciences, Dublin, IE;
[2] Charles Institute of Dermatology, School of Medicine, University College Dublin, Belfield, Dublin, 4, Ireland.
[3]Tissue Engineering Research Group (TERG), The Royal College of Surgeons in Ireland (RCSI), University of Medicine and Health Sciences, Dublin, Ireland
[4]Silverchain Primary Health Care and Community, Australia. [5]Bruin Biometrics LLC, Global Medical Affairs and Market Access, USA

RCSI SKIN WOUNDS, and TRAUMA - SWaT Research Centre

1. Introduction

- We have a limited understanding of the physiological differences in injury response across skin tones.
- Understanding the physiological mechanisms underlying the relationship between skin tone and injury response is essential for developing targeted prevention and treatment strategies.

2. Review Aim

- To explore existing literature examining physiological differences in pressure ulcer response among individuals with differing skin tones.

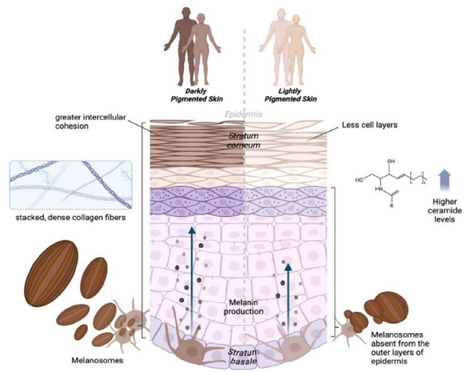
3. Methods

- This was a scoping review.
- Articles meeting the inclusion criteria were retrieved from electronic databases including PubMed, CINAHL, Scopus, Cochrane, and EMBASE, using the keywords "pressure ulcer," "skin pigmentation," "melanin," and "risk factor."
- Data were extracted using a predesigned data extraction tool and analysed using a narrative synthesis.

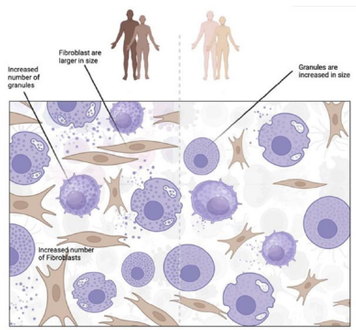
4. Results

- Five papers met the inclusion criteria.
- Analysis of findings suggests there are potential mechanisms which may influence the skin's ability to withstand mechanical stress and its inflammatory response to damage among those with different skin tones;
  - the structure of the stratum corneum,
  - collagen density,
  - fibroblast activity,
  - mast cell density,
  - transepidermal water loss (TEWL).

Structural differences between dark and light skin tones



Biological differences between dark and light skin tones



5. Interpretation

- Compact cells, greater intercellular cohesion, and more cell layers makes the stratum corneum in dark skin tone a stronger physical barrier.
- Light skin tone has a less dense arrangement of collagen fibers and includes fragmented fibers, so the skin is not as effective at distributing pressure.
- Reduced fibroblast activity in light skin tones compromises the skin's structural integrity, so it is more susceptible to damage under pressure.
- In dark skin tones, increased mast cells affect cell activity causing a more intense and prolonged inflammatory response in response to pressure, enhancing the risk of tissue damage.
- The higher TEWL in dark skin tones causes dryness, making the skin more vulnerable to mechanical stress.

6. Conclusion

- Physiological differences in skin structure may contribute to alterations in the response to pressure ulcer development among individuals with dark skin.
- Recognising these differences is important for targeted prevention strategies within diverse populations.
- Further research is needed to explore the mechanisms underlying this association in greater detail.

Reference

Avsar P, Moore Z, Patton D, O'Connor T, Skoubo Bertelsen L, Tobin DJ, Brunetti G, Carville K, Iyer V, Wilson H. Exploring physiological differences in injury response by skin tone: A scoping review. J Tissue Viability. 2025 May;34(2):100871. doi: 10.1016/j.jtv.2025.100871. Epub 2025 Feb 14. Erratum in: J Tissue Viability. 2025 Aug;34(3):100896. doi: 10.1016/j.jtv.2025.100896. PMID: 40086146.

The impact of machine learning on the prediction of diabetic foot ulcers – a systematic review

Declan Patton[1], Pinar Avsar[1], Linda Nugent[1] , Zena Moore[1], John H. McDermott[2], Seamus Sreenan[2], Hannah Wilson[1], Natalie L. McEvoy[1], Rosemarie Derwin[3], Paul Chadwick, Teagan Weatherall[1]

[1]Skin Wounds and Trauma (SWaT) Research Centre, School of Nursing & Midwifery, Royal College of Surgeons in Ireland (RCSI), University of Medicine and Health Sciences, Dublin, IE; [2]Department of Endocrinology, Royal College of Surgeons in Ireland (RCSI), Connolly Hospital Blanchardstown, Dublin, Ireland, [3]School of Nursing & Midwifery, Trinity College Dublin, Dublin, Ireland,

RCSI DEVELOPING HEALTHCARE LEADERS WHO MAKE A DIFFERENCE WORLDWIDE

RCSI SKIN WOUNDS, and TRAUMA - SWaT Research Centre

1. Introduction

- Globally, diabetes mellitus poses a significant health challenge as well as the associated complications of diabetes, such as diabetic foot ulcers.
- The early detection of diabetic foot ulcers is important in the healing process and machine learning may be able to help inform clinical staff during the treatment process.

2. Review Aim

- To explore the impact of machine learning on the prediction of diabetic foot ulcers.

3. Methods

- Systematic review methodology following PRISMA guidelines.
- The primary outcome was the impact of machine learning on the prediction of DFUs.
- The secondary outcome was the statistical performance measures reported.
- Five databases searched.
- Quality appraisal undertaken using the Evidence-based Librarianship checklist (Glynn, 2006).
- Data analysed using a narrative synthesis.

4. Results 1

- 18 studies met the inclusion criteria.
- 9 reports proposed models to identify two classes, either healthy skin or a DFU.
- 9 reports proposed models to predict the progress of DFUs, for example, classing infection versus non-infection, or using wound characteristics to predict healing.
- Mean EBL score: 87%, and all met the >75% cut off score.

Key Messages

Machine learning models have the potential to improve the detection, diagnosis and management of diabetic foot ulcers.

Clinical practice would benefit from the development and validation of a standard device and algorithm that is user friendly and affordable.

5. Results 2

- Performance of the models were reported in a variety of ways.
  - Sensitivity scores: 74.53% to 98%.
  - Accuracy scores: 64.6% to 99.32%.
  - Precision: 62.9% to 99%.
  - F1 score: 52.05% to 99.0%.

6. Discussion

- Results show that machine learning in the field of DFUs is emerging rapidly with a wide range of models being reported.
- Conclusions from nine studies suggested various machine learning and deep learning techniques can successfully classify diabetic foot ulcers.
- Conclusions from nine studies suggest that machine learning models can predict the progress of diabetic foot ulcers.

7. Limitations

- The main limitation of this study was the broad heterogeneity of the included studies.
- This meant that a meta-analysis of included studies could not be completed preventing a comparison between them.

Reference

Weatherall T, Avsar P, Nugent L, Moore Z, McDermott JH, Sreenan S, Wilson H, McEvoy NL, Derwin R, Chadwick P, Patton D. The impact of machine learning on the prediction of diabetic foot ulcers - A systematic review. J Tissue Viability. 2024 Nov;33(4):853-863. doi: 10.1016/j.jtv.2024.07.004. Epub 2024 Jul 11. PMID: 39019690.

Scan me!

The impact of pressure ulcer prevention education on health care professionals' knowledge

Tom O'Connor[1]
Zena Moore[1], Declan Patton[1], Noreen O'Brein[1]

[1]Skin Wounds and Trauma (SWaT) Research Centre, School of Nursing & Midwifery, RCSI University of Medicine and Health Sciences, Dublin, IE;
[2]Data Science Centre, School of Population Health, RCSI University of Medicine and Health Sciences, Dublin, IE.
[3] School of Nursing and Midwifery, Griffith University, Brisbane, AUS

RCSI DEVELOPING HEALTHCARE LEADERS WHO MAKE A DIFFERENCE WORLDWIDE

RCSI SKIN WOUNDS, and TRAUMA - SWaT Research Centre

Introduction

- Health care assistants (HCAs, known by various titles internationally) play a significant role in reducing PU occurrence and hence PU incidence
- Education is critical in achieving evidence based practice and competence in PU care and had been shown to be effective with other HCP and lay carers
- However, the precise impact of PU education on HCAs is largely under reported

Aim

- This study aimed to assess the impact of an education intervention on health care professionals' knowledge of pressure ulcer prevention

Methods

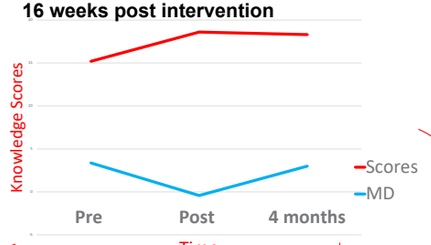
- Quasi-experimental: Assessment of HCAs' knowledge pre-and-post an education intervention and at 4 months
- The Shanley Pressure Ulcer Prevention Programme (SPUPP)1 and the PU Classification system (PUCLAS) programme2 (modules 3 and 4) were delivered.
- Knowledge scores, assessed using the Knowledge of Pressure Ulcer Prevention questionnaire (KPUP)3, were analysed over time using a repeated measures mixed-model analysis (unadjusted) and additionally adjusted for demographic variables.

Results

- 129 HCAs who completed the education intervention 19% (n=24) were male and 81% (n=105) were female. The mean age of participants was 49 years (range 29-60 years, SD: 7).
- Participants' duration of employment was averaged at 2-5 years
- 66% had no previous education relating to PU prevention
- 58% worked in publicly (government) run facilities

Key Messages

Knowledge increased and was sustained 16 weeks post intervention



This study has demonstrated the positive effects of PU education on LTC settings with an increase in knowledge for HCAs who contribute significantly to patient PU care. It is concerning that they are largely underrepresented in research pertaining to PU prevention.

Mean knowledge scores T1,2,3 (Max 20)

Time point	Mean	SD	Min	Max
T1	15.2	2.0	8	20
T2	18.6	1.4	13	20
T3	18.3	1.3	14	20

Mean differences in knowledge scores

Time point	Mean Difference	SD	95% CI	*p* value
T1-T2	3.37	1.66	3.08 to 3.66	0.0000*
T2-T3	-0.417	1.14	-0.69 to- 0.13	0.0039*
T1-T3	3	1.42	2.65 to 3.34	0.0000*

Repeated measures mixed-model analysis of knowledge scores over time; adjusted

	Univariable		Multivariable	
	β (95% CI)	*p*-value	β (95% CI)	*p*-value
Age	--	--	- 0.02 (-0.06, -0.23)	0.418
Gender – male	--	--	0.78 (0.06, 1.48)	0.033
Previous education (yes)	--	--	1.06 (0.5, 1.61)	0.000*
LOE (reference <2years) 3-5 years 6-10 years >10 year	--	--	 0.22 (-0.49, 0.93) 0.12 (-0.72, 0.97) 0.06 (-0.84, 0.97)	 0.54 0.77 0.89
Public LTC facility	--	--	-0.14 (-0.72 to 0.45)	0.65
Time				
Time 1 vs 2	3.37 (3.10 to 3.64)	<0.001	3.40 (3.10 to 3.70)	<0.001
Time 2 vs 3	-0.36 (-0.70 to -0.02)	0.036	-0.36 (-0.75 to 0.02)	0.067
Time 1 vs 3	3.01 (2.67 to 3.35)	<0.001	3.04 (2.65 to 3.42)	<0.001

Enhancing Deep Tissue Injury Detection: The Role of Near-Infrared Spectroscopy in Early Diagnosis Across Skin Tones

Hailey Caprara, BSN, RN, CWS, DAPWCA; Mary Rose Marcaida, MSN, RN; Nirman Tulsyan, MD, FACS, RPVI
Heritage Wound Care, Montclair, NJ 07042, USA

Introduction

Deep tissue injuries (DTIs) are severe pressure-induced damages to subdermal tissues, such as muscle and connective tissue, affecting approximately 0.4% of hospital patients and costing the U.S. healthcare system an estimated $1.3–2.7 billion annually for pressure injury (PI) management.[1-3] Early detection is critical to prevent progression to full-thickness wounds, yet current methods rely on subjective visual skin assessment (VSA), which is less effective in darker skin tones.[4] Thermography has been investigated as a potential alternative to VSA for DTI/PI detection.[5] Near-infrared spectroscopy (NIRS) provides a non-invasive method to measure tissue oxygenation (StO_2), offering a robust solution to overcome VSA's limitations too. This study evaluates NIRS imaging for early DTI/PI detection across Fitzpatrick skin types I–V, aiming to enhance diagnostic equity in clinical practice.

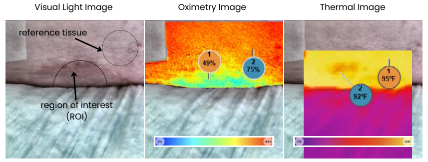
Methods

A prospective observational study was conducted across 15 long-term care facilities, enrolling 17 patients with 20 confirmed DTIs/PIs. Patients represented Fitzpatrick skin types I–V, with DTI/PI locations including Heel (10), Sacral (7), Hip (1), Medial Foot (1), Thigh (1). Exclusion criteria included active dying or unstable medical conditions.

Type I	Type II	Type III	Type IV	Type V
Always burns, never tans	Burns easily, tans minimally	Burns moderately, tans gradually	Burns minimally, tans easily	Rarely burns, tans darkly

Fitzpatrick Skin Type Distribution in the Study Cohort: *The table presents the distribution of DTIs/PIs across Fitzpatrick skin types I to V, detailing each skin type, its key characteristics, and the number of documented DTIs/PIs.*

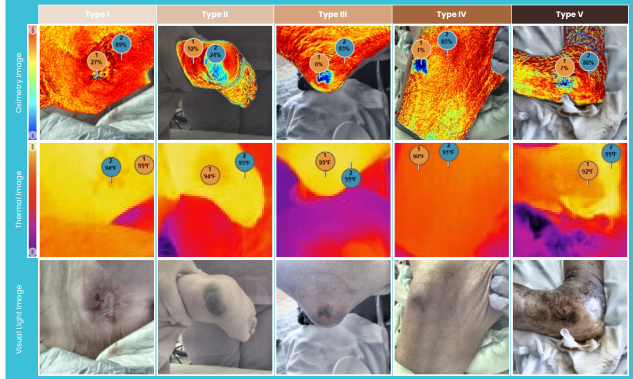
For each study participant, a Visual Light Image, Oximetry Image, and Thermal Image were captured using the FDA 510(k)-cleared handheld device MIMOSA Pro (MIMOSA Diagnostics, Inc., Toronto, ON). A region of interest (ROI) corresponding to the area of skin discoloration or wound location was identified, and the mean tissue oxygenation and skin surface temperature were extracted. These values were then compared to those of nearby healthy tissue, serving as a reference.



Visual Light, Oximetry, and Thermal Images for a Representative Study Participant (Fitzpatrick Type III, DTI on Right Thigh): *The digital image reveals underlying soft tissue damage, visible on the surface as skin discoloration and marked as ROI. The oximetry image shows that tissue oxygenation within the ROI is 26% lower than in the surrounding healthy tissue. The thermal image indicates that the ROI is 3°F cooler than the adjacent tissue.*

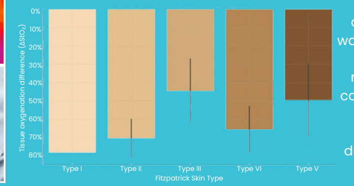
Results

Preliminary data showed NIRS-detected tissue oxygenation deficits ranging from -27% to -79% (mean ΔStO_2 = -56.8%, SD = 19.7%). No significant correlation was observed between Fitzpatrick type and ΔStO_2 (r = 0.14, p = 0.4547), suggesting NIRS's consistent performance across skin tones. Thermography showed variable performance, with reduced reliability in early-stage DTIs or later stage PIs.



The figure displays oximetry images (top) and thermography images (bottom) for selected participants representing Fitzpatrick skin types I–V.

The accompanying bar chart illustrates the mean difference in tissue oxygenation between the region of interest (skin discoloration) and adjacent reference tissue, including standard deviation, across all participants grouped by Fitzpatrick skin type.



In contrast, thermal imaging of the same regions showed inconsistent patterns. At initial assessment, the ROI was approximately 1°F cooler than the reference tissue in 6 cases, ≥3°F cooler in 3 cases, and showed no temperature difference in 11 cases.

Pressure injuries can be difficult to detect in their early stages and often deteriorate rapidly—progressing from minor skin irritation or discoloration to partial-thickness and eventually full-thickness wounds.

Discussion & Conclusions

This study highlights the potential of NIRS as a reliable and equitable tool for early detection of DTIs and PIs. NIRS consistently detected tissue oxygenation deficits across a diverse cohort, including participants with higher Fitzpatrick skin types—addressing a key gap in equitable wound care. As reported in the literature,[6] DTIs are often marked by reduced tissue oxygenation. In our study, we observed a consistent drop in oxygenation between the discolored region of interest and adjacent healthy tissue.

Compared to thermography, NIRS showed greater consistency in identifying early-stage DTIs. While thermography is expected to reveal "cold spots," we found that early DTIs sometimes appeared the same temperature as surrounding tissue—or only developed a "cold spot" days later. We did not observe any warm regions. This may be due to timing, as we did not track thermal recovery post-turn.[7]

These findings suggest that NIRS and thermography may offer complementary insights in the early detection of pressure-related injuries. Thermography, with its long-standing presence in clinical literature and established interpretation guidelines,[8] offers a familiar framework. NIRS, on the other hand, is an emerging technology that directly measures tissue oxygenation—providing deeper insight into underlying microvascular compromise before visible or thermal changes occur. By combining thermography's surface assessment with NIRS's capacity to detect early oxygenation deficits, clinicians may gain a more comprehensive and timely understanding of tissue health—enhancing both diagnostic accuracy and equity in care.

Bibliography
1. Kottner, J., Dassen, T. & Lahmann, N. Prevalence of deep tissue injuries in hospitals and nursing homes: two cross-sectional studies. Int J Nurs Stud 47, 665–670 (2010).
2. Incidence and Characteristics of Suspected Deep Tissue Pressure Injuries on the Foot and Ankle: A Retrospective Study. J Wound Ostomy Continence Nurs 50, E4 (2023).
3. A Retrospective Analysis of Deep Tissue Injury Prevalence and Incidence Using a Large-Scale Wound Care Database in Long-Term Care Settings. Swift https://swiftmedical.com/poster-npiap-dti-analysis-in-ltc/ (2025).
4. Black, J. M., Brindle, C. T. & Honaker, J. S. Differential diagnosis of suspected deep tissue injury. Int Wound J 13, 531–539 (2016).
5. Cox, J., Kaes, L., Martinez, M. & Moles, D. A Prospective, Observational Study to Assess the Use of Thermography to Predict Progression of Discolored Intact Skin to Necrosis Among Patients in Skilled Nursing Facilities. Ostomy Wound Manage 62, 14–33 (2016).
6. Lee, Lin-Lin, and Shu-Ling Chen. 2023. "The Application of Hyperspectral Imaging to the Measurement of Pressure Injury Area." *International Journal of Environmental Research and Public Health* 20 (4). https://doi.org/10.3390/ijerph20042851.
7. Bhargava, Akanksha, Arjun Chanmugam, and Cila Herman. 2014. "Heat Transfer Model for Deep Tissue Injury: A Step towards an Early Thermographic Diagnostic Capability." *Diagnostic Pathology* 9 (February):36.
8. Koerner, Suzanne, Diane Adams, Scot L. Harper, Joyce M. Black, and Diane K. Langemo. 2019. "Use of Thermal Imaging to Identify Deep-Tissue Pressure Injury on Admission Reduces Clinical and Financial Burdens of Hospital-Acquired Pressure Injuries." *Advances in Skin & Wound Care* 32 (7): 312–20.

HERITAGE WOUND CARE

TEMERTY FACULTY OF MEDICINE UNIVERSITY OF TORONTO

Cutaneous Management of Pressure Ulcers and Superficial Infections Post-Cardiovascular Procedures

Sara Pollanen, Andy Dongkwun Lee, Jazlyn McGuinty, Sean Jeong, Nicholas Chronis, Ilya Mukovozov

Introduction

- Surgical site infections occur in **2–20%** of cardiac surgery patients, with deep sternal wound infections carrying **10–47% mortality** (Morykwas MJ, 1997)
- Wound complications increase hospital length of stay (LOS), reoperations, and costs (Patel et al, 2017)
- While multiple wound management strategies exist, no **comprehensive comparative analysis** in cardiac surgery patients had been conducted.

Objectives

To **systematically evaluate/compare** all major postoperative wound and dermatological management strategies in adult cardiac surgery patients.

Outcomes: SSI rates, healing complications, LOS, adverse events.

Methods

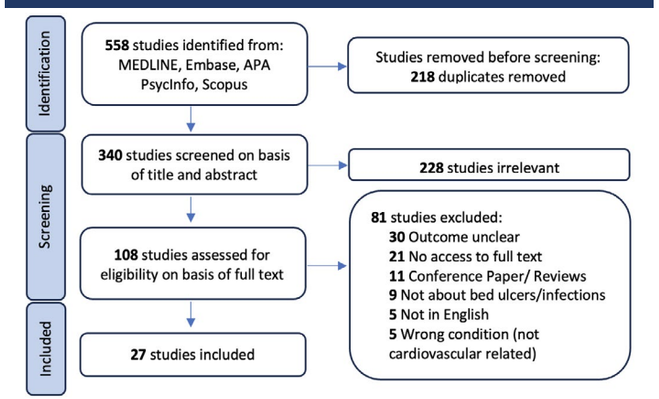


Figure 1. Flow diagram of screening using the Preferred Reporting Items for Systematic Reviews and Meta-Analyses guidelines. Figure adapted from http://prisma-statement.org.

Results

Wound Therapy Distribution

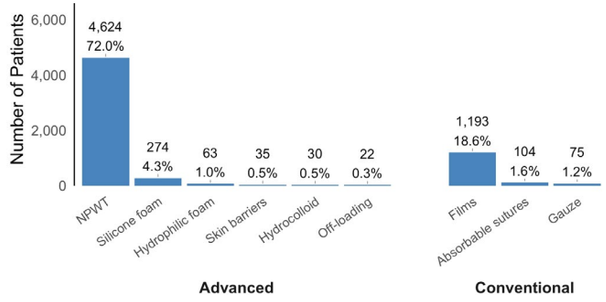


Figure 2. Distribution of patients across wound therapies in included studies (n=6,420). Advanced therapies (left) dominate - NPWT 4,624 (72%), vs conventional (right). Percentages indicate share of total patients.

Length of Stay & Treatment Discontinuation

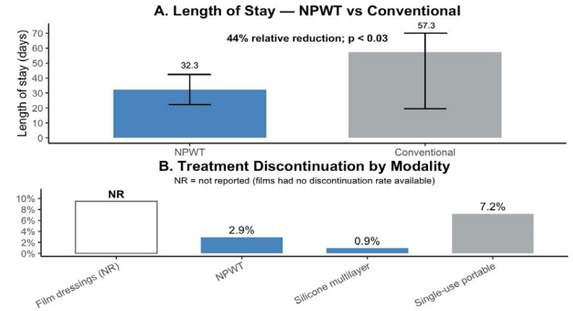


Figure 4. Clinical efficiency and tolerability. (A) Length of stay: NPWT 32.3 ± 10.0 vs conventional 57.3 ± 37.8 days (~44% reduction; $p < 0.03$). (B) Treatment discontinuation: NPWT 2.9%, silicone multilayer 0.9%, single-use portable 7.2%; film dressings NR (not reported); gauze N/A.

Infection Outcomes by Treatment Modality

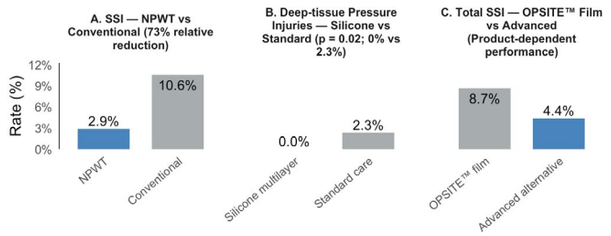
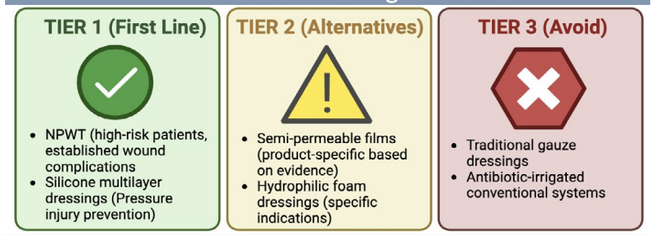


Figure 3. Infection outcomes by modality across included studies. (A) SSI: NPWT 2.9% vs conventional 10.6% (Δ −7.7 percentage points; 73% relative reduction). (B) Deep-tissue pressure injuries: silicone multilayer 0.0% vs standard 2.3% (p = 0.02). (C) Total SSI: OPSITE™ film 8.7% vs advanced alternative 4.4%—product-dependent performance. Values reflect study-level reports; no meta-analysis was performed due to heterogeneity.

Clinical Decision-Making Framework



Conclusions

Advanced modalities (NPWT, silicone multilayer) lower SSI and LOS and are better tolerated than conventional care; clinically, prioritize closed-incision NPWT for high-risk sternotomy, therapeutic NPWT for established infection, and silicone multilayer for pressure-injury prevention.

Future Research: multicenter head-to-head RCTs with cost-effectiveness analyses.

CATALYZING HEALING OUTCOMES FOR CHRONIC WOUNDS WITH CANADIAN-MADE INNOVATION: A CASE SERIES

By Rosemary Hill, RN, BScN, NSWOC, WOCC(C)

Vancouver CoastalHealth

STATEMENT OF CLINICAL PROBLEM

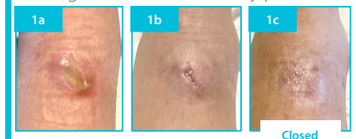
During a time of global uncertainty, many Canadians are prioritizing local solutions. This abstract summarizes the impact of a Canadian-made technology described as a Catalytic Treatment Matrix (CTM)[1] in five clinical cases involving diverse wound types: a chronic venous insufficiency leg ulcer, a full-thickness pressure injury, a full-thickness wound from an open fracture, and two diabetic foot ulcers (DFUs). Each case involved patients with non-healing wounds despite prior standard wound care. The wounds exhibited persistent inflammation, impaired tissue regeneration, and poor response to conventional treatments. All five patients had comorbidities affecting wound healing, such as diabetes, hypertension, or dialysis dependence.

ACTIONS TAKEN

The following cases included application of CTM, in addition to usual standard of care (SOC) such as compression and/or offloading in the case of the DFUs. The following individuals were included in this case series: A 64-year-old male with a chronic venous insufficiency ulcer for over a year, a 43-year-old female with a chronic wound from an open tibial fracture, an 84-year-old female with a full-thickness elbow pressure injury post-cast removal, a 78-year-old male with two DFUs and multiple comorbidities, and a 55-year-old male with a DFU.

CASE 1: CHRONIC WOUND FROM AN OPEN TIBIAL FRACTURE

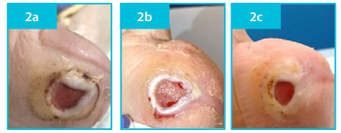
History: 43-year-old female with inflammatory challenges. Wound present and treated within standard of care (SOC) for 4 months with little improvement observed.
Prior Treatments: Cadexomer iodine
Actions Taken: Treated with CTM and a silicone cover bandage. Dressing changes were conducted by patient.



Day 0 Nov 5, 2024 | Day 8 Nov 13, 2024 | Closed Day 41 Dec 16, 2024

CASE 2: DIABETIC FOOT ULCER UNDER TOTAL CONTACT CAST

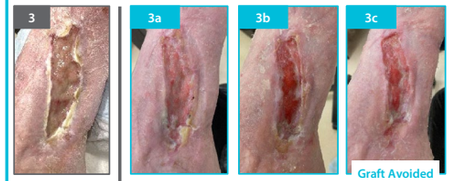
History: 55-year-old male with diabetes. Wound present and treated within SOC for 4 months.
Prior Treatments: Negative pressure therapy, methylene blue gentian violet, silver wound dressings, and offloading
Actions Taken: Treated with CTM under Total Contact Cast (TCC) with methylene blue gentian violet



Day 0 Feb 7, 2025 | Day 6 Feb 13, 2025 | Day 25 Mar 4, 2025

CASE 3: CHRONIC VENOUS INSUFFICIENCY LEG ULCER (2+ YEAR WOUND)

History: 64-year-old male with venous insufficiency. Wound present and treated within SOC for over two years.
Prior Treatments: Compression layer bandaging with methylene blue gentian violet
Actions Taken: Treated with CTM and methylene blue gentian violet (Transfer).



Prior to CTM Dec 29, 2023 | Day 0 Nov 29, 2024 | Day 84 Feb 21, 2025 | Day 122 Mar 31, 2025

CASE 4: FULL-THICKNESS PRESSURE INJURY

History: 84-year-old female. Patient had a fracture. Patient was treated for a full thickness pressure injury on the elbow upon cast removal. Wound present and treated within SOC for several weeks with little improvement observed.
Prior Treatments: Cadexomer iodine
Actions Taken: Treated with CTM and a silicone cover bandage. Dressing changes were conducted by patient.

Day 0 Dec 19, 2024 | Day 22 Jan 10, 2025 | Closed Day 56 Feb 13, 2025

CASE 5: DIABETIC FOOT ULCERS

History: 78-year-old male with diabetes, on dialysis, history of hypertension, atrial fibrillation, and blood thinners. Wound present and treated within SOC for 5 months.
Prior Treatments: Silver wound dressings and offloading
Actions Taken: Treated with CTM under TCC with methylene blue gentian violet (Transfer).

Day 0 Sep 13, 2024 | Day 14 Sep 27, 2024 | Closed Day 45 Oct 28, 2024

Day 0 Sep 13, 2024

Day 14 Sep 27, 2024

PATIENT OUTCOMES

The pressure injury, DFU, and tibial fracture cases they proceeded to closure within a range of 40 to 60 days. A 50% reduction in wound size and avoidance of a skin graft was observed for the patient with chronic venous insufficiency. The 55-year-old patient with a DFU saw a 45% wound area reduction in 3.5 weeks.

IMPLICATIONS FOR PRACTICE

Across all cases, application of CTM accelerated wound healing, improved wound bed conditions, and reduced chronic inflammation. Healing was observed in as few as 40 days for full-thickness wounds previously unresponsive to treatment. The application of CTM – particularly for patients with anticipated prolonged healing trajectories – should be considered to advance healing.

ACRONYMS & DEFINITIONS

CTM – Catalytic Treatment Matrix; trade name NanoSALV Catalytic®
DFU – Diabetic Foot Ulcer
SOC – Standard of Care
TCC – Total Contact Cast

REFERENCES

1. NanoTess Inc. (n.d.). *NanoSALV Catalytic*. NanoTess Inc. https://nanotess.com

Presented at the Wounds Canada Conference 2025 (Oct 2-4, 2025)

Assistance Disclosure
No financial assistance was provided for this case series. Support from NanoTess Inc was provided in the form of product samples used during these clinical cases.

The impact dressings on pressure ulcer prevention – a Cochrane systematic review

Tom O'Connor[1]

Zena Moore[1], Pinar Avsar[1], Fiona Boland[2] , Chaboyer WP[3], Latimer SL[3], Walker RM[3], Declan Patton1

[1]Skin Wounds and Trauma (SWaT) Research Centre, School of Nursing & Midwifery, RCSI University of Medicine and Health Sciences, Dublin, IE;
[2]Data Science Centre, School of Population Health, RCSI University of Medicine and Health Sciences, Dublin, IE.
[3] School of Nursing and Midwifery, Griffith University, Brisbane, AUS

Reference: Patton, D., Moore, Z. E. H., Boland, F., Chaboyer, W. P., Latimer, S. L., Walker, R. M., & Avsar, P. (2024). Dressings and topical agents for preventing pressure ulcers. Cochrane Database of Systematic Reviews(12). doi:10.1002/14651858.CD009362.pub4

RCSI DEVELOPING HEALTHCARE LEADERS WHO MAKE A DIFFERENCE WORLDWIDE

RCSI SKIN WOUNDS, and TRAUMA - SWaT Research Centre

Introduction

- Dressings to protect the skin from damage are increasingly used in clinical settings as another pressure ulcer prevention strategy. They are hypothesised to work by:
  - Reducing Friction:
  - Absorbing and Redistributing Shear Forces:
  - Pressure Reduction:
  - Microclimate Management:

Review Aim

- This Cochrane review aimed to evaluate the effects of dressings on pressure ulcer prevention (PU). This paper will concentrate on the silicone dressing v no dressing data

Methods

- Cochrane Systematic review (3rd Update)
- We searched the 5 databases and trial registers.
- No restrictions on language, publication date, or setting were imposed.
- Primary Outcome: PU Incidence
- Secondary Outcomes (reported here): PU Stage, time to ulcer development, anatomical location of PU
- We included RCTs with people at risk of developing a PU
- Data synthesis using Cochrane methodological procedures

Results

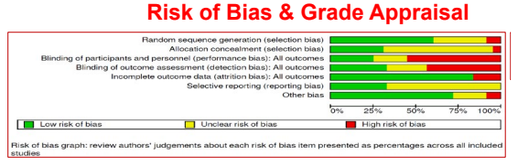
- 31 trials included with 13 comparisons with 9027 participants.
- Silicone foam dressing versus no dressing: PU Incidence (18 trials)
- Silicone vs No Dressing: PU Stage (11 Trails)
- Silicone vs No Dressing: Time to PU Development (4 trials)
- Silicone vs No Dressing: Anatomical Location (5 Trials)

Key Messages

The evidence points to silicone dressings having an effect in the reduction in PU incidence, however, the certainty is very low

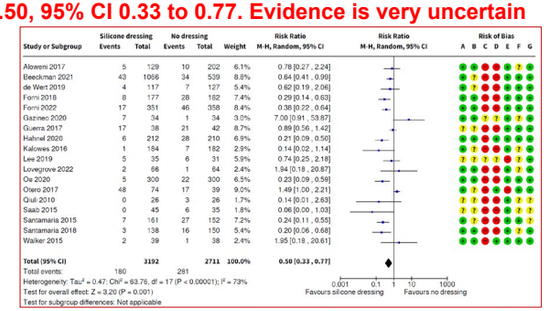
Given the large number of dressings advocated for pressure ulcer prevention, future studies should engage with patients, the public and decision makers to determine priority interventions to test in future research

Risk of Bias & Grade Appraisal



⊕⊖⊖⊖ **Very low**

Incidence: Silicone foam 5.6%; No dressing 10.4%; RR 0.50, 95% CI 0.33 to 0.77. Evidence is very uncertain



PU Stage: May reduce Stage 1 & 2, little or no effect on Stage 3,4, unstageable or deep tissue

	Result	Silicone	None	Risk Ratio
	Silicone foam dressings may reduce pressure ulcer incidence, **stage 1** compared to no dressing	2%	6%	RR 0.32, 95% CI 0.13 to 0.79
	Silicone foam dressings may reduce the incidence of **stage 2** pressure ulcers compared to no dressing	2%	5%	RR 0.47, 95% CI 0.30 to 0.73.
	Silicone foam dressings may have little to no effect on the incidence of **stage 3** pressure ulcers compared to no dressing	0.3%	1%	RR 0.45, 95% CI 0.06 to 3.21
	Silicone foam dressings may have little to no effect on the incidence of **stage 4** pressure ulcers compared to no dressing	0%	1%	RR 0.21, 95% CI 0.02 to 1.77
	Silicone foam dressings may have little to no effect on the incidence of **unstageable** pressure ulcers compared to no dressing	0%	1%	RR 0.20, 95% CI 0.01 to 4.09
	Silicone foam dressings may have little to no effect on the incidence of **deep tissue injury** compared to no dressing	0.7%	3%	RR0.32, 95% CI 0.09 to 1.08

Time to PU Development: 3 of 4 trails found silicone dressing delayed onset.

Location: Silicone dressing may reduce incidence at sacrum (RR 0.39, 95% CI 0.24 to 0.65)
May reduce incidence at heel (RR 0.44, 95% CI 0.21 to 0.95)

"Voices into Action": Co-Creating a Patient Bill of Rights and Responsibilities to Advance Equity in Wound Care in Canada

Idevania G. Costa (RN, NSWOC, PhD), Darren Levine (MEd, EdD), Pilar Camargo-Plazas (RN, PhD), Michelle Spadoni (RN, PhD), Catherine Schoales (RN, PhD), Catherine Philips (SW, PhD)

INTRODUCTION

- Gaps in wound prevention and care highlight the need for a structured, patient-centred framework to guide care and advocacy, such as a patient Bills of Rights and Responsibility in Wound Prevention and Care (PBORR/WPC).[1]
- A PBORR is a patient-driven mechanism that promotes dignity, shared decision-making, and system improvement. It reinforces that patient rights—including access to safe, timely, and effective care; understandable information; and supported decision-making—are foundational to quality and equity.[2]

AIM

To present the co-created Patient Bill of Rights and Responsibilities (PBORR) in wound prevention and care.

METHODOLOGY

- A qualitative, narrative-based methodology grounded in community-based participatory principles[3] was used to analyze 20 digital stories as part of the *Our Voices, Our Stories* initiative.
- By intentionally avoiding predefined notions of what a "bill of rights" should include, the content emerged organically from recurring themes and needs voiced by participants. Representative quotes were included to humanize and contextualize each statement.
- The final PBORR was co-designed with diverse interest-holders, including people with lived experience, family members, healthcare providers, and policy makers. The step-by-step process and its outcomes are outlined in the Results section.

We gratefully acknowledge all patients, care partners, healthcare providers, and policy makers who contributed their time, expertise, and lived experiences to co-create the PBORR/WPC. Your voices made this work possible.

RESULTS

Step 1: Grounding the PBORR in real Stories

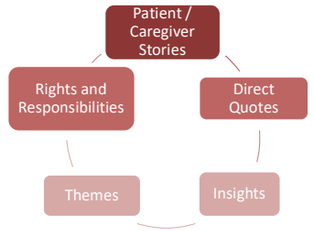


Figure 1 . A model representation of the process of developing a PBORR grounded in real stories.

Table 1. Example of thematic analysis leading to the rights and responsibility's statements grounded in stories.

Themes	Rights' statements (What Patients Deserve)	Responsibilities (What Patients/Families Should Do)	Supporting Quote
Right to clear and accessible communi-cation	Right to clear, plain-language updates on health and wound status, the care plan and treatment options, as well as access to education at every stage of care, from prevention of wounds to treatment and post-healing .	To ask questions when something is unclear, request updates, share needs and provide updated information with care providers to support continuity.	"We had no idea about a horrifying wound until he was transferred…" – Linda

Step 2: Workshop Series

A series of workshops were held with interest-holders to review and refine the first version of the PBOR, grounded in patient stories. Participants brainstormed and provided feedback on terminology and language clarity and refined the statements of rights and responsibility.

Step 3: Level of Agreement

A Likert-scale survey was developed to assess interest-holders' agreement with the 16 rights and corresponding responsibility statements. Agreement levels ranged from **68.4% to 100%**, with an overall average of **88.9%**. Notably, **28 of the 32 statements (87%) exceeded 80% agreement**, demonstrating strong consensus across participants.

Step 4: Validation and Editing

In this step, survey results were shared with interest-holders for final validation. A professional editor then reviewed the language to ensure clarity and plain-language alignment, merging repetitive statements based on interest-holder feedback. Table 2 presents the 12 rights that reflect the latest validation of the PBORR/WPC

Table 2. PATIENT BILL OF RIGHTS AND RESPONSABILITIES IN WOUND PREVENTION AND CARE
1. Right to timely skin-related risk assessment upon accessing health care in any setting
2. Right to timely referral to skin-health and wound-related care
3. Right to high-quality, consistent, coordinated, evidence-based care in every setting
4. Right to clear and accessible communication
5. Right to be included as part of the wound care team
6. Right to personalized, person-centred care
7. Right to respect, compassion, dignity and culturally safe care
8. Right to pain assessment and management
9. Right to support for navigation and care transitions
10. Right to mental, emotional and trauma-informed support
11. Right to supportive resources and rehabilitation across all health-care settings
12. Right to work, financial security and employer support

CONCLUSION

- Although the PBORR/WPC is still undergoing validation — with the next step involving patient and care partner organizations — its potential impact is clear.
- This co-created tool is designed to empower patients and caregivers to navigate care more confidently, support healthcare providers in delivering high-quality wound care, strengthen advocacy efforts, and guide equitable, person-centred practices across health-care settings.
- By aligning care expectations and responsibilities, the PBORR/WPC represents a critical step toward safer, more coordinated, and more compassionate wound care in Canada.

References

1. Swartzell, K. L., Fulton, J. S., & von Gaudecker, J. (2023). Older adult caregivers' perspectives on wound-care resources. *Home Health Care Management & Practice.*
2. World Health Organization. (2024, April 16). *Patient Safety Rights Charter.* World Health Organization.
3. Horowitz, C. R., Robinson, M., & Seifer, S. (2009). Community-based participatory research from the margin to the mainstream: Are researchers prepared? *Circulation, 119*(19), 2633–2642.

Effects of A 12-Week Supervised Exercise Program on Patients With Peripheral Artery Disease:
A Retrospective Cohort Study

Abstract #21

Effects of a 12-week supervised exercise program on patients with peripheral artery disease: a retrospective cohort study

Jérôme Patry, DPM, MD, MSc[1-3]; Emma Fontaine[1,2]; Andrée-Anne Hébert BSc[1,4]; Marie-Kristelle Ross MD[1,2,4]; Magali Brousseau-Foley DPM, MD, MSc[3,5]

[1]Université Laval, [2]Centre de recherche du CISSS de Chaudière-Appalaches, [3]Université du Québec à Trois-Rivières, [4] CISSS de Chaudière-Appalaches, [5] CIUSSS Mauricie-Centre-du-Québec

Background

Peripheral artery disease (PAD)
- >202 million people worldwide
- An atherosclerotic continuum with different levels of arterial insufficiency
  - Mild: asymptomatic
  - Moderate: intermittent claudication
  - Severe: leading to chronic limb threatening ischemia (CLTI)
- Supervised exercise program (SEP) is the 1st line treatment with lifestyle changes

Rationale and Setting

- Is SEP beneficial and safe for patients with arterial/ischemic ulcers and/or CLTI ?
- The benefits or harms of supervised exercise programs for these patients are unknown.

Study Objectives and Methods

Aim of the study:
- Population: patients with PAD, with an arterial ulcer or at-risk;
- Intervention: a 12-week SEP/cardiovascular rehabilitation program (PREV) in Lévis, P.Q.

Outcomes: wound healing, maximal walking distance, cardiovascular outcomes up to 1 year after

Study design: retrospective observational cohort study

Ethics: approved by the Institutional Ethics Committee (#CER-2024-1075)

Eligibility:
- All adult patients (18 years and older) admitted to the PREV program and completed at least 1 week between 2021-2023
- With a diagnosis of PAD

Data extraction:
- Manually extracted from electronic medical records
- Pre/post maximal walking distance at the 6 min. walk test
- Cardiovascular outcomes (revascularization procedures, amputation, death)

Results

Table 1. Patients' characteristics at baseline

		n (%)	Mean	Median	SD
Age (years)			69.5	70.5	8.6
Sex	Male	30 (71.4)			
	Female	12 (28.6)			
Body mass index (BMI) (Kg/m²)			28.2	27.7	5.0
Smoking status	Active smoker	10 (23.8)			
	Former smoker	28 (66.7)			
	Never smoked	4 (9.5)			
Diabetes	Type 1	0 (0)			
	Type 2	20 (47.6)			
HbA1c (%)			6.2	5.8	1.2
Peripheral neuropathy		7 (16.7)			
Hypertension		38 (90.5)			
CKD (mL/min/1.73m²)	eGFR 45-60	10 (23.8)			
	eGFR 30-44	4 (9.5)			
	eGFR < 30	0 (0)			
Cerebrovascular artery disease		10 (23.8)			
CAD		29 (69.0)			

		n (%)	Mean	Median	SD
Ankle Brachial Index	Left foot		0.71	0.66	0.21
	Right foot		0.72	0.66	0.24
Toe pressure (mmHg)	Left foot		68.0	66.5	29.6
	Right foot		65.7	66.0	28.8
Severe ischemia with toe pressure < 30 mmHg	Patients	16 (38.1)			
	Left foot	13 (31.0)			
	Right foot	13 (31.0)			
Prior percutaneous angioplasty	In the year prior	3 (7.1)			
	In any year prior	17 (40.5)			
Prior lower limb surgical revascularization	In the year prior	5 (11.9)			
	In any year prior	8 (19.1)			
Lower limb wound		8 (19.1)			
Intermittent claudication		36 (85.7)			

Table 2. Wounds at baseline: co-interventions and wound healing outcomes

	Wound location	Prior angioplasty to SEP	Interdisciplinary wound care	Oral or IV antibiotics	Offloading shoe or adapted shoes	Skin graft	Number of weeks of SEP completed	Wound healing outcomes
1	Subungual left hallux		X	X	X		12	Healed during PREV
2	Plantar left hallux	X 6 months before	X	X	X		2	Deceased before healing
3	Dorsal 2nd left toe		X		X		12	Healed during PREV
4	Plantar right hallux		X	X	X		12	Healed after PREV
5	Plantar right hallux	X 5 years before	X		X		12	Healed during PREV
6	Plantar 1st right metatarsal head		X		X		12	Healed after PREV*
7	Lateral 5th right toe		X		X		12	Healed during PREV
8	Dorsal left 2nd-3rd-4th metatarsal heads	X 5 weeks before	X	X	X	X	12	Healed during PREV

Primary outcome After 12 weeks of SEP

Secondary outcomes After 1 year of SEP

	n (%)
Wound healing	7/8 (87.5)
Percutaneous angioplasty	4/42 (9.5)
Surgical revascularization	0/42 (0)
New lower limb wound	1/42 (2.4)
Amputation	1/42 (2.4)
Death	1/42 (2.4)

Discussion and Implications

Major findings:
- A significant increase of 30.2% in walking distance
- All wounds healed, except for one patient: died before completing the program
- One had a contralateral wound, then healed with bilateral offloading shoes
  - Caution: make sure to limit weightbearing exercises
- Lower cardiovascular complications at 1 year: than other studies with simillar CLTI patients

Limitations:
- Retrospective design and wounds were treated with different co-interventions

Conclusion:
- A 12-week of SEP appears beneficial to improve walking distance for patients with moderate to severe PAD.
- It appears safe for patients with or at-risk of a lower limb wound, providing tailored exercises for each patient with adequate supervision.
- However, prospective studies are required before making clinical recommendations of such a program for the at-risk foot with PAD.

Contact

Jérôme Patry, DPM, MD, MSc, Clinique des plaies complexes, Hôtel-Dieu de Lévis; 143 rue Wolfe, Lévis, (Québec), Canada, G6V 3Z1; jerome.patry.1@ulaval.ca

References

1. Conte MS, Bradbury AW, Kolh P, et al. Global Vascular Guidelines on the Management of Chronic Limb-Threatening Ischemia [published correction appears in Eur J Vasc Endovasc Surg. 2020 Mar;59(3):492-493] [published correction appears in Eur J Vasc Endovasc Surg. 2020 Jul;60(1):158-159]. Eur J Vasc Endovasc Surg. 2019;58(1S):S1-S109.e33.

2. Nordanstig J, Behrendt CA, Baumgartner I, et al. Editor's Choice -- European Society for Vascular Surgery (ESVS) 2024 Clinical Practice Guidelines on the Management of Asymptomatic Lower Limb Peripheral Arterial Disease and Intermittent Claudication. Eur J Vasc Endovasc Surg. 2024 Jan;67(1):9-96.

3. Patry, J; Fontaine, E; Hébert, AA; et al. The effects of a 12-week supervised rehabilitation exercise program on patients with peripheral artery disease with or at risk of lower limb wound: a retrospective cohort study. Advances in Skin & Wound Care. Adv Skin Wound Care. 2025 Aug 1;38(7):351-355

AUTOFLUORESCENCE TO ASSESS BACTERIAL BURDEN IN WOUNDS: PRELIMINARY RESULTS FROM A PROSPECTIVE STUDY

Jérôme Patry, DPM, MD, MSc[1,2]; Emma Fontaine[1,2]; Neal W. Pollock, PhD[1-3]

[1]Université Laval, [2]Centre de recherche du CISSS de Chaudière-Appalaches, [3]Centre de médecine de plongée du Québec

BACKGROUND

- All wounds are colonized, but not all are infected
- Localized infections can show subtle signs, which may be hard to detect
- Proper wound care and antimicrobial dressings are often sufficient, it is not always necessary to use antibiotics

OBJECTIVES

- To investigate the potential of autofluorescence to provide clinical insight on bacterial load in different wounds.
- Compare clinical judgement and culture assessment

METHODS

- Prospective study at Hôtel-Dieu de Lévis – Complex Wound Clinic
- Moleculight used for fluorescence imaging
- Clinician training: 2 h online, virtual session and hands-on training
- Patients recruited during routine appointment
  - **Inclusion**: ≥18 y; wound; able to consent
  - **Exclusion**: neoplastic wounds, post-radiotherapy, active cancer treatment, povidone-iodine use

PROCEDURES

1) Informed consent
2) Wound cleaning, debridement and measuring
3) Assessment of study variables

Method	Level	Description
Clinical bacterial load	1	None
	2	Localized
	3	Deep tissue
Wound imaged (Moleculight)	1	Negative
	2	Positive
Wound swab	1	No bacteria
	2	Trace
	3	Low
	4	Moderate
	5	High

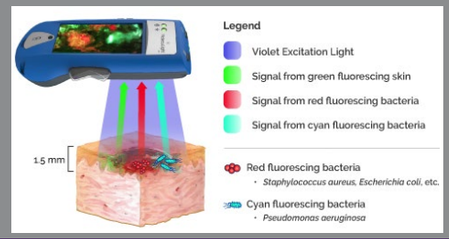


Figure 1. Visualizing bacteria with fluorescence imaging (Source: MolecuLight Inc.)

RESULTS

- n=35 (20 men, 15 women)
- age: 70±12 (mean±SD)

Table 1. Patients' characteristics	n
Clinical judgment	
No infection	22
Localized infection	6
Deep tissue infection	7
Clinical judgment with positive fluorescence	
No infection	7
Localized infection	4
Deep tissue infection	2
Location	
Foot (except toe)	16
Toe	10
Leg	6
Others	3
Type of wound	
Diabetic	11
Veinous	7
Surgical	4
Pressure	4
Arterial	3
Traumatic	2
Others	4
Treatment	
Antimicrobial	18
Antibiotic	15
Antiseptic	3

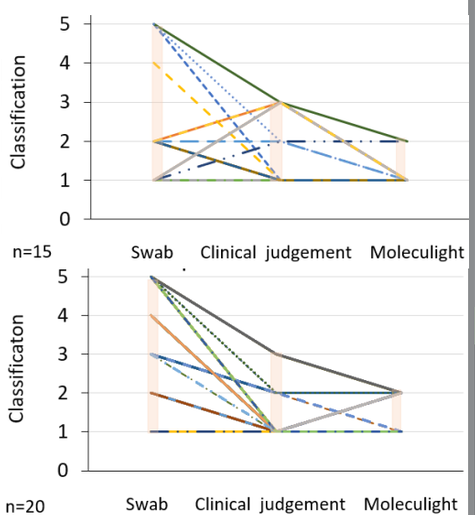


Figure 2. Comparison of culture assays, clinical judgement, and flourescence fingdings for subjects on antibiotics (top) and subjects not on antibiotics (bottom)

DISCUSSION

- Assessing bacterial burden in wounds is a challenge for health care providers
- The wound infection continuum:
  - Colonisation
  - Local infection
  - Deep tissue infection
- Patients on antibiotics did tend to have lower bacterial loads and more negative fluorescence findings
- While fluorescence can indicate increased bacterial load, its agreement with bacterial load assays and clinical judgement was variable

Limitations

- No pre/post-debridement, no direct comparison of fluorescence before/after cleaning, small sample size, few clinicians involved

CONCLUSION

- Increased bacterial load is not always clear
- Our preliminary assessment did not confirm that fluorescence was a reliable tool relative to clinical judgement or wound culture assays, but additional data are required for a full assessment

The Number and Costs of Wounds in Canada and its Provinces and Territories in 2024

Medicalhelplines.com Inc
your one stop shop for all your medical information needs!

Douglas Queen, BSc, PhD, MBA and Mariam Botros, D.Ch, CDE, IIWCC-CAN
CEO Medicalhelplines.com Inc (DQ) and CEO Wounds Canada (MB)

WoundsCANADA.ca

Project Aim To estimate the number and costs of wound across Canada and its provinces.

Many researchers have completed studies to evaluate the costs of wounds. These are typically done through health economic costing studies involving health economists. Such studies are complicated, and costly. One consistent theme from several international research studies, however, is that they relate the costs of wounds, extrapolated or otherwise, to the total geographic health-care costs of that region. Governments, including both Canada's federal and provincial/territorial legislative bodies, capture annual population and health-care costs. These statistics are a valuable starting point for the estimation of the number and cost of wounds. Researchers have studied and estimated the costs of wounds in many locations around the world. Such studies have demonstrated relative commonalities regarding wound care costs, ranging from 2-5% of total regional health-care costs upwards. Similar studies have measured the number of wounds, ranging from 0.9-7% of country populations.

Formula for Number of Wounds

EWN = TP x AWPP

EWN - Estimated Wound Care Number
TP - Total Population
AWPP - Average Wound Prevalence Percentage
For the purposes of our calculations, remembering different geographies can be at differing evolutionary stages regarding wound care, we chose the median of 3% as the AWPP.

Methods

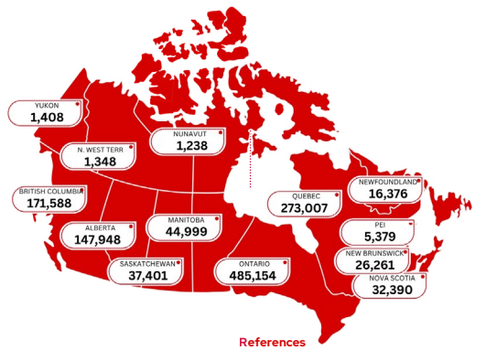
Using the methodology of Queen & Harding[3] and Canadian statistics, an estimate of the number and costs of wounds, both in Canada and within its provinces/territories were calculated.

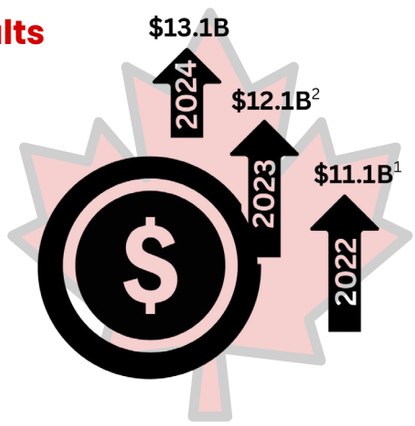
Formula for Costs of Wounds

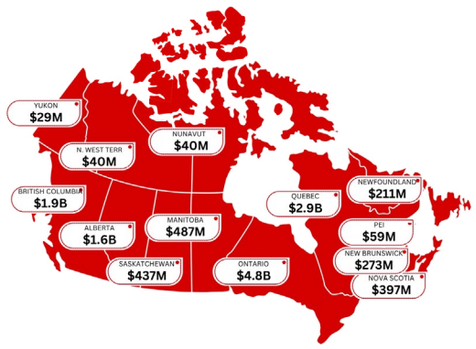
EWCE = [PCHCS x TP] x AWCCP

EWCE - Estimated Wound Care Expenditure
PCHCS - Per Capita Health Care Spend
TP - Total Population
AWCCP – Average Wound Care Cost Percentage
For the purposes of our calculations, remembering different geographies can be at differing evolutionary stages regarding wound care, we chose the median of 3.5% as the AWCCP.

Results







References

1. Queen D, Botros M. The true cost of wounds for Canadians. Wound Care Canada. 2024;22(1): 16-20. DOI: 10.56885/ NXMW2913
2. Queen D, Botros M, Harding K. International opinion-the true cost of wounds for Canadians. Int Wound J. 2024 Jan;21(1):e14522. DOI: 10.1111/iwj.14522
3. Queen D, Harding K. What's the true costs of wounds faced by different healthcare systems around the world. IInt Wound J. 2023 Dec;20(10):3935-3938. DOI: 10.1111/iwj.1449

NORTH YORK GENERAL
Here for life.

The Pressure is On: Game-Based Strategies for Wound Care Excellence

Authors: Sonia Mendez RN, MSN, BScN, Komal Patel RN, PMEd, BScN, Sarah Branton RN, MScN, BScN, Elena Chamaleeva, RN, BScN, Giselle Tolentino, RPN

Introduction

Excellence in wound care is essential for safe, effective, and timely healing. Negative Pressure Wound Therapy (NPWT) and pressure injury management are two of the most complex areas in nursing care. These areas require knowledge, critical thinking, and confidence in clinical decision-making. Nurses at all levels-from novice to expert-face challenges in applying evidence-based principles consistently. This can impact outcomes and patient safety.

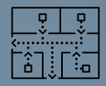
This initiative employs simulation-based learning and gamification to enhance staff development. These methods increase the engagement, practicality, and retention of wound care education. Simulation provides a controlled, realistic environment for practicing skills such as NPWT application, pressure injury assessment, and dressing selection. Nurses acquire competencies, team competitions and interactive case studies. These activities promote active participation, reinforce knowledge retention, and support collaborative problem-solving while having fun.

Objective

The implementation of "The Pressure is On: Game-Based Strategies for Wound Care Excellence" education session involved nursing teams from the inpatient General Surgery and Orthopaedic Surgery units. The approach emphasized the importance of utilization of organizational protocols, patient safety and evidence-based practices with the emphasis on pressure injury management and NPWT.

Educational strategies included:

- Interactive Task Stations
- Hands-on Simulation
- Case scenario-based gamification



Methodology

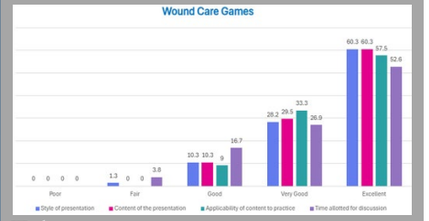
Plan
Nurses divided into small groups of 5-8

Goal
To complete all wound related tasks and activities

Gamification
Snakes and Ladder - Pressure Injury Management
Escape Room - NPWT

Debrief
Reflections on simulation and gamification were shared, including a review of both challenges and achievements.

Gamification Result

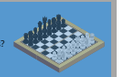


Take-away

- Curriculum development strategies that incorporate interactive methodologies within controlled learning environments foster psychological safety, enabling learners to engage meaningfully in the educational process.
- Educators employ innovative and dynamic pedagogical approaches that cater to diverse learning styles, thereby promoting inclusivity and enhancing learner engagement.
- Simulation and game-based learning serve as integrative modalities, combining theoretical knowledge with clinical skill application to enhance patient safety and advance nursing competency. ,
- The structured use of case scenarios underscores the transferability of learning across varying stages of the educational activity, reinforcing knowledge acquisition and support long-term retention.

References

1. Beevi, S. and Veragi, P. (2023) Game based learning in nursing - an innovative strategy. *Medcon Medical Sciences* 4(2), 4-7.
2. North York General Hospital (2022). *Negative Pressure Wound Therapy*. https://online.fliphtml5.com/ydybz/iwcp/#p=1
3. North York General Hospital (2023). *Wound Prevention, Assessment & Management*. https://nyghportal.policymedical.net/policymed/newSearch/searchDocuments?sfContent=Wound&queryStr=%2Fpolicymed%2FnewSearch%2FdoSearchAnn%3FsfContent%3DWound#
4. North York General Hospital (2023). *Simulation Policy*. https://nyghportal.policymedical.net/policymed/newSearch/searchDocuments?sfContent=Simulation&queryStr=%2Fpolicymed%2FnewSearch%2FdoSearchAnn%3FsfContent%3DSimulation#



Evaluating the Health Economic Value of Implementing an All-In-One, Extended-Wear Negative Pressure Wound Therapy Dressing

Christine Bongards, PhD; Yesenia Banks, CPC; Leah Griffin, MS

Solventum, Maplewood, MN, USA

Introduction

- An all-in-one negative pressure wound therapy (NPWT) dressing* (**Figure 1**) integrates foam and drape for easy application.
- Its ease of use and ability for extended wear (up to 7 days) enables changes to wound care protocols.

Figure 1. All-in-one integrated foam dressing with drape.

Purpose

- This research study aimed to determine the economic value, based on time and cost savings, associated with introducing the all-in-one dressing into the acute care or home health care settings in the United States.

Methods

- Budget Impact Assessments were developed for 1) acute care and 2) home health settings, evaluating the impact of implementing the all-in-one dressing (changed weekly) to replace existing dressings.
- In the acute care setting:
  - Usage, cost, and application time assumptions included 100 advanced wound care dressings (AWD; 4x weekly, 27 secs) and 100 traditional NPWT dressings† (3x weekly, 4 min 40 secs).[1]
  - This model included a $5 cost for consumables per dressing change and a nursing hourly rate of $41.38.[2]
  - Per application, costs were $20.00 for AWD, $49.87 for traditional NPWT dressings, and $109.95 for all-in-one NPWT dressings.
- In the home health care setting:
  - The assumption was to replace standard of care for 10 patients using AWD (4x weekly, 2 visits, $10.00) and 10 patients using traditional NPWT dressings (3x weekly, 3 visits) per month.

Methods (Cont'd)

  - Monthly mean reimbursements were $2,989 per patient,[3] and the mean cost per wound care visit was $168.40.[4]
- The implementation of the all-in-one NPWT dressing is limited to wounds without tunnelling and undermining >2 cm, and wound depth should be no greater than 6 cm.

Results

- In the acute care setting:
  - Replacement of 100 traditional NPWT dressing changes and 100 AWD dressing changes would require only 58.3 all-in-one NPWT dressing changes, which could save 42 hours (72%) of nurse working time (**Figure 2**).
  - There is a potential reduction by $3,201 in total cost, including $1,452 material cost savings (**Figure 3**).
- The cost savings of the acute care model scenario is highly sensitive to the frequency of dressing changes and unit costs. While nursing cost is the main contributor to overall cost savings, the model is less sensitive related to the hourly nursing cost.
- The break-even point for a cost-neutral exchange of traditional NPWT dressings in acute care settings is reached when the mean wear time of all-in-one NPWT is 5 days (1.4 dressing changes per week).

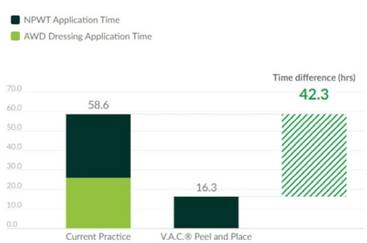


Figure 2. Time savings in acute care settings.

Results (Cont'd)

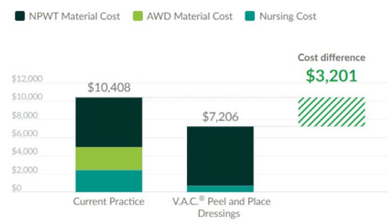


Figure 3. Cost savings in acute care settings.

- In home health care setting:
  - Switching 10 patients from traditional NPWT dressings and 10 patients from AWD to all-in-one NPWT could result in 129 (60%) fewer visits (**Figure 4**) and $23,400 (61.8%) savings (**Figure 5**).
  - With fewer dressing changes, the cost of care can be reduced by >60% with the implementation of all-in-one NPWT.
  - In a scenario focused on replacement of traditional NPWT only, a 67% reduction of nursing visits can be realized.

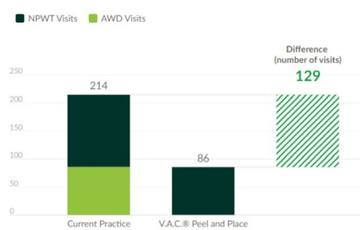


Figure 4. Fewer visits in home health care settings.

Results (Cont'd)

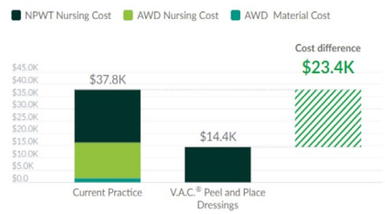


Figure 5. Cost savings in home health care settings.

Conclusions

- The cost-benefit in acute care settings is mainly dependent on nursing time savings, while in home health care, it is the reduced frequency of visits.

References

1. SAT-MTF-05-995965 Marketing Study for 3M V.A.C. Peel and Place dressing. 2023
2. The 2022-2023 mean hourly rate of US registered nurse USD $41,38 US Department of Labor: https://www.bls.gov/ooh/healthcare/registered-nurses.htm
3. 2024 Medicare average monthly rate for wound care patients, estimated with 2024 average wound related case mix weight x 2024 base rate of $2,038.13 according to: https://www.federalregister.gov/documents/2023/11/13/2023-24455/medicare-program-calendar-year-cy-2024-home-health-hh-prospective-payment-system-rate-update-hh
4. CMS Issues Final 2024 Home Health Payment Rule for Medicare Providers - LeadingAge New York (leadingageny.org).

Presented at the 2025 Wounds Canada National Hybrid Conference, October 2-4, 2025, Toronto, ON

***Solventum™ V.A.C.© Peel and Place Dressing; †Solventum™ V.A.C.™ Granufoam™ Dressing (Solventum Corporation, Maplewood, MN, USA)**

Note: Specific information, contraindications, warnings, precautions and safety information exist for these products and therapies. Please consult a clinician and product instructions prior to application. Rx only.

McMaster University | Health Sciences

Nursing Roles in Diabetic Foot Care: An Interpretive Description Study

Maxine Juneau RN BScN[1], Melissa Northwood RN PhD[1], Diana Sherifali RN CDE PhD[1] & Sandra Carroll RN PhD[1]

McMaster University
School of Nursing

Background

- Approximately 15-25% of people living with diabetes in Canada will experience foot ulceration during their lifetime (Diabetes Canada, 2023)
- In Canada there continues to be a gap between clinical practice and evidence-based guideline recommendations in diabetic foot care (Clement et al., Kim et al., 2025; 2018; Patel et al., 2022)
- Whether these gaps can be attributed to inadequate nursing care, barriers to nursing practice, or poor utilization of the nursing role is mostly unknown in the Canadian context

Purpose

- To explore the roles that nurses experience while providing care to prevent diabetic foot ulcers (DFU) or support adults with DFU in Ontario, Canada

Methods

- This qualitative study was done using Thorne's (2016) interpretive description methodology.
- Individual semi-structured interviews were conducted with 15 nurses experienced in diabetes education, diabetic wound care, foot care, or diabetes-related amputation and practicing in a patient-facing role
- Data analysis followed a process of 1) sorting and organizing the data, 2) making sense of pattern, 3) transforming patterns into findings, and 4) conceptualizing findings

Participants

- Participants included: 1 registered practical nurse, 2 nurse practitioners, 5 Clinical Nurse Specialists, and 7 registered nurses
- Participant education: CDE (2), wound care certification (11), and foot care course (3).
- Practice settings: home and community care, outpatient clinics, acute care, primary care, and private practice
- Participants had an average of 22.5 years of nursing experience and 14.4 years of diabetic foot care experience.

Preliminary Results

Requiring Specialized Skill and Education

- Specialized skills include diabetes patient education, offloading device management, nail care and debridement, and wound care
- Different nursing roles had responsibility for some or all of these skills with variability between settings and parts of the province
- Nurses shared that diabetes patient education, offloading management, nail care and debridement were underemphasized aspects of the nursing role as reflected in funding and reason for referrals creating variability in delivery of this care between settings
- Some wound care nurses even felt a sense of futility when the underlying causes of the DFU were not being addressed, including the social determinants of health

People get all hung up by the latest and greatest in this dressing, or that technology, or whatever. But at the end of the day, it's you know, managing people's blood sugars, and offloading, and proper foot care. And those things are like core things that I don't think have changed since the dawn of figuring out hey these people's feet change (Clinic Nurse)

Navigating a Scattered and Siloed System

- Many nurses described patients having to go between multiple care centers and networks to receive holistic care, which complicated care planning.

A lot of the patients that I see it's a lot of work to be going to see all these different specialists and they don't always keep it together. Some of them have the barriers, as I mentioned, they may have cognitive issues, right? (Clinic Nurse)

- Nurses described how the lack of a dedicated care pathway for patients living with DFU resulted in them having to leverage professional connections or sending patients to emergency rooms to escalate care
- Participants also described having to find workarounds to get patients access to foot care including volunteering their time, leveraging grant or donation money, or extending the number wound care visits to provide nail and callus care

Caring as a Two-Way Street

- Care was described as an equal exchange of investment between the nurse and the patient
- Nurses described that the lifestyle changes needed to maintain good foot health required significant participation and investment from patients who were already facing barriers related to the affordability and accessibility of care.
- This contributed to frustration when nurses felt that patients did not share their sense of urgency and buy-in to the time and monetary investment required to heal and prevent DFUs

Because at the end of the day, sometimes it's not just about managing the wound itself. Because sometimes they have something more important than managing the wound or the foot care at that time (In-Patient Acute Care Nurse)

Evaluating Through Stories

- Nurses shared that the primary means of evaluating the quality of their care was on a patient-to-patient basis
- Very few nurses described being aware of any organizational auditing or monitoring of patient related outcomes such as rates of wound closure, screening, amputation, or infection

Conclusions

- Existing educational resources should be leveraged and training provided on diabetes education, offloading, and debridement for nurses in generalist positions in home and primary care
- Trauma-informed approach to diabetic foot care is an important nursing consideration across all practice settings
- Standardization of intersectoral DFU care, including nursing roles providing required care, would support more holistic care
- Timely assessment and treatment of DFUs can be facilitated through standardization of access to nurses specialized in DFU care
- Intersectoral monitoring and measurement of patient outcomes in diabetic foot care is needed provincially

References

Clement, M., Filteau, P., Harvey, B., Jin, S., Laubscher, T., Mukerji, G., & Sherifali, D. (2018). Organization of Diabetes Care. *Canadian Journal of Diabetes*, *42*, S27–S35. https://doi.org/10.1016/j.jcjd.2017.10.005

Diabetes Canada. (2023). *Diabetes in Canada: 2023 Backgrounder*.

Kim, A. Y., Hanley, J., Fuhrer, R., & de Mestral, C. (2025). Temporal Trends in the Rates of Foot Complications and Lower Extremity Amputation Related to Type 1 and Type 2 Diabetes in Adults in Selected Canadian Provinces. *Canadian Journal of Diabetes*. https://doi.org/10.1016/j.jcjd.2025.03.003

Patel, J., Zamzam, A., Syed, M., Blanchette, V., Cross, K., Albalawi, Z., Al-Omran, M., & de Mestral, C. (2022). A Scoping Review of Foot Screening in Adults With Diabetes Mellitus Across Canada. *Canadian Journal of Diabetes*, *46*(5), 435-440.e2. https://doi.org/10.1016/j.jcjd.2022.01.004

Affiliations

1 School of Nursing, McMaster University, Hamilton, Canada

Brighter World

Maxine Juneau
RN BScN

McMaster University, School of Nursing
juneaum@mcmaster.ca

Topical hydrogen sulfide as a novel pharmacotherapy for frostbite injury

George J. Dugbartey[1,2], Lucas N. Penney[1], Lauren Mills[1], Sally Major[1], Matthew Whiteman[3], Alp Sener[1,2*]

[1]Matthew Mailing Center for Translational Transplant Studies, London Health Sciences Center, Western University, London, Ontario, Canada

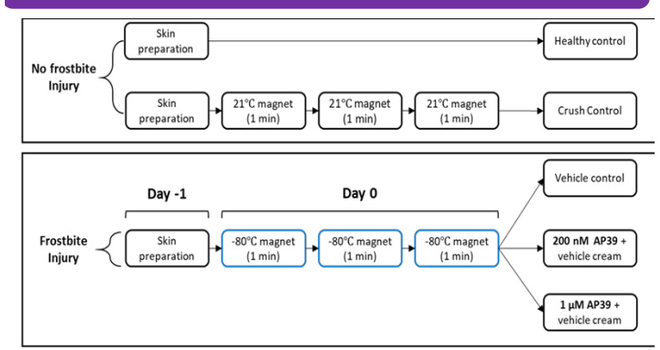
[2]Department of Surgery, Division of Urology, London Health Sciences Center, Western University, London, Ontario, Canada

[3]St. Luke's Campus, University of Exeter Medical School, Exeter EX1 2LU, UK.

Background & Aim

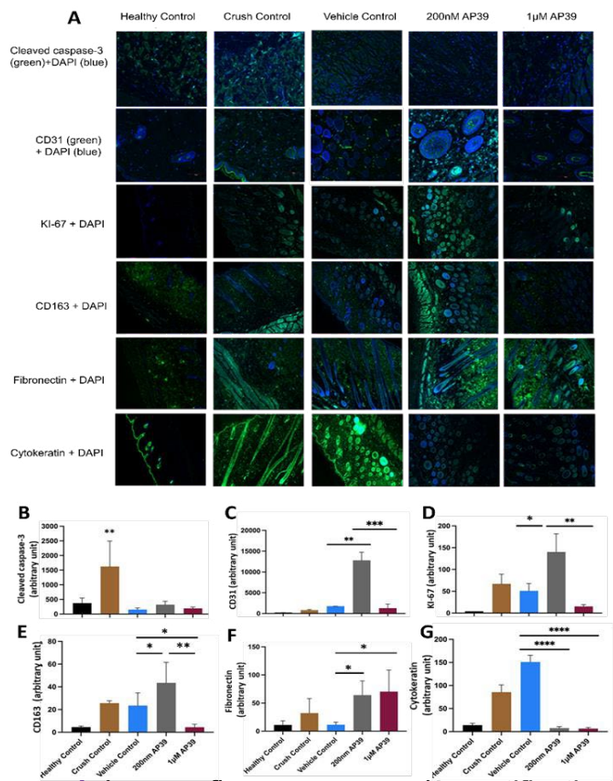
Frostbite is a freezing injury associated with significant morbidity. However, treatment options have been limited to supportive care, leading to suboptimal outcomes for affected patients. The aim of this study is to investigate whether topical application of 200nM and 1µM of AP39, a non-clinically viable hydrogen sulfide donor, improves frostbite wound healing in a mouse model.

Materials & Methods



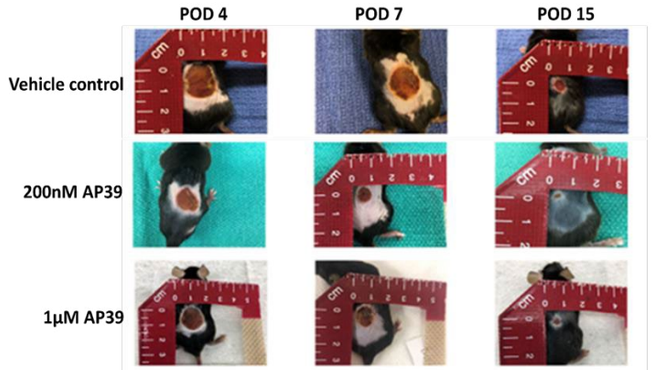
Legend: Flowchart of experimental design

Result



Legend: Immunofluorescence and quantification of wound-healing markers

Result



Legend: Progression of frostbite wound from day 4 to day 15 after induction of frostbite injury

Discussion & Conclusion

- Both doses of AP39 enhanced frostbite wound healing
- 200nM AP39 produced a better wound-healing effect than 1µM
- Further studies with clinically approved hydrogen sulfide donor will be required

Email: Alp.Sener@lhsc.on.ca

Therapeutic effect of sodium thiosulfate in frostbite injury

George J. Dugbartey[1,2], Liam McFarlane[1], Tamara S. Ortas[1], Sally Major[1], Aaron Haig[3], Alp Sener[1,2*]

[1]Matthew Mailing Center for Translational Transplant Studies, London Health Sciences Center, Western University, London, Ontario, Canada

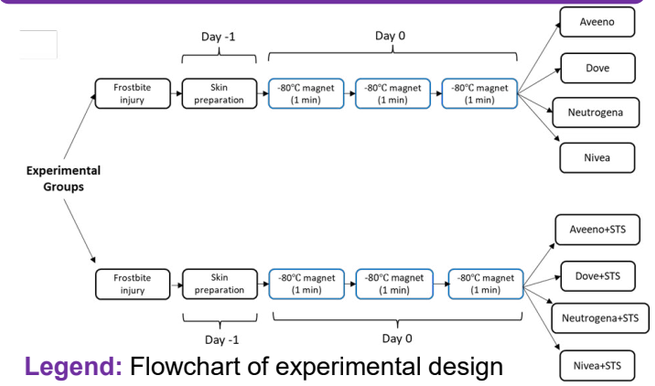
[2]Department of Surgery, Division of Urology, London Health Sciences Center, Western University, London, Ontario, Canada

[3]Department of Pathology, Schulich School of Medicine & Dentistry, University of Western, London, Ontario, Canada

Background & Aim

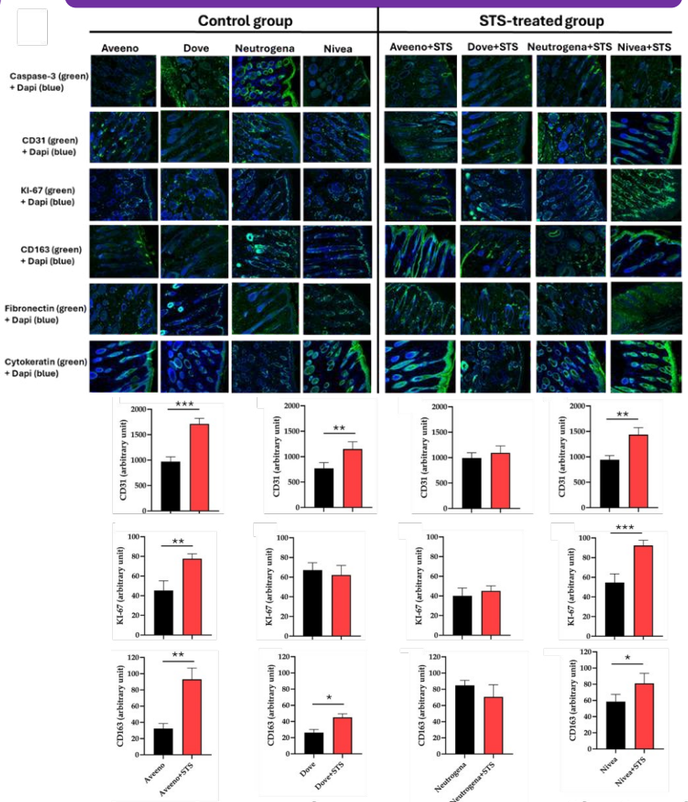
Frostbite injury is a medical condition caused by freezing of the skin and underlying tissues due to extreme cold exposure. Unfortunately, there is no approved pharmacotherapy for frostbite injury besides supportive care. In this study, we present sodium thiosulfate (STS), a clinically viable hydrogen sulfide donor drug, as a novel pharmacotherapy in a preclinical model of frostbite injury.

Materials & Methods



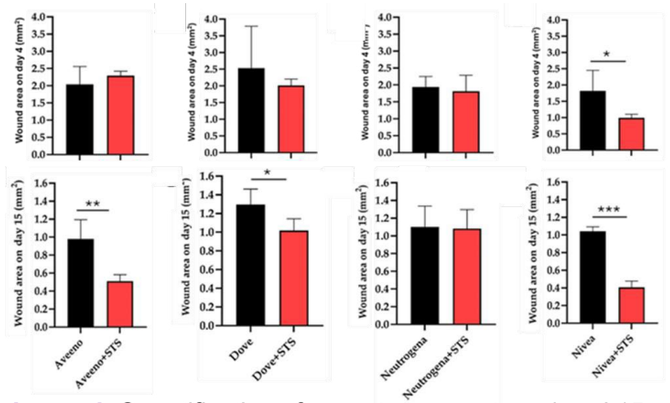
Legend: Flowchart of experimental design

Result



Legend: Immunofluorescence and quantification of markers of wound healing showing

Result



Legend: Quantification of wound area on days 4 and 15 following induction of frostbite injury

Discussion & Conclusion

- STS accelerated frostbite wound healing
- STS consistently upregulated wound-healing markers
- STS could be a novel pharmacotherapy for clinical frostbite wounds

Email: Alp.Sener@lhsc.on.ca

The Impact of Dermatillomania on Wound Healing: A Systematic Review on Wound Care Strategies

Misbah Gaurd[1], Daanyal Noor Farrukh[2], Cynthia Angelica Lawrence[3], Fiza Farrukh, MD[4]

[1]Department of Psychology, Neuroscience, and Behaviour, McMaster University; [2]Department of Kinesiology, McMaster University; [3]Department of Biology, McMaster University; [4]Department of Internal Medicine, MountainView Hospital

Background

- Dermatillomania: compulsive skin-picking → chronic wound + poor healing.
- Management is challenging due to interplay of behavioral, psychiatric, and physical components.
- Increased risk of severe infections, hospitalizations, and long-term tissue damage
- Limited research; most data are case reports.

The cycle of skin picking and impaired wound healing

Objectives

- Evaluate the impact of dermatillomania on wound healing outcomes.
- Identify wound care strategies reported in literature and identify gaps.
- Explore clinical challenges in management and the interplay of psychiatric comorbidities and wound healing challenges.
- Propose recommendations for future clinical management and research design

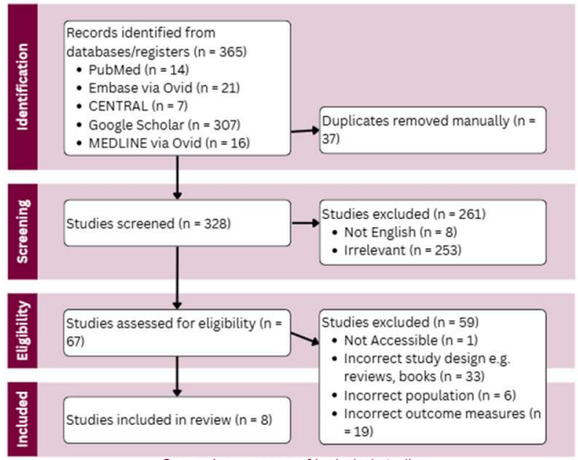
Methodology

- Databases searched: PubMed, Embase (Ovid), MEDLINE, CENTRAL, Google Scholar
- Search Strategy: keywords and subject headings related to "dermatillomania" AND "wound healing" AND "treatment"

Inclusion Criteria	Exclusion Criteria
➢ Case reports and higher-level scientific evidence. ➢ Studies reporting wound outcomes and management strategies.	➢ Reviews, opinion pieces, non-English articles, psychiatric-only focus without wound outcomes.

Inclusion and exclusion criteria for review

Results



Screening process of included studies

- **Theme 1: Severe Medical Complications**
  - Cervical osteomyelitis, cranial excoriation, scalp excision.
  - Frequent secondary infections delaying healing.
  - Extreme physiological burden of dermatillomania.
- **Theme 2: Psychiatric Comorbidities and Challenges**
  - High rates of comorbid depression, anxiety, OCD.
  - Resistance to wound treatment due to ongoing picking.
  - Psychological instability directly interfered with healing.
- **Theme 3: Need for Long-term, Multidisciplinary Care.**
  - Successful healing generally required a combined effort from dermatologists, psychiatrist, and relevant interventions.
  - Individualized strategy.
  - Case reports emphasized the importance of long-term follow-up with psychiatrist and dermatologist to improve outcomes.

Discussion

- Wounds cannot be managed alone with the presence of psychiatric drivers and conditions.
- There was the trend of recurrent and poorly healed wounds that was the result of acute and non-integrative care.
- Only anecdotal evidence available, no RCTs or CTs.
- Psychological therapies, such as CBT and habit-reversal therapy, may reduce recurrence and improve healing outcomes.
- Holistic patient care must target both physical wounds and psychological compulsions simultaneously.

Conclusion, Future Direction

- Dermatillomania can lead to severe and recurrent wounds.
- Current evidence is limited, and low-level.
- Poor outcomes in wound healing consistently linked to failure in addressing psychiatric comorbidities.
- Clinical implications: adopt multidisciplinary, long-term, individualized treatment plans.
- **Research recommendations:**
  - Conduct well-designed case-control studies
  - Assess efficacy of psychological interventions.
  - Explore role of behavioral modifications and wound care innovations

References

1. American Psychiatric Association. (2013). Diagnostic and statistical manual of mental disorders (5th ed.). https://doi.org/10.1176/appi.books.9780890425596
2. Cano, A., & Fernandez, T. (2016). Dermatillomania: A psychodermatological perspective. Dermatology Online Journal, 22(10). https://escholarship.org/uc/item/7fn9r8q4
3. Cohen, L. J., Stein, D. J., Simeon, D., Spadaccini, E., Rosen, J., Aronowitz, B., ... & Hollander, E. (2020). Clinical characteristics of individuals with compulsive skin picking. Comprehensive Psychiatry, 65, 91–97. https://doi.org/10.1016/j.comppsych.2020.01.007
4. Grant, J. E., Odlaug, B. L., & Kim, S. W. (2012). Clinical characteristics and psychiatric comorbidity in individuals with skin picking disorder. Journal of Clinical Psychiatry, 73(6), 820–826. https://doi.org/10.4088/JCP.11m07438
5. Tucker, B. T., Woods, D. W., Flessner, C. A., Franklin, M. E., & Wetterneck, C. T. (2011). The skin picking impact project: Phenomenology, interference, and treatment utilization. Behavior Modification, 35(4), 330–351. https://doi.org/10.1177/0145445511408094
6. Halalmeh, D. R., Salama, H. Z., Molnar, P., & Moisi, M. D. (2023). Advanced Neck Dermatillomania Leading to Cervical Osteomyelitis and Epidural Abscess. Cureus, 15(11), e48163. https://doi.org/10.7759/cureus.48163
7. Riordan, C. P., Owusu-Adjei, B., Daci, R., Phelan, A., Mietus, C. J., Kosarchuk, J., Lambert, W., Qureshi, H. M., Lim, J. C., Mihalek, O., Li, D., Sorour, O., Homsy, C., Kryzanski, J., Aulet, R., & Johnson, M. D. (2024). Self-Trephination in Cranial Excoriation Disorder. Neurosurgery, 95(6), e161–e166. https://doi.org/10.1227/neu.0000000000003004
8. Yang, H., & Kim, J. (2025). Recurrent Midface Deep Ulcer Caused by Excoriation Disorder. The Journal of craniofacial surgery, 10.1097/SCS.0000000000011438. Advance online publication. https://doi.org/10.1097/SCS.0000000000011438
9. Kim, D. I., Garrison, R. C., & Thompson, G. (2013). A near fatal case of pathological skin picking. The American journal of case reports, 14, 284–287. https://doi.org/10.12659/AJCR.889357
10. Meunier, S., Yang, M., & Ogrodnik, J. (2021). Digging into dermatillomania: scalp reconstruction in a complex patient. Eplasty, 21, ic3.
11. Alexandrov, P., Tan, W. P., & Elterman, L. (2017). Genital dermatillomania. Current Urology, 11(1), 54-56.
12. Bahraini, A., Samant, S., Pogson, K. B., Khan, K., & Ogunleye, A. A. (2023). Reconstruction of scalp wounds in patients with excoriation disorder. Journal of Craniofacial Surgery, 34(8), e814-e816.
13. Martinson, A. A., Nangle, D. W., Boulard, N., & Sigmon, S. T. (2011). Old habits die hard: Treating a woman with a 20-year severe case of skin picking disorder. Clinical Case Studies, 10(6), 411-426.

Optimizing Wound Care Procurement Across Long-Term Care Factilities Through Provincial Strategies

Bernadette Mitchell-Mcdonald RN, BCOMM, IIWCC, MSC (Skin Integrity & Wound Mgt)
Senior Manager Provincial Clinical Program; Health Association of Nova Scotia (HANS)

INTRODUCTION

🧓 **Aging population** → Increasing wound care needs due to comorbidities and skin integrity issues (Guest et al., 2015; 2020)

📊 **Provincial context** → Over 1 million residents in NS, including 8,000 in LTC (Government, 2023)

💰 **Economic burden** → 2022 N.S. wound care spending estimated at $323.5M CAD (Queen et al., 2024)

⚠️ **Practice challenges:**

🗑️ Product wastage → Wound products are often ordered for individual residents rather than the floor. Combined with order changes, this results in accumulation of unused or unopened dressings, contributing to waste and inefficiency

💸 Costly or inaccessible hospital-recommended products

💊 Limited pharmacist knowledge and product availability (Swanson et al., 2022)

🔄 Fragmented care across acute, primary, and home care sectors hinders standardized protocols (Laforet et al., 2012)

OBJECTIVE

⏱️ **Streamline procurement** → Reduce delays from prescriber orders and pharmacy fulfillment

💰 **Minimize costs & wastage** → Address discontinued or unused wound care products

📝 **Reduce administrative burden** → Simplify reimbursement processes for LTC and government

🛒 **Implement GPO e-commerce platform** → Improve efficiency, accessibility, and cost-effectiveness (Hossain & Thakur, 2024)

📊 **Inform policy & funding** → Highlight economic impact and support sustainable sourcing decisions (Queen et al., 2024)

HEALTH ASSOCIATION NOVA SCOTIA

METHODOLOGY

Aim & Setting 🎯

- **Aim**: Assess cost savings (30–40%) and operational impact of transitioning LTC procurement from pharmacy to a GPO.
- **Setting:** Provincial long-term care (LTC) facilities.
- **Stakeholders**: HANS GPO project team, LTC advisory group, suppliers/distributors, government representatives.

Phase 1 – GPO Engagement (Months 1–2) 🤝

- **Objective**: Engage Canadian GPO and suppliers/distributors.
- **Outcome**: Draft plan for supplier/distributor contracts developed.

Phase 2 – Supplies & Platform planning (Months 2–3) 🛒

- **Objective:** Identify compatible e-commerce platforms and analyze LTC requirements.
- **Outcome:** Platform selected, and contracts finalized.

Phase 3 – Pilot Testing & Advisory Review (Month 4) 🏫

- **Objective**: Test e-commerce platform in selected LTC homes.
- **Outcome**: Feedback collected; operational issues addressed.

Phase 4 – Dissemination & Training (Month 5) 📚

- **Objective:** Communicate findings and train LTC staff across the province on the new ordering process.
- **Outcome**: Staff trained; platform fully implemented.

Strategic Tool

- **SWOT** Analysis: Evaluate strengths, weaknesses, opportunities, and threats to guide strategy.
- **Surveys**: Collect feedback and data from stakeholders.
- **Regular Meetings**: Ongoing engagement with government and LTC stakeholders.
- **Cost Tracking:** Monitor procurement savings and process efficiency.

KEY FINDINGS

Streamlined Wound Care Management

🛒 **Efficient Ordering:** A newly formed team develops a GPO ordering program on Shopify to simplify supply orders, helping LTC facilities manage wound care inventory onsite.

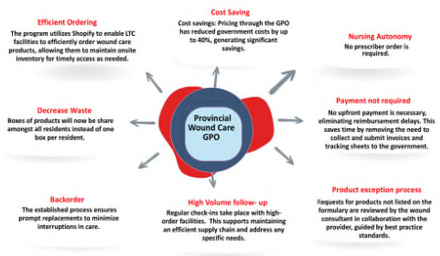
⏱️**Timely Access & Reduced Waste:** Supplies are stocked on the units in LTC, not per resident, ensuring products are available when needed and minimizing waste.

✅ **Nurse Empowerment:** Staff can autonomously manage and replenish supplies.

💰 **No Facility Cost**: The program handles direct reimbursement with the government, so LTC facilities don't pay upfront for wound products.

⚡ **Proactive Support**: Team quickly addresses backorders by finding alternatives and the wound team follows up when order volumes are higher than usual to review inventory management.

ANALYSIS



CONCLUSION

GPO-managed ordering streamlines LTC procurement, ensuring timely wound care products, reducing waste, and eliminating facility costs. Unit-level stocking empowers nurses, making this model a scalable, sustainable solution.

Acknowledgment to Sarah Stickland, Senior Operations Manager (HANS), and the GPO team.

Ontario Health atHome

Ontario Health atHome
Breaking Barriers: Impact of Virtual Wound Care Nurse Practitioner Consultations in Home Care
Jenny Su, NP-PHC, MClSC-WH, PhD (student)

South West Regional Wound Care Program

Introduction

Nurse practitioners (NP) in Ontario are equipped with an expanded scope of practice including conducting comprehensive assessments to diagnose medical conditions, ordering and interpreting diagnostic tests and prescribing both pharmacological and non-pharmacological interventions (College of Nurses of Ontario [CNO], 2017). Despite this, Ontario's home care system remains fragmented, with inconsistent communication between sectors, and a shortage of NPs overseeing medically complex patients with wounds. Ultimately, patients experience chronic and non-healing ulcers affecting quality of life.

Purpose

This case study illustrates the effectiveness of virtual wound care nurse practitioner (WC-NP) services in mitigating practice gaps inherent in an asynchronous home care system, through a case study of a patient with non-healing venous lower leg ulcers of five years.

Procedure / Methods

Case Background

A 73-year-old female patient presented with cellulitis of her left lower extremity on a background of stage 2 lymphedema of the lower extremity, diagnosed five years prior. The cellulitis was treated and resolved; however, subsequent blistering resulted in the development of two large venous leg ulcers medially and laterally on her left lower leg.

Over the five-year period, the patient trialed various wound care dressings and advanced therapies, none of which resulted in any wound healing. She suffered with severe, unmanaged ulcer related and neuropathic pain to her left lower extremity throughout the five years thus unable to tolerate any forms of compression therapy. She has been unable to leave her home to see her doctor in five years. In February 2024, the patient was referred to the WC-NP for specialist virtual consultations.

Her past medical history includes borderline type 2 diabetes, lumbar radiculopathy, hypertension, gastroesophageal reflux, and osteoarthritis

Key Takeaways

Breaking Barriers: Home care delivery is fragmented; The WC-NP overcame barriers by serving as the specialist point of contact for the involved care team, facilitate communication and information sharing across sectors, and delivering timely, evidence-based and patient centered care.

Comprehensive care: WC-NPs deliver highly specialized medical oversight, particularly valuable for this homebound patient. The NP conducted regular assessments of the patient's various forms of pain and managed analgesic therapy through ongoing adjustments. This reduced her pain to a tolerable level enabling compression wraps for the first time in 5 years, which ultimately closed her venous leg ulcers.

Health care system: Virtual WC-NP consultations are cost effective, provide timely assessments and interventions, as well as bridging geographic and systemic barriers in the home care system.

References

1. College of Nurses of Ontario. (2017). *Practice standard: Professional standards, revised 2002*. https://www.cno.org/globalassets/docs/prac/41038_strdrnec.pdf

January 2024 – Referral sent	February 2024 – First assessment	October 2024 – Follow up	June 2025 - Recovery
Referral eligibility to WC-NP services – chronic wound(s), non-healing, complex clinical situations, infection management, frequent emergency department use, with/without a primary care provider, pain management, complex hospital discharge **Not eligible** – primary health care needs only (without a wound), wound(s) healing on trajectory **Referral process –** Any member of the patient's care team can refer by completing and faxing the referral form **Review process –** The WC-NP reviews referrals based on eligibility criteria and accepts and or declines the referral. If accepted, the WC-NP sets up virtual consultations with the patient, caregiver, and wound care specialist (WCS) nurse	**Assessment –** Comprehensive review of patient including chronic comorbidities, barriers to wound healing, venous leg ulcers **Diagnosis –** unmanaged severe ulcer related pain, severe neuropathic pain, unmanaged stage 2 lower extremity lymphedema, chronic venous leg ulcers **Treatment –** weak opioids with/without non-opioid analgesics and adjuvants, optimization of chronic comorbidities, silver based and outer absorbent wound dressings daily. Patient unable to tolerate any form of compression therapy **Follow up –** reassessments every 2 weeks with the patient / caregiver and WCS nurse	 **Follow up –** ongoing titration, trial & error with opioids, non-opioid analgesics and adjuvants, able to start compression therapy as pain decreases, continue with silver based dressings.	 **Follow up –** with the right combination of opioids, non-opioid analgesics and adjuvants, pain decreased to mild and both venous leg ulcers have closed after five years.

Advancing Wound Healing and Trust in Vulnerable and Insecurely Housed People With Catalytic Treatment Matrix Technology

By: Kerri Potter, ACP, Community Paramedic & Michele Smith, BHSc, ACP

CLINICAL CHALLENGE

Vulnerable populations face substantial barriers to wound care, including limited access to clinical settings, delayed treatment, and environments that hinder healing. These challenges often result in prolonged wounds, higher complication rates, and a decline in trust in the healthcare system. Innovative, patient-centred approaches are essential to deliver effective wound care in these contexts. This project highlights the work of Alberta Health Services' Mobile Integrated Healthcare – City Centre Team (CCT), whose community paramedics provide dynamic and comprehensive care in non-traditional, low-barrier, and austere settings. Within this model, Catalytic Treatment Matrix (CTM) technology has supported accelerated healing and provided patients with visible results that help sustain engagement with the care team.

METHODS & INTERVENTIONS

A case series of six individuals presenting with complex wounds, including frostbite, burns, chronic ulcers, and traumatic injuries, was treated using CTM technology alongside standard wound care protocols. Care was delivered across diverse community settings, such as warming centers, outreach clinics, emergency shelters, harm reduction housing, encampments, and the CCT mobile treatment unit. In addition to wound management, the community paramedics provided mobile services encompassing on-site assessments, tailored interventions and follow-up through repeat visits. Wound healing was monitored using clinical assessments and serial photography. Holistic care addressed underlying causes, social determinants of health, and coordination of multidisciplinary supports. This mobile model enabled continuity of care despite environmental instability, limited resources, and patient mobility.

OBSERVATIONS

CTM technology accelerated wound healing across all cases, despite significant barriers to care. Notably, a frostbite case that might have otherwise resulted in amputation achieved full recovery. Individuals experiencing housing insecurity with chronic wounds attained complete closure within weeks. Acute burns and post-debridement wounds healed within 5 to 10 days, even with variable adherence to dressing protocols or inconsistent follow-up. Delivered through the CCT's mobile treatment model, the simplicity and high tolerability of CTM enabled clinicians to provide effective care, reduce healing time, and demonstrate visible results that supported patient engagement. This approach fostered trust and continuity of care among populations who frequently face marginalization.

NEW CLINICAL APPROACH

CTM technology offers a practical, versatile, and effective approach for delivering advanced wound care to individuals experiencing housing insecurity and other vulnerable populations. Its ease of use and demonstrated clinical effectiveness support community-based care models by improving healing outcomes and simplifying wound management. Broader adoption of CTM has the potential to reduce health disparities and alleviate the burden of chronic wounds in underserved communities.

Case 1:ACUTE BURN FROM GLASS HARM REDUCTION EQUIPMENT

History: 57-year-old unhoused male, treated at pop-up clinic space.
Actions Taken: Following wound cleansing, CTM was applied as the primary therapeutic intervention. The site was covered with a thin foam dressing to maintain a moist healing environment, and a tubular elastic support bandage was applied to enhance protection. Dressing changes were performed by community paramedics on an alternate-day schedule.
Observation: Marked reduction in wound size with epithelization and improved tissue integrity.

Day 1 Day 5

Case 2: EXACERBATION OF ECZEMA

History: 23-year-old male, recently unhoused, treated in a harm reduction facility. History of untreated eczema worsened by excessive pruritus.
Actions Taken: Treated in hospital prior to CCT involvement with oral antibiotics and wound care. CCT provided cleaning with antiseptic and saline solutions, CTM was applied and covered with a thin foam dressing, wrapped with a conforming gauze dressing. CCT completed dressing changes every two to three days.
Observation: Resolution of eschar and inflammation, significant reduction of erythema.

Day 1 Day 51

Case 3: INSECT BITE WITH ABSCESS

History: 53-year-old male, unhoused, treated at pop-up clinic space. Treatment in hospital before CCT involvement with IV antibiotics and debridement.
Actions Taken: CCT provided cleaning with antiseptic and saline solutions, CTM was applied, covered with a thin foam dressing and secured with self-adhesive fabric tape. CCT completed dressing changes every two days.
Observation: Tissue loss and exposed wound bed healed to intact skin with full epithelization and restoration of contour.

Day 1 Day 8

Case 4: GRADE 3 FROSTBITE

History: 43-year-old unhoused male, treated at warming shelter following a 10-day hospital stay with IV iloprost and oral antibiotics before leaving against medical advice.
Actions Taken: Initially managed with antiseptic and iodine, the wound was later treated with CTM under a thin contact layer, covered with light foam, and secured with self-adhesive fabric tape. Dressings were changed daily or every other day, with intermittent use of iodine solution alongside CTM for moisture management.
Observation: Necrotic tissue improved to granulating wounds with a reduction in necrosis and visible tissue regeneration.

Day 1 Day 76

Case 5 FULL THICKNESS ULCER WITH CALLUS: PRESENT

History: 56-year-old male, treated in harm reduction sober living. Initial wound small bullae complicated by neuropathy.
Actions Taken: Cleaned with saline solution, CTM applied, covered with light breathable foam dressing, wrapped with antimicrobial gauze, and secured with self-adhesive fabric tape. Wound care completed every 2-3 days.
Observation: Reduced in depth with granulation and improved epithelization.

Day 1 Day 14

Case 6: BURN WITH CELLULITIS AND ABSCESS

History: 75-year-old male, intermittently housed in motels. Burn from a blowtorch complicated by self-debridement with a non-sterile knife, resulting in extensive cellulitis.
Actions Taken: Initially managed by CCT with IV and oral antibiotics. The wound abscess was irrigated with normal saline, CTM applied, and covered with absorbent foam plus antimicrobial or standard gauze. Dressings were changed daily initially, then every two to three days as healing progressed.
Observation: Slough and abscess progressed to intact skin, full epithelization, and restored tissue integrity.

Day 1 Day 28

REFERENCES

1. Health Canada. (n.d.). *Medical device license: NanoSALV Catalytic Advanced Wound Care Treatment Matrix* [. Government of Canada. https://health-products.canada.ca/mdall-limh/information?deviceId=1053891&deviceName=NANOSALV+CATALYTIC+ADVANCED+WOUND+CARE+TREATMENT+MATRIX&licenceId=108236&type=active&lang=&lang=eng
2. NanoTess Inc. (n.d.).*NanoSALV Catalytic*. NanoTess Inc. https://nanotess.com
3. Alberta Health Services. (n.d.). *Clinical care topics: Wound CCT – Wound care products.* Alberta Health Services. https://www.albertahealthservices.ca

CTM: PRACTICAL FOR PROVIDERS, ADAPTABLE FOR PATIENTS

ABBREVIATIONS

CCT – City Center Team of Community Paramedics
CTM – Catalytic Treatment Matrix; trade name NanoSALV Catalytic®

Alberta Health Services
Mobile Integrated Healthcare

Assessing the Effectiveness of a Charged Silver-Infused Fiber Dressing with Micro-Adherent Healing Matrix and Polyabsorbent Fiber

Livia Urtuna, RN, IIWCC, Gilmore Lodge, Fort Erie

Karen Laforet, RN, MClSc-WH, CCHN(C), CVAA(c), VA-BC. Norfolk General Hospital/ VHA-EHS

Introduction

Effective wound care requires dressings that can support healing, manage exudate, and reduce infection risk, especially in complex or slow-healing wounds. Charged fiber dressings infused with silver, combined with a micro-adherent healing matrix and polyabsorbent fibre, offer a multifunctional approach. These features support autolytic debridement, provide antimicrobial action, and absorb exudate while remaining cohesive and easy to manage.

Methodology

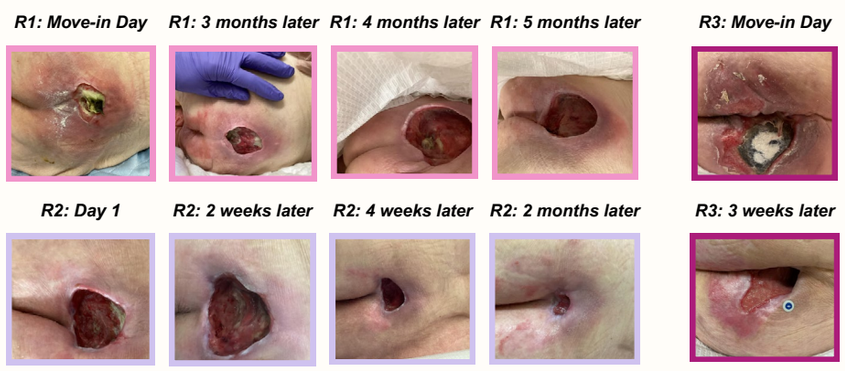
A case series was conducted with three long-term care residents presenting with sacral pressure injuries lasting more than 12 weeks.

All wounds met the following criteria:

- At least 50% slough or necrotic tissue
- Three or more signs of local infection
- Less than 20% wound surface area (WSA) closure at baseline

The evaluation lasted 8–12 weeks, depending on the rate of slough reduction. The charged silver-infused fiber dressing replaced the primary dressing, while secondary dressings were selected based on exudate levels. Wound cleansing with hypochlorous acid continued throughout, and the dressing protocol remained consistent under clinical supervision.

Resident 1 | Resident 2 | Resident 3



UrgoCleanAg product provided by Urgo Medical

Aim

To evaluate the clinical effectiveness of a charged silver-infused fiber dressing in managing sacral pressure injuries in residents with delayed healing and signs of infection.

Application / Implications

The charged silver dressing demonstrated consistent performance in promoting healing, supporting ongoing autolytic debridement, and improving wound bed quality. Findings were aligned with published evidence and highlight the dressing's value in reducing infection, simplifying care routines, and supporting wound progression in complex cases.

Results

All wounds demonstrated >70% granulation tissue

- Signs of infection had resolved in all cases
- WSA steadily reduced across the study period
- Residents tolerated the dressing well
- Positive outcomes, particularly given the residents' advanced age and multiple comorbidities.

Conclusion

The charged silver-infused fiber dressing proved effective in managing complex pressure injuries, supporting wound progression, infection control, and patient comfort. These results suggest it is a valuable option in the treatment of stalled or high-risk wounds in long-term care settings.

References

- **Dissemond J, et al. Use of a TLC-Ag dressing on 2270 patients with wounds at risk or with signs of local infection: an observational study**. J Wound Care. 2020, Mar 2;29(3):162-173.
- **Mayer, D. O., Tettelbach, W. H., Ciprandi, G., et al. (2024). Best Practice for Wound Debridement: International Consensus Document.** Journal of Wound Care, 33(Supplement C), S2–S29. MA Healthcare Ltd.
- **Meaume S, et al. Evaluation of two fibrous wound dressings for the management of leg ulcers: results of a European randomised controlled trial** (EARTH RCT). J Wound Care. 2014 Mar;23(3):105-6,108-11, 114-6.

Waste Comes In Many Forms: The geko™ device mitigates

Aim

Canada's healthcare system faces many challenges to provide timely, cost- efficient, evidence-based care, within the confines of limited budgets. The future lies with medical technologies having the capabilities to mitigate these challenges. This poster will share how a United Kingdom analysis addressed inefficiencies and waste in time to healing, nursing visits, and reduction of medical consumables in landfills, ultimately leading to cost reduction using the geko™ device.

Procedure/Method

A real-world analysis of eight (8) wounds classified as non-healing with an average of 143 weeks duration, and a projected 52 weeks to closure. Standard of Care (SoC) was compared to SoC and the geko™ device.[1]

Findings/Results

Concurrent weeks of treatment with SoC was 416 vs 43.4 with SoC and the geko™ device. Nursing visits per year with SoC demonstrated a capacity to treat 19 wounds vs 182 with SoC and the geko™ device. A reduction of visits by 89.6%. The cost to treat 8 wounds over a 52-week period with SoC was estimated at £54,463.84 (C$100,464.00) vs £10,698.92 (C$19,735.23) SoC and the geko™ device. The cost of treating this group was reduced by 64%. The reduction of medical waste to landfills by volume and weight was approx. 87% with SoC and the geko™ device vs SoC alone.

	Standard of care	geko + standard of care	Difference
Resource use			
Estimated time to closure, weeks	416.0	43.4	-372.6
Total number of visits	969.3	101.2	-868.1
Total nurse time, hours	746.3	77.9	-668.4
Percentage difference	**-89.6%**		
Treatment cost			
Nurse visits	£42,542	£4,442	-£38,100
Consumables	£11,922	£1,245	-£10,677
geko device	-	£5,012	£5,012
Total	**£54,464**	**£10,699**	
Total difference	**-£43,765**		

Conclusion

Implementing the geko™ device with SoC can positively impact the treatment of nonhealing wounds by reducing the time to closure, the number of nursing visits/ hours to treat wounds, and reducing the volume of consumables (dressings, compression wraps) being sent to landfills. The result being timely, cost- efficient, evidence-based care, within the confines of limited budgets. Incorporating the geko™ into your daily practice, health system benefits can be realized

Reference

1.Data on file FirstKind Ltd /NHS foundation Trust UK

HOW OFTEN IS TOO OFTEN:
A SURVEY OF DRESSING CHANGE PRACTICES ACROSS CARE SETTINGS

Julie Perry MSc PhD[1], Viktoria Körner MSc[1], John Timmons RN, DipNS, Master of Nursing, PG Dip PGTLHE[1] [1]Mölnlycke Health Care, Gothenburg, Sweden

BACKGROUND

- Wound care happens with increasing frequency in the community setting in Canada, with over a third of all home and community care clients having wound care needs (1), and similar trends seen in most countries.
- The introduction of advanced dressings has the potential to save healthcare costs by both improving patient outcomes and reducing the frequency of home-based dressing changes.
- However, the adoption of new practices requires an understanding of healthcare professionals' (HCP) decision-making process and current practice across settings.

(1) Laforet, K., Allen, J., McIsaac, C. Evidence-Based Wound Care: Home Care Perspective. 2012. The Canadian Home Care Association. Available at: cdnhomecare.ca/wp-content/uploads/2020/03/Wound_Management_-_Home_Care_Perspective_-_English_2012.pdf

Aim

To understand wound care practices, including dressing change rationale and frequency, through a survey of healthcare professionals

SURVEY METHOD AND RESPONSE RATE

- An 11-question survey was designed to explore HCPs' current practices and perspectives on dressing change frequency. Questions focused on dressing change practices for chronic wounds.
- The survey was administered through a third-party survey provider and completed by HCPs in Canada, the USA, Australia, the UK, Spain, Italy, Germany and China.
- Responses were compiled anonymously.

725 HCPs completed the survey from **8 countries**

>86% responses from HCPs working in Community/Home Care or Primary Care clinics

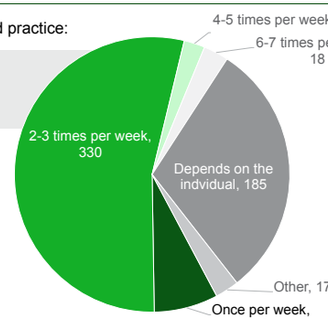
HCPs reported managing venous leg ulcers (VLUs) most frequently, followed by pressure injuries and diabetes-related foot ulcers (DFUs)

88% responses from the UK, 5% from Canada, 5% from Australia, 2% from other 5 countries

RESULTS

HCPs were asked the following questions about dressing change frequency and practice:

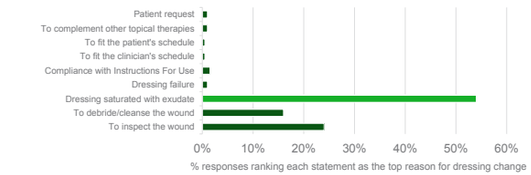
Q. How frequently are dressings changed, on average, for a patient with a chronic wound?



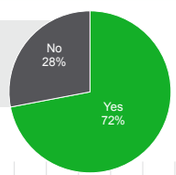
Survey responses indicated a dressing change frequency of 2-3 times per week is most common. A large proportion of survey respondents also indicated that dressing change frequency is dependent on the patient.

When survey respondents were asked to rank the reasons for dressing change, the reason ranked most often as #1 was dressing saturation with exudate (54% of responses ranked as #1). Clinical reasons like wound inspection (24%) and cleansing/debridement (16%) were also highly ranked. Schedule-based reasons were rarely ranked as the primary reason for dressing change among HCPs surveyed.

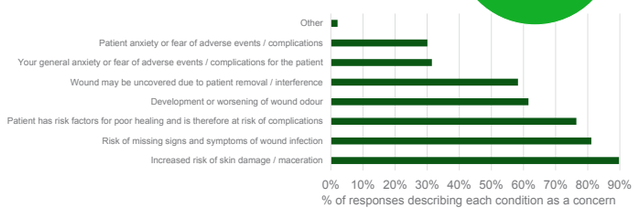
Q. What is the most common reason a dressing is changed?



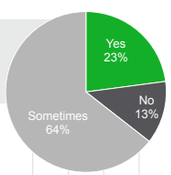
Q. Do **HCPs** have concerns if they cannot change the dressing within their usual time frame?



Q. Which of the following best describes these concerns?



Q. Do HCPs perceive that **patients or their caregivers** have concerns when asked to keep a dressing in place for longer?



Q. Which of the following best describes these concerns?

CONCLUSIONS

Over 86% of survey respondents worked in the **post-acute** care setting and reported treating **VLUs** most frequently. The most common dressing change frequency reported was **2-3 times/week. Dressing saturation** was ranked as the most common reason for dressing change, with **maceration and skin damage** reported as top concerns by HCPs, and **leakage** perceived as a top patient concern.

→ The use of advanced wound care dressings with extended wear times offers an opportunity to improve the efficiency of home-based wound care through potential reductions in dressing change frequency with improved exudate management.

→ Education of HCPs and patients may be necessary to overcome residual concerns about exudate, maceration and leakage, and the need for frequent dressing changes.

Evaluating the Integration, Impact, and Scalability of MIMOSA: A Mixed-Methods Assessment of Non-Invasive Wound Imaging in Nova Scotia

Samantha Lavallée[1] MSc, Marie Anna Elliott[1] MD, Ben Hunt[2] MA PMP, Ronni Bellefontaine BScN RN[2], Prosper Koto[1] PhD, Laura Croft BN RN[2]

[1]Implementation Science Team, Nova Scotia Health, NS, Canada, [2]Innovation Hub, Nova Scotia Health, NS, Canada

INTRODUCTION

Pressure Injuries (PIs)
- Are caused by prolonged pressure on bony areas and leads to skin and tissue damage. This can progress into deep wound, infections and if untreated can lead to sepsis.

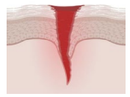


Figure 1. Pressure injury wound

Current Risk Assessment
- In hospitals across North America, the Braden Scale and visual skin assessments are the most commonly used methods for evaluating the risk of PIs. However, these may miss early, below surface tissue damage.

Innovation: MIMOSA
- A compact, non-invasive wound imaging technology device that uses multispectral near-infrared spectroscopy and thermal imaging to capture skin temperature (°C), tissue oxygenation (StO_2), and digital images.

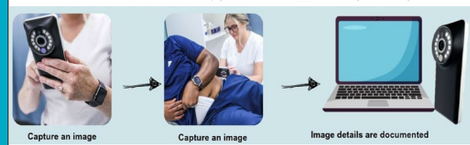


Figure 2. MIMOSA device use

Desired Benefits
- MIMOSA aims to facilitate earlier detection of wound deterioration, reduce hospitalizations, enhance documentation and prevention, and enhance patient outcomes.
- An evaluation was completed to assess MIMOSA's integration into Nova Scotia Health clinical workflows from January 2025 to August 2025.

OBJECTIVES

This evaluation aimed to:
1. Assess MIMOSA's integration into workflows and identify-barriers and facilitators;
2. Understand initial perceptions, contextual influences, and alignment with stakeholder needs; and
3. Evaluate the device's overall impact on patient care, and health system efficiency.

METHODS

Design: A convergent parallel mixed-methods design was utilized.

Data Collection and Analysis:
- Quantitative data encompassed device utilization rates, and patient demographics. Descriptive statistics summarized collected data.
- Qualitative data, collected via semi-structured interviews, explored the care teams' perceptions and contextual factors influencing adoption. Inductive thematic analysis of interview data was completed to determine key takeaways.

Integration: Findings were combined through triangulation for comprehensive insights.

RESULTS

Device Use
- 11 providers used the device on 40 patients from January 2025 to August 2025. Use ranges from one to nine uses per provider on a unique patient across four locations.
- The mean age of patients was 61.3 years old (SD:18.4).

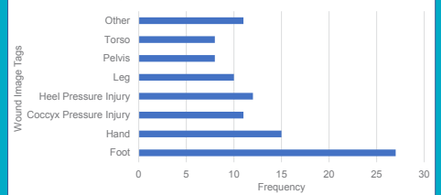


Figure 3. Frequency of wound image tags added to MIMOSA images from January 2025 -August 2025

Figure 4. MIMOSA device being demoed

"[Patients] they're generally pretty excited and wanna see the pictures. And really interested and eager." – Focus Group Participant

Results

Clinical Team Interviews
- Three clinical device users participated in a focus group in August 2025. Two were wound care nurse specialists, and one was an ICU clinical lead. Interview participants used the device on three, six, and nine patients.

Initial perceptions and training were positive
- Onboarding and confidence grew with hands-on training.
- Perceived value for tracking wound healing.
- Positive but inconsistent use.

There were challenges to workflow integration

Challenges:
- The device is often left charging in a secure office; one device per site limits availability; users forget to bring it on rounds.
- Short stays, patient instability, and competing priorities reduce inpatient use.

Facilitators:
- More use when it is easily accessible and available.
- More consistent use in outpatient settings as patients have more structured and regular follow up.

"Much better in outpatients...we can track the progress whereas sometimes these inpatients get discharged." – Focus Group Participant

Device was effective for monitoring chronic pressure injuries
- Participants found the device use most valuable for chronic, slow-healing, complex wounds with clear wound borders.
- Participants expressed that it helps with objective measurements, consistent tracking between staff and is a useful tool for patient education and motivation.

"It has enabled us to track wounds more appropriately, specifically with their size and shape and how they're doing over a number of days, which is very cool to see." – Focus Group Participant

Patient experience was positive
- Patients appeared more engaged and motivated when shown serial wound images, which improved understanding of progress and supported treatment adherence.

Discussion

- MIMOSA was viewed as a useful, easy-to-use tool for wound tracking and patient engagement.
- **Limitation:** Low uptake; limited consistent use prevents firm conclusions about its overall impact.

Next Steps:
- Improve uptake. Clinical user suggestions included more devices, a carrying case, greater portability, and longer battery life.
- Conduct future evaluations once there is higher usage to better assess effectiveness and integration.
- Explore a cost-effectiveness analysis once sufficient uptake is achieved.

Conclusions

MIMOSA shows strong potential for wound tracking and patient engagement, but broader uptake and evaluation are needed to realize its full impact.

Trillium Health Partners

Evaluating Optimal Shieh Score Cut-Offs for Predicting Pressure Injury Risk in ICU Patients

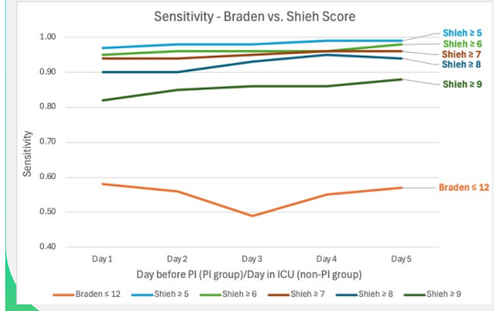
Project Team: Ashar Siddiqui, Hetal Bambharoliya, Wendy Campbell

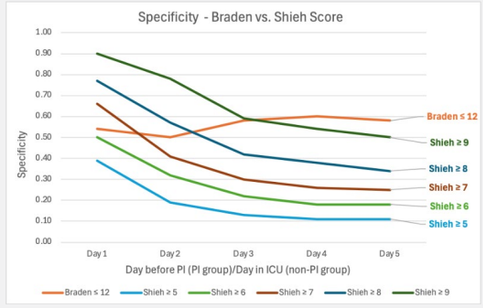
Background & Aim

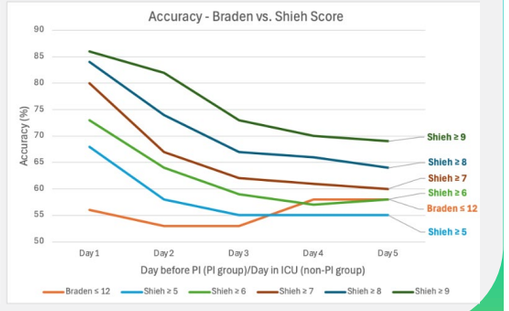
This study presents the second phase of our quality improvement project, following the work presented at the 2024 Wounds Canada Conference (***Shieh vs Braden Scores: Evaluating Pressure Injury Risk Assessment Tools in the ICU Patient Population).*** The aim was to determine the optimal Shieh Score cut-offs thresholds (≥5, ≥6, ≥7, ≥8, and ≥9) for identifying intensive care unit (ICU) patients at high risk for hospital-acquired pressure injuries (HAPIs), and to compare its effectiveness to the Braden Scale.

Methods

A retrospective study was conducted at Trillium Health Partners' med-surg ICU between **January 2022 and December 2023**. Adult ICU patients **(N=202**) were divided into two groups: those who developed stage 2 or higher-pressure injuries (n=101), and those who did not (n=101). Shieh and Braden Scores were calculated daily for five days prior to pressure injury development (PI group) or during the first five ICU days (non-PI group). Sensitivity, specificity, and overall accuracy were calculated for each Shieh Score cut-off and compared to the Braden Scale (cut-off ≤12).







Findings

At cut-off ≥5, the Shieh Score demonstrated very **higher sensitivity (97-99%) but lower specificity (11-39%)** than the Braden Scale (49%-58% and 50-60%, respectively). A Shieh score **cut-off of ≥7 retained high sensitivity (94-96%) and improved specificity (25-66%) and accuracy (60-80%).** Higher cut-offs of ≥8 and ≥9 increased specificity (up to 90% at Day 1 for ≥9) but reduced sensitivity (down to 82% at Day 1 for ≥9). The Shieh Score consistently outperformed the Braden Scale across all metrics, especially at higher cut-offs and earlier in the ICU admission.

Implications

A Shieh Score cut-off of ≥7 offers the most optimal balance for ICU use, maximizing early identification of high-risk patients while minimizing false positives. The objective, EMR-driven Shieh Score may streamline risk assessment, reduce staff workload, and enhance HAPI prevention efforts in critical care settings.

References:

- Shieh D, Sevilla M, Palmeri A, et al. The Shieh Score as a Risk Assessment Instrument for Reducing Hospital-Acquired Pressure Injuries: A Prospective Cohort Study. J Wound Ostomy Continence Nurs. 2023;50(5):375-380. doi:10.1097/WON.0000000000000997
- Shieh D, Li Q, Shi J, Tovar S. The Shieh Score as a Risk Assessment Tool for Hospital-Acquired Pressure Injuries: A Retrospective Cohort Study. Adv Skin Wound Care. 2021; 34:132-138. doi:10.1097/01.ASW.0000732736.89356.cb
- Shieh, D. C., Berringer, C. M., Pantoja, R., Resureccion, J., Rainbolt, J. M., & Hokoki, A. (2018). Dramatic reduction in hospital-acquired pressure injuries using a pink paper reminder system. Advances in Skin & Wound Care, 31(3), 118-122. https://doi.org/10.1097/01.asw.0000527966.72494.61

Ignite the Team, Ignite the Culture: Reducing Pressure Injuries at Heritage Green Long-Term Care

BPSO RNAO BEST PRACTICE SPOTLIGHT ORGANIZATION

Sharing the Data!

Sharing the Story!

- Story Telling!
- Media- Posters, bulletin boards.
- PSW & NPC meetings & minutes
- Managers Meetings & Managers Huddle
- Focused Floor Huddles

HOW DID WE GET HERE

Focus on prevention!
Regular Repositioning!
Great Wound Care!
Lots of Education!

Decrease in the Number of Pressure Injuries- 62.5% from 1st to 2nd quarter!

EDUCATION-WOUND CARE EXHIBITION

- Involvement of all the departments
- (Around 85 staff members attended)
- Wound Care Quiz
- Story Telling-Wound Nurse Racquel
- Sharing success stories-Celebrating/Home Page
- Monthly Wound Care Huddles
- 1:1 Education and training-as needed!
- Staff Appreciation Week

Building Skin Health and Wound Care Capacity Among Personal Care Providers in Long-Term Care (LTC)

Janet L. Kuhnke[1] RN, BA, BScN, MS, NSWOC, FCN, Doctorate in Psychology; Patricia Coutts[2] RN, IIWCC; Karen Laforet[2] RN, MClSc-WH, CCHN(C), CVAA(c), VA-BC; Irmajean Bajnok[2] RN, MScN, PhD; Celine Breyton[2] ; Megan Logeman[2] BSc.; Michelle Rey-Lloyd[3], BScH, MSc, PhD; Darian Cheng[3], RN, PhD;
Cape Breton University, School of Nursing[1]; Wounds Canada[2]. and the Registered Nurses' Association of Ontario[3]

Abstract

Aim: The aim of the Wounds Canada Registered Nurses' Association of Ontario Skin Health Program for Personal Care Providers (PCP) is to augment the knowledge of PCPs related to:

- key aspects of residents' skin health, wound prevention,
- early detection, and prevention and
- reporting and documenting skin issues.

Methods: A pre-post program evaluation study was carried out to determine the impact of the education on participant satisfaction, confidence levels, knowledge, skills, and self-reported changes in practice that could be attributed to the education.

Results: The research findings demonstrated participants' shifts in confidence related to

- screening a person's skin for risk of skin changes and or risk of pressure injuries
- explaining skin health and prevention strategies to residents and their caregivers
- being a member of the interprofessional healthcare team

Implications: Wound care education for Personal Care Providers arms them with knowledge and skills to boost their confidence in working as a member of the team to provide quality wound care, report findings, and gain a sense of satisfaction in their work. Evaluation results also show they are more confident in changing their practice to reflect their learning. This is critical in LTC settings, where a team effort is required to reduce the incidence of pressure injuries and other hard-to-heal wounds.

Figure 1: Recruitment poster used in 2025.

Introduction

PCPs are integral to the care team in LTC, especially in maintaining skin health. Research evidence shows continuing education supports retention and prevents staff turnover in long-term care settings.

The SHP aims to enhance skin health excellence by augmenting the knowledge of Personal Care Providers related to their understanding of key aspects of patients' skin health, wound prevention and early detection and reporting of skin issues. The program is offered online and includes active webinars and student engagement through learning discussion boards. There is a final knowledge and case-based examination. The program is micro credentialed through Nipissing University.

In January 2025, the program was offered to 200 PSWs in Ontario LTC Homes supported by MLTC funding. The program learners were recruited through Long Term Care homes, organizations, and associations in Ontario. (see Figure 1).

Methodology

The overall program evaluation encompassed Wounds Canada education quality improvement processes and the research-based evaluation. The evaluation goals were to:

- gain insight into learners' experiences throughout the SHP
- explore if, and in what ways, the program may contribute to practice changes surrounding wound prevention and intervention.

The program research incorporated a mixed-methods design combining both quantitative and qualitative measures. Surveys were administered to learners at the beginning and end of the program.

The evaluation was augmented by the voices of the SHP participants through a review and analysis of qualitative data collected throughout the program, including aggregate and de-identified participant surveys.

The overarching questions guiding the evaluation included:

- How has the program impacted PCPs experiences and clinical practices?
- What are Personal Care Provider's experiences with the program?
- What changes in clinical practice have occurred as a result of completing the program?

Results

The program data revealed a learner cohort that engaged and participated fully in the program, resulting in program targets being met.. The cohort represented 84 LTC Homes throughout Ontario and 77% of participants self-reported working full-time in their role.

Of importance were the participants' detailed descriptions and ratings on a five-point Likert Scale ranging from 1 (low) to 5 (high) that depicted a significant shift in their perceived confidence levels related to skin health and wound care.

Participants indicated their confidence levels shifted upwards from between 3 and 4 to between 4 and 5 from the beginning to the end of the program. This shift involved increased confidence surrounding:

- protecting skin and preventing skin damage,
- applying best practices when providing skin care,
- teaching basic skin health and wound prevention to residents and their families,
- being part of a wound care team, providing skin care to a resident with diabetes, and
- caring for a person with a pressure injury.

As depicted in Figures 2 and 3 below, participants reported increased confidence in two key areas of wound care in LTC– providing skin care to a resident with diabetes and providing care to a resident with a pressure injury.

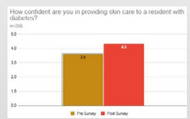
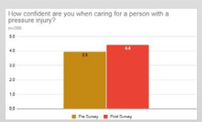


Figure 2: Self-reported confidence level in providing skin care to a resident with diabetes pre- and post-program

Figure 3: Self-reported confidence level in providing skin care to a resident with a pressure injury pre- and post-program



Preliminary findings show graduates have identified practice change related to all seven program competencies, listed below

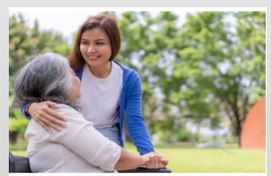
1. Awareness of the need to adhere to their agency/facility policies
2. Judgment to describe common skin damage such as the causes and common locations of pressure injuries, skin tears and leg ulcers
3. Skills in identifying risk factors for skin damage
4. Ability to implement methods to reduce risk in consultation with the care team
5. Knowledge about how to protect skin and prevent skin damage while providing person-centred care
6. Ability to observe signs of moisture-associated skin damage and medical adhesive skin injury, and to report them to a regulated health-care professional, working collaboratively to support a care plan
7. Ability to observe and report early signs of new or worsening skin damage specific to dryness, moisture, pressure, trauma and infection

Using a deductive analysis process, responses related to how learners intend to change their practice because of the program were coded according to the seven competencies. Results showed a very high association of the intended practice changes with Competency 2 (judgement to describe skin damage, recognizing severity and type) and Competency 7 (observing and reporting signs of skin damage and injury). The remaining competencies were identified as highly associated with the intended practice changes. Competency 6 (observe and report signs of moisture-associated skin damage and skin injury was moderately associated with intended practice change.

Final program evaluation results will be available in Fall 2025.

Conclusion

To successfully promote skin health and prevent complications from pressure injuries and wounds related to chronic conditions, unregulated health-care providers must have a robust foundational level of skin health and wound education. The Skin Health for Personal Care Providers program is key to integrating personal care providers as part of the interprofessional team to help address gaps in skin health and wound care in the long-term care sector.



Personal Care Provider program

Acknowledgements

We gratefully acknowledge the support of the following groups and institutions for their guidance, contributions, funding and for their valuable input and assistance throughout this project.

Ontario MINISTRY OF LONG-TERM CARE
RNAO
CBU College of Nursing
NIPISSING UNIVERSITY
WoundsCANADA Institute

Enhancing Skin Health, Wound Care Knowledge and Skill Among Regulated Care Providers in Ontario LTCH's

Janet L. Kuhnke[1] RN, BA, BScN, MS, NSWOC, FCN, Doctorate in Psychology; Robyn Evans[2] BSc, MD, CCFP, Barbie Murray[2] CNS, (APN) BScN RN MCScWH MDLUC/Vascular; Patricia Coutts[2] RN, IIWCC; Eliot To[2] DCh, MCISc (Wound Healing), HBSc; Irmajean Bajnok[2] RN, MScN, PhD; Celine Breyton[2] ; Michelle Rey-Lloyd[3], BScH, MSc, PhD; Darian Cheng[3], RN, PhD;
Cape Breton University, School of Nursing[1]; Wounds Canada[2]. and the Registered Nurses' Association of Ontario[3]

Abstract

Aim: The aim of the Wounds Canada Registered Nurses' Association of Ontario Accredited Wound Care Champion Program is to assist clinicians in acquiring the knowledge and skills necessary to:

1) identify persons at risk for wounds;

2) implement preventative and treatment measures in skin health and wound care; and

3) lead change and sustain excellence in wound care practices in their workplace.

A robust recruitment process was used to attract staff with full organizational engagement to sponsor and support students in completing the program.

The comprehensive curriculum includes technology-based knowledge transfer, hands-on in-person skills labs, building a knowledge exchange network, and leading and navigating change

Methods: Program evaluation goals were to:

- define the learner profile,
- identify the impact of the education on participant satisfaction,
- determine changes in confidence levels, knowledge, skills, and clinical practice, and
- understand how participants took a leadership role in wound care practice change.

A pre-mid- and post-program evaluation study, including qualitative and quantitative data, was carried out..

Results: Baseline data indicate an eager group of interprofessional learners ready to enhance their wound care knowledge and skills and lead others in establishing quality wound care practice. Early evaluation results showed trends of enhanced confidence levels in carrying out all aspects of wound care.

The connection with learners and their organizations has maximized learner retention and engagement in the program.

Implications: Maximizing return on organizational investment in professional development may be enhanced by preparing clinicians with leadership and change management knowledge and skills, and engaging organizations in sponsoring and supporting their staff in professional development, increasing the likelihood of program completion.

Introduction

The Accredited Wound Care Champion Program (AWCCP) is offered by the Wounds Canada Institute, in collaboration with the Registered Nurses' Association of Ontario (RNAO). Designed to enhance wound care knowledge, clinical competencies and leadership capacity, the AWCCP equips Ontario's regulated health professionals to deliver evidence-based, person-centred care and lead system-wide improvements in wound prevention and management. The program is multifaceted, built on principles of adult learning, and aims to produce health-care clinicians proficient in wound prevention and care who are prepared to lead changes in their work settings.

The program is accredited by the Canadian Nurses Association and the Temerty Faculty of Medicine at the University of Toronto (Continuing Education Division) and is micro credentialed by Nipissing University. Importantly, the AWCCP IIs a long-standing gap in Ontario's health-care system by providing structured, high-quality education to develop proficient-level wound care practitioners—a level of expertise previously lacking in many frontline care settings across sectors.

In January 2025, Wounds Canada was funded by the Ontario Ministry of Long-Term Care (LTC) to offer the AWCCP to regulated care providers working in Ontario LTC settings. Following an active and robust recruitment process engaging Long-Term Care homes, associations and organizations, a qualified cohort of applicants was admitted to the program. See Figure 1 for a recruitment poster)

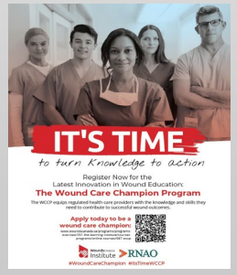


Figure 1: Recruitment Poster used for the AWCCP Long-Term Care cohort

Program Delivery and Evaluation

As of August 31, 2025, the program exceeded its target numbers of 100 graduates, with a completion rate that exceeds industry standards. This is noteworthy given the ongoing care delivery challenges related to health human resource pressures. The program was adapted to a 6-month format, adhered to very specific and published program progression standards, and provided learners with faculty accessibility and staff support, all of which enhanced learner retention and maintained program momentum.

The purpose of the program evaluation was to gain insight into the outcomes and impact of the AWCCP as perceived and experienced by learners working with residents in Ontario's long-term care settings. A robust evaluation framework (See Figure 2), included as part of the funded program proposal, guided the program evaluation focus and activities.

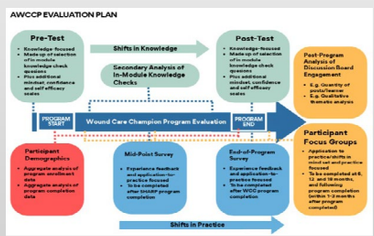


Figure 2: Evaluation Framework used at in the AWCCP.

Methodology

1. Before the program started up, a pre-survey was administered to all learners. Survey data was focused on demographics, baseline skin health and wound care knowledge and skills, and confidence levels in caring for residents with various types of wounds and risks for skin health damage.
2. A second survey was administered mid-program to determine changes in knowledge, skills, and confidence levels, and information about the application of knowledge to practice.
3. At the end of the program, the survey was repeated with some additional questions focused on the specific application of skin health knowledge and change management.

Preliminary Results

The majority of learners were registered nurses, registered practical nurses, or nurse practitioners. The remaining participants were chiropodists, physiotherapists, and registered dieticians. This cohort represented over 100 unique employers across Ontario Long-Term Care Homes. The connection with learners and their organizations has maximized learner retention and engagement in the program.

Pre-survey data indicate an eager group of interprofessional learners ready to enhance their wound care knowledge and skills and lead others in establishing quality wound care practice.
Preliminary results from mid-program survey analysis show enhanced confidence levels in carrying out all aspects of wound care. Post--program data analysis is currently being carried out.

Throughout the program faculty noted a very involved cohort of participants who consistently met the required milestones, fully engaged in completing online modules, and were highly interactive in the synchronous webinars, and the in-person Skills Labs and Practical Evaluation (See Figure 3).

Figure 2: Participants at the May 2025 Skills Labs learning about compression therapy.

Acknowledgements

We gratefully acknowledge the support of the following groups and institutions for their guidance, contributions and funding for their valuable input and assistance throughout this project.

Insights and Impact of an Innovative Wound Care Champion Program in Nova Scotia

Janet L. Kuhnke[1] RN, BA, BScN, MS, NSWOC, FCN, Doctorate in Psychology; Robyn Evans[2] BSc, MD, CCFP, Barbie Murray[2] CNS, (APN) BScN RN MCScWH MDLUC/Vascular; Greg Archibald[2] MD, CCFP, FCFP; Melissa Gosse[3] RN, BN, IIWCC-CAN, MSc; Bernadette Mitchell-McDonald[3] RN, BComm, IWII-CAN, MSc; Irmajean Bajnok[2] RN, MScN, PhD; Celine Breyton[2]; Megan Logeman[2] BSc.
Cape Breton University, School of Nursing[1]; Wounds Canada[2]; Health Association Nova Scotia[3]

Abstract

Aim: To evaluate the Accredited Wound Care Champion Program's (AWCCP) impact on learners' focusing on shifts in confidence levels and practice change related to skin health and wound care in long-term care settings in Nova Scotia.

Procedure/Method: A mixed-methods design was employed, combining quantitative and qualitative measures. Surveys were administered to learners at the beginning, midpoint, and end of the program, and a focus group was conducted. The program evaluation plan was approved by Cape Breton University's Research Ethics Board.

Findings/Results: Data revealed a cohort of learners representative of the interprofessional team engaged in wound care, largely working in rural and mixed areas with 10 or more years of experience in their current role. Overwhelmingly , the AWCCP learners reported an increase in confidence across several areas, including wound assessment, treatment, patient education and change management. Many learners were more confident leading the team and teaching and engaging their team members in prevention strategies. A key finding is the high ratings the hands-on skills lab received related to its impact on development of wound care skills.

Implications/Applications: The evaluation results-- both the impact of the program on knowledge and skills acquisition and uptake of change management skills-- demonstrates the marked impact of this professional development program on capacity building and impact on sustained practice change. This reinforces the need for professional development programs to focus on clinician knowledge and skills as well as organizational leadership, to facilitate higher return on investment in staff development.

Introduction

The RNAO Wounds Canada Accredited Wound Care Champion Program (AWCCP), is an interprofessional, evidence-informed educational offering that includes extensive hands-on skills components and an interactive community of learning. Taught by interprofessional wound-care experts, the AWCCP is accredited through the Canadian Nurses Association, the Temerty Faculty of Medicine, Continuing Education Division at the University of Toronto and Dalhousie University, Nova Scotia. In addition, the AWCCP is micro credentialed through Nipissing University.

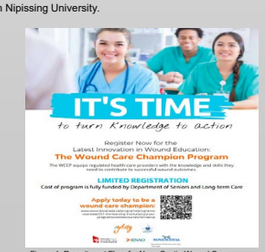


Figure 1: Recruitment Flyer for Nova Scotia Wound Care Champion Program

Through funding by Nova Scotia Seniors and Long-Term Care, the program was implemented for regulated staff in long term care settings across Nova Scotia over the period of 2023-2024 (See recruitment poster in Figure 1.)

The Health Association of Nova Scotia (HANS) Provincial Wound Program oversaw the implementation and garnered organization support through a mentorship approach. This approach enabled participants to connect with a mentor that provided support and encouragement throughout the program, maximizing a high program completion rate of learners fully engaged in skin health and wound care in their workplaces.

Program Evaluation Methodology

The purpose of this program evaluation was to gain insight into the outcomes and impact of the AWCCP as perceived and experienced by learners working with seniors in Nova Scotia's long-term care settings.

A robust evaluation framework (See Figure 2 below) was included as part of the funded program proposal.

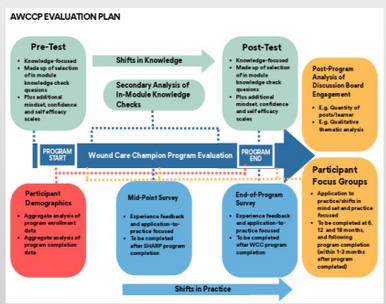


Figure 2: AWCCP Program Evaluation Framework.

The AWCCP Program Evaluation included a focus on ongoing formative and summative evaluation and a robust mixed-methods design was employed, combining quantitative and qualitative measures. Surveys pre-mid- and post program were administered, collecting quantitative and qualitative data. A focus group was conducted to identify learner's responses to the program and impacts on practice and change leadership behaviours. The research/evaluation plan received approval by Cape Breton University's Research Ethics Board.

Results

Data revealed a cohort of learners representative of the interprofessional team engaged in wound care, largely working in rural and mixed areas with 10 or more years of experience in their current role.

Throughout the AWCCP, participants were provided opportunities to self-report and share feedback about their experiences and the impact of the program (e.g., program surveys and focus groups). Of importance were the participants' detailed descriptions and ratings on a five- point Likert Scale ranging from 1 (low) to 5 (high) that depicted a significant shift in their perceived confidence levels related to skin health and wound care. Participants indicated their confidence levels shifted upwards from between 2 and 3 to between 4 and 5 from the beginning to the end of the program. This shift involved increased confidence surrounding key skin health and wound care competencies.

Increased Confidence in Caring for Persons at Risk of and or with a Skin Tear A important self-reported confidence question focused on the promotion of skin health and thereby the prevention of skin tears (See Figure 3). In the pre-program survey, participants rated their confidence at an average of 4.0 out of five. By the end of the program, this increased to an average rating of 4.7.

Figure 3: Self-reported confidence level in caring for a person with a skin tear

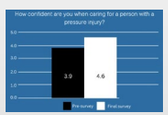


Figure 4: Self-reported confidence level in caring for a person with a pressure injury

Increased Confidence When Caring for Persons with Pressure injuries The increased confidence levels reported by AWCCP participants during focus groups was further reflected in, and supported by survey data, particularly as it related to caring for persons with pressure injuries. As depicted in Figure4, participants' self-reported confidence levels increased from an average rating of 3.9 out of 5 at the start of the program to a rating of 4.6 out of 5 at completion (See Figure 4).

Increased Confidence in Exercising Leadership Not all workplaces had expert the resources to provide a skin health lead, and for those that did, participants often described frequent changes surrounding responsibility for wound care within their organizations. This was evident for learners when seeking assistance to advocate r persons with pressure injuries. Graduates of the AWCCP reported higher levels of confidence in their ability to lead in these situations. Participants specifically self-reported in focus groups about their shift in confidence by one to two points on a 5-point Likert Scale. This positive shift in confidence is evidenced in their reported practice changes and change leadership.

Increased Confidence as Part of an Interprofessional Wound Care Team In the pre-program survey, participants rated their confidence as part of an interprofessional team at an average of 3.7 out of five. By the end of the program, this increased to an average rating of 4.5. Given the interprofessional focus of skin health and wound care, this finding is particularly important. In the AWCCP, the interprofessional nature of the learners and the engagement of interprofessional faculty likely contributed to this outcome

Participant Satisfaction The asynchronous virtual aspects of the AWCCP were well received and provided flexibility for learners throughout the program. However, participants expressed high levels of satisfaction with the in-person components of the program, particularly the skills lab and practical evaluation (See Photo 1) These curriculum components were implemented by Wounds Canada faculty experts across Nova Scotia.

Eighty four percent of survey respondents stated the skills labs were the most beneficial part of the AWCCP. Participants noted that this was an opportunity to be on-site and engage with expert faculty, and peers from other health care teams in the province and it gave them an opportunity to contribute to a community of practice. Participants reported that the skills labs contributed to the development of networks across the province and provided opportunities for participants to share knowledge and ideas about application and integration of their learning in the practice setting.

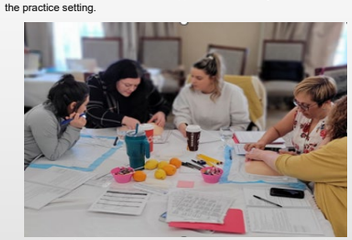


Photo 1: Group of learners engaged in learning activities during the Nova Scotia Skills Lab

Conclusion

The evaluation results demonstrate the impact of this professional development program on learner perception of change in knowledge and confidence and reported changes in their behaviour. What is noteworthy is the number of learners who embraced the role of *change agent* within the realities of heavy workloads, funding issues and multiple competing demands and forged ahead to advance skin health and wound care in their organizations.

These findings reinforce the need for professional development programs that address clinical issues to incorporate elements of change management to build organizational engagement for sustained change. Also evident in these findings is the need to focus on both clinical knowledge and skills and supporting organizational leadership to facilitate higher return on staff development investments.

Acknowledgements

We gratefully acknowledge the support of the following groups and institutions for their guidance, contributions and funding for their valuable input and assistance throughout this project.

NOVA SCOTIA Seniors and Long-Term Care
CBU College of Nursing
NIPISSING
DALHOUSIE UNIVERSITY
RNAO
Wounds CANADA Institute

Cost-Analysis of Universal Decolonization with Pure Hypochlorous Acid (pHA*) and Mupirocin to Prevent Infections in Burn Patients

Peter J. Mallow, PhD Xavier University; Debashish Chakravarthy, PhD, Urgo Medical North America; Kevin Foster, MD, Arizona Burn Center, Valleywise Health

BACKGROUND

Infections account for 42% to 65% of all deaths in burn patients. [1]Methicillin-resistant Staphylococcus aureus (MRSA) is a particular concern among burn patients. [2] Universal decolonization programs have been shown to reduce MRSA infection rates. [3] The use of pHA* (for bathing and treatment) and mupirocin has been effective in reducing MRSA and controlling bacterial bioburden. [4]

OBJECTIVE

The objective of this study was to conduct a cost-analysis of pure hypochlorous acid* (pHA) and mupirocin for the prevention of MRSA infection in hospitalized burn patients.

METHODS

A patient-level microsimulation model was used to conduct a cost-analysis from the US health system perspective.

All clinical data was obtained from a retrospective observational trial. [4]
The clinical data examined the admitted burn patients for a one-year period prior to the introduction of pHA* and mupirocin and one year period post introduction of pHA* and mupirocin.

The primary outcome variable was the reduction in MRSA infections per 1000 bed days. Cost data were obtained from the publicly available data sources in 2023 USD using a pragmatic literature review. [5,6]

Deterministic and probabilistic sensitivity analyses (PSA) were performed to gauge the robustness and reliability of the results.

RESULTS

Table 1 shows the parameters used in the model.

Parameter	Values		
	Base	Low	High
Pre-Infection Rate / 1000 days	7.23	5.42	9.04
Post-Infection Rate / 1000 days	2.37	1.78	2.96
Cost of MRSA Infection	$30,988	$23,241	$38,735
Cost of pHA* / day	$75.00	$56.00	$94.00
Cost of mupirocin / day	$6.80	$5.10	$8.50

The clinical data found that burn patients prior to the introduction of pHA* were 3.05 times more likely to acquire a MRSA infection.

The expected cost to treat solely the MRSA infections in the pre-pHA* period was $224,116 per 1000 bed days; whereas, the expected cost in the post-pHA* period was $73,465 per 1000 patient bed days.

Figure 1 and 2 show the histogram results of the patient level microsimulation model after 10,000 iterations.

FIGURE 1: PRE-pHA* MODEL RESULTS

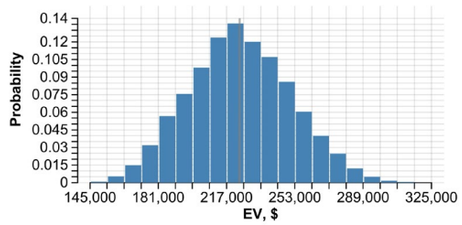


FIGURE 2: POST-pHA* MODEL RESULTS

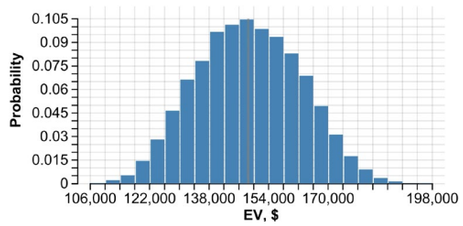
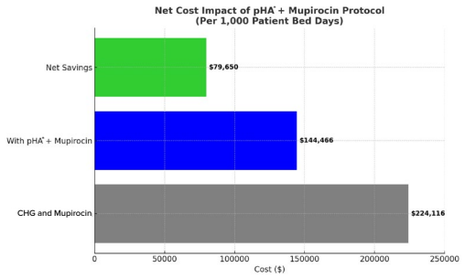


Figure 3 shows the costs pre and post intervention with pHA* and mupirocin and the expected net savings.

DISCUSSION

The findings of this study demonstrate that the universal use of pHA*w and mupirocin for decolonization in burn patients leads to substantial cost savings. MRSA infections substantially increase the length of stay, resource utilization, and overall treatment expenses. By reducing MRSA infections, hospitals can lower antibiotic use, improve bed turnover, increase patient satisfaction and reduce clinical time per patient. The expected savings after accounting for the added cost of pHA* and mupirocin equate to $79.65 per day. In a capitated payment model for inpatient burn care, the expected savings is a direct financial benefit to the hospital.

FIGURE 3: NET COST IMPACT



Adding the cost of pHA* ($71,001), the net savings was expected to be **$79,650 per 1000 patient bed days** or $79.65 per bed day. All model iterations show a cost savings associated with pHA* and mupirocin.

LIMITATIONS

The results of this analysis were based on a single center burn unit's experience with pHA* and mupirocin in a pre- / post-period observational study. Second, this study was limited only to an examination of intervention effect on MRSA. It did not include an assessment of the cost of all treatment, ancillary burn-related services, or labor productivity related to the intervention.

CONCLUSIONS

pHA* and mupirocin was expected to be a substantial cost-saving strategy for the prevention of infection in burn patients. Larger and more clinically diverse studies are recommended to confirm these findings.

REFERENCES

1. Bloemsma, G.C.; Dokter, J.; Boxma, H.; Oen, I.M. Mortality and causes of death in a burn centre. Burns 2008, 34, 1103–1107
2. Samuel, P.; Kumar, Y.S.; Suthakar, B.J.; Karawita, J.; Kumar, D.S.; Vedha, V.; et al. Methicillin-Resistant Staphylococcus aureus Colonization in Intensive Care and Burn Units: A Narrative Review. Cureus. 2023, 15(1), e47139.
3. Hacek, D.M.; Paule, S.M.; Thomson, R.B.; Robicsek, A.; Peterson, L.R. Implementation of a universal admission surveillance and decolonization program for methicillin-resistant staphylococcus aureus (MRSA) reduces the number of MRSA and total number of S. aureus isolates reported by the clinical laboratory. Journal Clinical Microbiology. 2009, 47(11), 3749-3752.
4. Gray, D.; Foster, K.; Cruz, A.; Kane, G.; Toomey, M.; Bay, C. et al. Universal decolonization with hypochlorous solution in a burn intensive care unit in a tertiary care community hospital. American Journal of Infection Control. 2016, 44, 1044-1046.
5. Nelson RE, Hatfield KM, Wolford H, Samore MH, Scott RD, Reddy SC, et al. National estimates of healthcare costs associated with multidrug-resistant bacterial infections among hospitalized patients in the United States. Clinical Infectious Diseases. 2021;72:S17-S26.
6. Mallow PJ, Black J, Chaffin AE, Couch KS, Faust E, Fernandez LG et al. The economic and quality effects of wound cleansing with pure hypochlorous acide: evidence-based evaluation and guidance. Wounds. 2024;36(10):S1-S13.

*Vashe Wound Solution
201-PB069

Use of a Negatively Charged Fiber Based Dressing* on Painful Atypical Wound Patients to Deslough as an Adjunct to Sharp Debridement

Loan Lam DPM FAWPHc FAPWCA CWSP CHWS CLWT Medical Director of Wound Services – United Vein and Vascular Centers, Tampa, FL

INTRODUCTION

Desloughing of wounds is a critical first step to healing and considered a low-risk form of debridement. Slough is the yellowish/whitish, gelatinous/stringy material that covers wound surfaces and impairs healing by creating a bacterial burden. Based on previously published randomized controlled trials, negatively charged fiber dressings* can be used to attract slough carrying a positive charge, particularly when moistened with a mildly acidic cleanser such as pure hypochlorous acid solution**. While such products tend to be studied on common wounds like diabetic or venous ulcers, there are also various atypical wounds of uncommon etiologies like pyoderma gangrenosum, vasculitis, sickle cell anemia, and spider bites that tend to be exquisitely painful and difficult to tolerate typical sharp debridement. These atypical wounds can also be extremely painful during dressing changes and the addition of autolytic or enzymatic dressings needed for fibrin and slough removal can assist in minimally atraumatic debridement.

METHODS AND MATERIALS

We retrospectively studied a newly launched product using negatively charged fibers on various atypical wounds in our wound center. We describe 14 wounds treated with this product over 8 weeks and excluded venous, arterial, pressure, and diabetic wounds. All wounds were initially reported by the respective patient to be rated 3 or higher on the Pain Visual Analogue Scale. We monitored wound size, wound condition, and extent/speed of desloughing using imaging technology compatible with electronic medical recordkeeping weekly. We followed the usage instructions provided in the packaging and presoaked all wounds with a pure hypochlorous acid solution.**

RESULTS

We found that product was effective in desloughing wounds when used consistently, particularly when the wounds were pretreated with a hypochlorous acid based soak at every dressing change. We present tabulated results of 14 atypical wounds (pyoderma gangrenosum, vasculitic, sickle cell, and spider bite wound types). Each patient had previously been treated with sharp debridement at least once prior to use of the negatively charged fiber dressing and reported intolerance to sharp debridement due to pain. Each reported good tolerance of subsequent sharp debridements and reduction of pain with the use of the negatively charged fiber dressing.

CASE 1 FIGURES 1 + 2

WEEK 1 WEEK 4

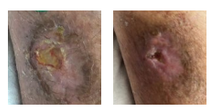
CASE 2 FIGURES 3 + 4

WEEK 1 WEEK 4

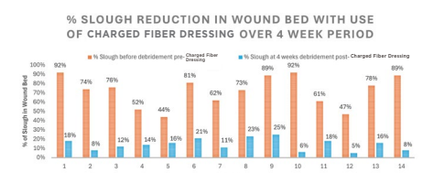
CASE 3 FIGURES 5 + 6

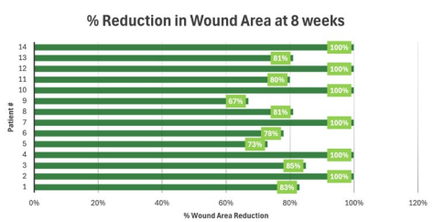
WEEK 1 WEEK 4

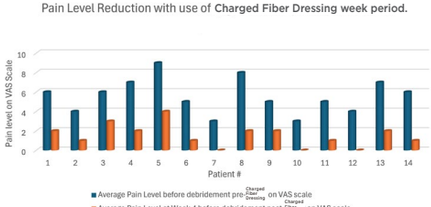
CASE 4 FIGURES 7 + 8



WEEK 1 WEEK 4







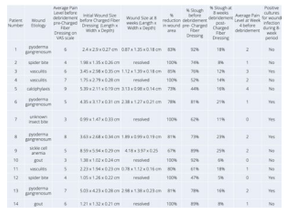


TABLE 1: ATYPICAL PATIENT WOUNDS USING NEGATIVELY CHARGED FIBER BASED DRESSING

DISCUSSION

Sharp debridement is considered the gold standard in wound care in a clinical setting. To assist in reducing bioburden buildup between clinical visits, finding a wound dressing that can assist in desloughing of the wound, while simultaneously minimizing pain and trauma to the wound bed can be challenging, especially in more painful wound types. The charged dressings described here* represents an entirely new mode for physical removal of slough.

We decided to stock this product in our wound center after an evaluation on all wound types.

While the randomized controlled trial to support this product's use is consistent with the claims associated with the product, it still is worthy to note that it works well on atypical wounds, especially more painful wounds. The use of the hypochlorous acid based cleanser is consistent with the recorded ability of the product to work synergistically with the negatively charged fiber dressing presented here.

REFERENCES

1. Desroche N, et al. Antibacterial properties and reduction of MRSA biofilm with a dressing combining poly-absorbent fibres and a silver matrix. J Wound Care. 2016 Oct;25(10):577-84.
2. Percival SL. Restoring balance: biofilms and wound dressings. J Wound Care. 2018 Feb;27(2): 102-13
3. Desroche N, et al. Evaluation of in vitro anti-biofilm activities of two dressings with poly-absorbent dressing fibres and a DACC coated dressing. Poster EWMA 2017
4. Meaume, S., Dissemond, J., Addala, A. Evaluation of two fibrous wound dressings for the management of leg ulcers: results of a European randomised controlled trial (EARTH RCT). J Wound Care 2014; 23: 3, 105–116.
5. N. Desroche et al, Evaluation of the anti-biofilm activity of a new poly-absorbent dressing with a silver matrix*using a complex in vitro biofilm model. Poster Wounds UK 2017.
6. Lazareth I, et al. The role of a silver releasing lipido-colloid contact layer in venous leg ulcers presenting inflammatory signs suggesting heavy bacterial colonization: Results of a randomized controlled study. Wounds. 2008;20(6):158–66
7. Dalac S., Sigal L., Addala A., et al Clinical evaluation of a dressing with poly absorbent fibres and a silver matrix for managing chronic wounds at risk of infection: a non-comparative trial. J Wound Care, Vol 25, No 9, September 2016

The Wound Clinic at United Vein & VASCULAR CENTERS

Contact Info:
Email: Loan.Lam@unitedveincenters.com
Office: 813.321.2235

*Urgoclean Ag
** Vashe Wound Solution
Sponsored by Urgo North America
804-PB021

Patient and Family-Centred Pressure Injury Prevention and Management in Acute Care

Amelia Wells, Inam Khalfan, Saleen Shivji, Chester H. Ho, Kiran Pohar Manhas, Elisavet Papathanassoglu, and Caitlin L. Hurd
Alberta Health Services and University of Alberta

Introduction

Background: Pressure injuries (PIs) are localized damage to the skin and underlying soft tissue usually over a bony prominence or related to a medical or other device[1]. PIs are a persistent issue in clinical settings, causing profound social, physical, and psychological impacts on patients, leading to higher mortality rates, increased burdens on family members, and significant costs to the healthcare system[2,3]. Although PIs are largely preventable and routinely addressed in hospital practice, the global prevalence of hospital-acquired PIs remains high[4,5].

Purpose: The purpose of this study was to explore patient and family perspectives on PI prevention and management among adult inpatients at risk of developing a PI in acute care settings throughout Alberta. This includes their perceptions of the care they received, how they were or were not involved, and their preferences regarding involvement in their care.

Methods

Design: A cross-sectional survey study design that included open-ended and closed ended survey items.
- Open-ended items (e.g., *What are some positive experiences you have had related to pressure injury prevention during this hospital admission?)*
- Closed-ended items (e.g., *I know what a pressure injury is, strongly disagree → strongly agree*)

Survey development: The survey was developed in collaboration with patient and family partners to explore participants' perceptions of the care they received, how they were or were not involved, and their preferences for involvement in their care.

Participants and setting: The survey was administered to patients at risk of PI (or their family or caregivers), as defined by Braden Scale score of ≤ 18, in eight acute care settings across Alberta.

Sampling: Convenience sampling was used, and eligible participants were identified and approached by a clinical partner.

Analysis:

Open-ended questions were thematically analyzed in NVivo.
- Responses were coded by two independent researchers who then met to discuss emerging themes.

Closed-ended questions were analyzed in SPSS.
- Descriptive statistics summarized the data.
- Statistical tests included: Cochran's Q, GEE logistic regression, binary logistic regression, and Mann-Whitney U.
- Models adjusted for confounders (e.g., age and sex) where appropriate.
- A *p*-value >0.05 was deemed statistically significant.

Results- Demographics

Participant Demographics (n=161)

Age admitted (median years)	**73 years (IQR: 19)**
Gender	
Male	66 (41.0%)
Female	94 (58.4%)
Missing	1 (0.6%)
Survey Respondents	
Patient	129 (80.1%)
Family member/Caregiver	32 (19.9%)
Geographical Location Based on AHS Zones	
Urban	57 (35.4%)
Rural	102 (63.4%)
Missing	2 (1.2%)
Type of Unit or Ward	
Medicine	111 (68.9%)
Intensive Care Unit	7 (4.3%)
Surgical	14 (8.7%)
Other	26 (16.1%)
Missing	3 (1.9%)
Hospital Length of Stay (median days)	13 (IQR: 25)
Current Presence of PI in the Patient	
Yes	34 (21.1%)
No	109 (67.7%)
Unsure	17 (10.6%)
Missing	1 (0.6%)
Ethnicity	
White of North American descent	114 (70.8%)
White of European descent	33 (20.5%)
Minority ethnic groups	14 (8.7%)
Prefer to self-identify	2 (1.2%)
Prefer to not respond	3 (1.9%)

Results- Quantitative

Knowledge of PIs

While **80.7%** of participants expressed some knowledge of PIs

69.6% had not heard about PI prevention or received resources regarding PI prevention/management from the healthcare team during their admission

Source of PI Information

1 IN 5 — Participants self-reported having a pressure injury at the time of survey

Research Question: What are the effects of hearing about the risk of PIs from the healthcare team during the current admission on the likelihood of having a PI?

Statistical Test: Binary Logistic Regression

Unadjusted Model

Predictor	β	Wald	P-value	OR	95% CI
No PI Info During Admission	1.20	7.24	0.007	3.31	[1.38,7.91]

Adjusted Model

Predictor	β	Wald	P-value	OR	95% CI
No PI Info During Admission	0.95	4.22	0.040	2.59	[1.04, 6.40]
Age	0.008	0.299	0.584	1.01	[0.98,1.04]
Gender	0.113	0.06	0.808	1.12	[0.45,2.78]

Interpretation: These results suggest that although model fit declined when controlling for age and gender, not hearing about PIs during admission remained significantly associated with having a PI.

Involvement in Care

PI Prevention Activities

- Caregivers and patients were most involved in **changing positions** and **drinking water throughout the day.**

82.2% → Of patients reported that they: *"often or always change positions in my bed or chair"*

62.5% → Of caregivers reported that they: *"often or always help the patient change positions in their bed or chair"*

- Caregivers and patients were least involved in activities surrounding **exercise.**

41.1% → Of patients reported that they: *"rarely or never do exercises throughout the day"*

53.1% → Of caregivers reported that they: *"rarely or never help the patient do exercises throughout the day"*

Barriers and Facilitators to Involvement in Care

Research Questions: Are certain PI prevention practices perceived as facilitators or barriers to involvement in care? Do these perceptions differ between patients and caregivers, and between those who reported having had a PI and those who had not?

Statistical Test: Mann-Whitney U

Results:
- The impact of the patient's health condition, ability to help/perform daily living tasks, personal experience with PIs, and choices that the patient and caregiver are given about PIs as barriers/facilitators to involvement in care did not differ ($p>0.05$).
- The education given to participants about the risk of developing a PI was statistically significantly different between patients and caregivers ($U=709.0$, $p<0.001$).
  - Patients had significantly higher total education received scores (mean Rank = 81.59) compared to caregivers (mean Rank = 40.26), indicating that:

Patients were more likely than caregivers to identify education as a facilitator to PI prevention whereas, caregivers were more likely to rate lack of education as a barrier.

Resource Considerations

Resource Considerations
- Participants were asked how they would prefer to receive PI prevention resources in the future.
- There was little alignment with what participants indicated they would like to see in the future compared to what they received.

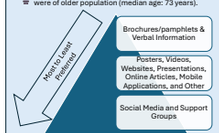
Resources Received During Admission

While **52.2%** of participants indicated that they would like to receive brochures as a PI prevention resources

Only **6.2%** of participants reported receiving a brochure or pamphlet during their hospital admission.

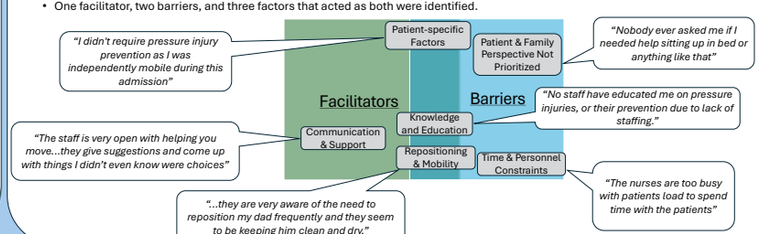
Resource Preferences
- Patients and caregivers did not differ in their preferences in PI prevention resources.
- Participants preferred brochures/pamphlets and verbal information over all the other types of resources, and the significantly least preferred resources were social media and support groups.

This may have been due to age because the participants were of older population (median age: 73 years).



Results- Qualitative

Barriers and facilitators to PI prevention: major themes
- One facilitator, two barriers, and three factors that acted as both were identified.



Key Takeaways

- Most respondents knew what a PI was, despite many not hearing about it during admission.
- Hearing about PI prevention was associated with lower self-reported PI incidence, even after adjusting for age and gender.
- Patients and caregivers did not differ significantly in perceived barriers and facilitators to PI prevention or activities they were involved in.
- Participants were most involved in repositioning related activities and least involved in those related to exercise.
- Although verbal information and pamphlets/brochures were the preferred PI prevention resources, few participants reported receiving them during their hospital admission.
- There is an opportunity for healthcare professionals to engage patients and their caregivers in PI prevention and management by adopting a patient-centred approach in acute care settings. This requires a multidisciplinary model in which healthcare providers work together with patients and their caregivers to deliver and coordinate optimal care.

References

[1]Edsberg, L. E., Black, J. M., Goldberg, M., McNichol, L., Moore, L., & Sieggreen, M. (2016). Revised National Pressure Ulcer Advisory Panel Pressure Injury Staging System: Revised Pressure Injury Staging System. *Journal of Wound, Ostomy, and Continence Nursing*, *43*(6), 585–597. https://doi.org/10.1097/WON.0000000000000281

[2]Song, Y., Shen, H., Cai, J., Zha, M., & Chen, H. (2019). The relationship between pressure injury complication and mortality risk of older patients in follow-up: A systematic review and meta-analysis. *International Wound Journal*, *16*(6), 1533–1544. https://doi.org/10.1111/iwj.13243

[3]Mervis, J. S., & Phillips, T. J. (2019). Pressure ulcers: Pathophysiology, epidemiology, risk factors, and presentation. *Journal of the American Academy of Dermatology*, *81*(4), 881–890. https://doi.org/10.1016/j.jaad.2018.12.069

[4]Lavallée, J. F., Gray, T. A., Dumville, J., & Cullum, N. (2018). Barriers and facilitators to preventing pressure ulcers in nursing home residents: A qualitative analysis informed by the Theoretical Domains Framework. *International Journal of Nursing Studies*, *82*, 79–89. https://doi.org/10.1016/j.ijnurstu.2017.12.015

[5]Klaas, N., & Serebro, R.-L. (2024). Intensive care nurses' knowledge of pressure injury prevention. *BMC Nursing*, *23*(1), Article 876. https://doi.org/10.1186/s12912-024-02533-4

Use of a Decellularized Dermal Matrix* to Heal Pilonidal Sinus Wounds When Standard of Care Fails

Costa, I.G.[1], Stoesz, S.[2] and Gratzer, P.F.[3]

1. School of Nursing, Lakehead University, Thunder Bay, ON
2. Red Deer Community Health, Red Deer, AB
3. School of Biomedical Engineering, Dalhousie University, Halifax, NS

Introduction

Pilonidal sinus wounds (PSW) form as follicles in the gluteal cleft become blocked due to friction and moisture, leading to inflammation, infection and abscess formation. The acute abscess can evolve into a chronic abscess, leading to the development of sinus tracts that connect the abscess cavity to the skin surface. In many cases, the wound may fail to heal completely, leading to recurrent infections, drainage and discomfort. Treatment often involves surgical excision of the sinus tracts and ongoing wound care to prevent recurrence. The non-healing PSW, and prolonged need for wound care, greatly impact patients' quality of life.

We present two cases of recurrent pilonidal cyst sinus wounds that had failed to heal despite multiple surgical and standard wound care interventions. In both cases, a decellularized dermal matrix (DDM)*[2] created from donated human skin (see Fig. 1) was applied to the wound site and successfully closed the wounds.

Case History

Patient #1 is a 37 year old female who had a pilonidal cyst surgically removed 1 year previously and then a second attempt 3 months after failed closure from the first surgery. On the day of treatment, the wound measured 1.0 x 0.5 x 1.0 cm (LWD).

Patient #2 is a 33 year old female with a large, deep wound from surgical debridement measuring 4.5 x 3.5 x 6.5 cm (LWD). The wound had been open for 6 months prior to a second debridement.

Both Patients received standard of care wound treatment since each surgery but did not close.

Actions Taken

Both patients received DDM* grafts after debridement and creation of a lightly bleeding base in each wound. Wounds were packed to hold the DDM* in place during healing and control exudate.

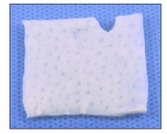


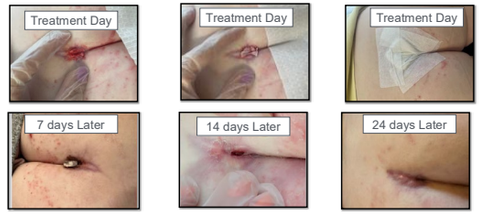
Figure 1. Decellularized Dermal Matrix (DDM)*

All patients had a secondary dressing applied on top of the DDM* in the wound which was changed weekly. Offloading of the wound area was prescribed and followed by both patients.

Results

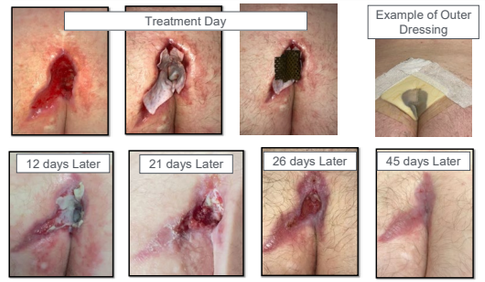
Patient #1 (see Fig. 2) had mild drainage initially but at 2 weeks post treatment moderate drainage was present causing the DDM* to become detached. Despite this, the wound closed 24 days post-treatment.

Figure 2. Healing Progression for Patient #1



Patient #2 (see Fig. 3) had mild to moderate drainage that was managed with significant new tissue growth progressively filling the wound until it closed 45 days post-treatment.

Figure 3. Healing Progression for Patient #2



Implications for Practice

The new tissue regenerative DDM* provided the needed environment and stimulation for cells to mount effective healing of pilonidal cyst wounds. This approach may also help to provide a more effective treatment for other difficult to heal wounds.

References

(1) Costa IG, Strachan R, Everett E. An alternative approach: decellularized dermal matrices for pilonidal sinus when standard care falls short. Wound Care Canada. 2024;22(1): 10-14. DOI: 10.56885/LKQU7921.

(2) Costa, I.G. et al. A Feasibility and Safety Study of a Novel Human Decellularized Dermal Matrix to Accelerate Healing of Neuropathic Diabetic Foot Ulcers in People With Type 1 and Type 2 Diabetes Can J Diabetes (2022) 46: 671-677. DOI: 10.1016/j.jcjd.2022.03.010

Acknowledgements

* DermGEN™ for the study was supplied by RegenMed under license from DeCell Technologies Inc.

Healing Hard to Heal Diabetic Foot Ulcers Using an Advanced Regenerative Matrix*: A Large Multi-Site Case Series

Bishop, R.[1] Roche-Nagle, G.[2], Saleh, A.[3], Costa, I.G.[4], Glazebrook, M.[5], Langile, M.[6], Labbie, M.[7], De Jagger, L.[8], Smith, C.8, Stoesz, S.[9], Wolfli, J.[10] and Gratzer, P.F.[11]

1. Halton Healthcare Services, Oakville-Trafalgar Hospital, Oakville, ON. 2. Dept. of Vascular Surgery, Toronto General Hospital, Toronto, ON 3. Division of Vascular Surgery, Humber River Hospital, Toronto, ON
4. School of Nursing, Lakehead University, Thunder Bay, ON 5. Dept. of Orthopaedic Surgery, QEII Hospital, Halifax, NS 6. Ambulatory Care Centre, QEH, Charlottetown, PEI
7. Ambulatory Wound & IV Clinic, West View Health Centre, Stony Plain, AB 8. QEII Ambulatory Care Center, Grande Prairie, AB 9. Red Deer Community Health, Red Deer, AB 10. Dept. of Plastic Surgery, Grey Nuns Hospital, Edmonton, AB
11. School of Biomedical Engineering, Dalhousie University, Halifax, NS

Introduction

Current Standard of Care (SOC) for DFU's represents a growing cost to healthcare and produces sub-optimal clinical outcomes resulting in avoidable complications including amputation and significant quality of life implications for people with diabetes.

Here we present a large case series involving 80 hard to heal Diabetic Foot Ulcers (DFUs) in patients from clinics and hospitals located in Alberta, Ontario, Nova Scotia and PEI. All patients had received SOC with some also receiving adjuvant therapies (e.g. negative pressure, oxygen exposure) without successful healing. An alternative Advanced Regenerative Matrix * was then utilized to treat these hard to heal DFUs and the results of this therapy are summarized here. This product is decellularized human skin that maintains the structural matrix through a unique cell extraction and non-gamma sterilization process.[1] This preserves the biochemistry of the skin's healing environment and provides a scaffold for tissue regeneration.

Patient Data

Patients ranged in age from 32-95 years old, were predominantly male, either type I or type II diabetic, had a broad range of co-morbidities, with wounds present unhealed from 4 weeks to 3 years, and in various locations of the foot and/or leg.

Patient Demographics	
Age Range	32-95 years
Sex (M:F)	75:25
Diabetes Type	Type I & II
Wound Duration	4 weeks to 3 years
Wound Size (Max., Min.)	20.7 cm^2 – 2.5 cm^2

Wound Locations	
Top of Foot	5%
Bottom of Foot	47%
Side of Foot	24%
Heel	12%
Toe	8%
Shin	4%

Actions Taken

A total of 80 patients were treated between Feb. 2021 and Nov. 2024. The size of DFUs treated ranged from 2.5 cm^2 to 20.7 cm^2. All patients met the criteria for treatment that included Wagner Grade 1 or 2 wound, adequate blood flow demonstrated by bleeding at wound site during debridement and a willingness to be involved in self-care.

Figure 1. Advanced Regenerative Matrix*

All patients underwent a similar general application procedure for the Advanced Regenerative Matrix* (Fig. 1) that included conservative sharp debridement, placing of the matrix onto the wound, covering the matrix with a non-adherent moisture controlling dressing, and appropriate offloading when necessary. In general, dressings were replaced and healing progress monitored weekly.

Results

Patients did not have any complications during treatment. An 85% success rate for healing the treated DFUs was obtained with healing occurring between 2 to 10 weeks and with a median time of 4 weeks. In almost all cases, only 1 application of the Advanced Regenerative Matrix* was required. Causes of failures were mainly attributed to failure to offload and maceration of the matrix due to excessive moisture in the wound site.

Open Wounds Before and Then Closed After Treatment

Implications for Practice

The new Advanced Regenerative Matrix* provided the needed environment and stimulation for cells to mount effective healing of hard to heal DFUs. This approach provides one-and-done application aimed at improving healing outcomes, improving the patient and clinician experience and lowering health care costs.

References

(1) Costa, I.G. et al. A Feasibility and Safety Study of a Novel Human Decellularized Dermal Matrix to Accelerate Healing of Neuropathic Diabetic Foot Ulcers in People With Type 1 and Type 2 Diabetes Can J Diabetes (2022) 46: 671-677. DOI: 10.1016/j.jcjd.2022.03.010

Acknowledgements

* DermGEN™ for the study was supplied by RegenMed under license from DeCell Technologies Inc.

Evaluation of the geko™ Device in the Treatment of Sacral Pressure Injuries and Below-Knee Amputation Sites

Paulo Da Rosa RN, BScN, NSWOC, MCIScWH, WOCC(C)
Clinical Nurse Specialist for Wound Care at Parkwood Institute

Background

The geko™ device, a neuromuscular electrostimulation tool, has been effective in improving circulation and healing venous leg ulcers[1,2]. Its role in treating pressure injuries (PIs) and below-knee amputation (BKA) wounds remains unclear.

Case History

A rehabilitation hospital evaluated seven patients: two with sacral PIs and five with BKA wounds[Image 1,3,5]. All had chronic, non-healing wounds unresponsive to standard care, including appropriate dressings and offloading[Table 1].

Clinical Situation

Patients had wounds with minimal healing progress despite adherence to conventional management. Sacral PIs resulted from prolonged pressure, while BKA wounds showed delayed post-surgical healing.

Methods

The geko™ device was introduced as an adjunct therapy to a single patient. Applied to the lateral knee, it was used daily to stimulate the common peroneal nerve, aiming to enhance lower limb blood flow[Figure 2]. Each device performed two 12-hour treatments on separate days (one treatment in 24 hours). The device was removed between treatments. A new device was used every two days, as one device cannot perform more than 2 x 12-hour treatments. Treatment duration varied based on patient response. Wound photos were taken weekly to monitor progression.

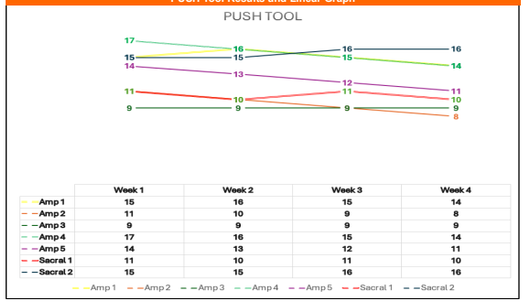
Inclusion criteria:
- Five new BKA patients with closed or open incisions
- Two sacrococcygeal PIs Stages 3 or 4
- ≥18 years of age

Exclusion criteria:
- Implanted electronic devices
- Recently diagnosed/suspected DVT
- < 18 years of age
- Pregnant or breast feeding
- Diagnosed heart condition
- Epilepsy
- Allergy to acrylic acid

Figure 2: NMES Device Placement

Evaluation Process:
An information sheet on the study, with eligible and non-eligible criteria was available on three nursing units at Parkwood Institute: Complex Care, Regional Rehab and Specialized Geriatrics. Nurse notified NSWOC and/or Physician of eligible patient for assessment. Patient consent was obtained. NSWOC provided instructions and treatment schedules, as well as reassessments dates. NSWOC provided geko™ devices for each week. Treatments were discontinued after 28 days.

Figure 1: PUSH Tool Results and Linear Graph



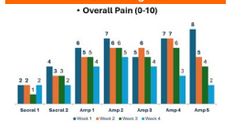
	Week 1	Week 2	Week 3	Week 4
Amp 1	15	16	15	14
Amp 2	11	10	9	8
Amp 3	9	9	9	9
Amp 4	17	16	15	14
Amp 5	14	13	12	11
Sacral 1	11	10	11	10
Sacral 2	15	15	16	16

Amp 1 Amp 2 Amp 3 Amp 4 Amp 5 Sacral 1 Sacral 2

Table 1: Demographic and Clinical Variables

Demographic Variable	BKA (n = 5)	PI (n=2)
Age (years)		
Range	65 - 87	44 & 48
Gender		
Female	2	0
Male	3	2
Duration of Wound (Weeks)		
Mean	10	25
Range	5.0-14	20-30
Blood Glucose (mmol)		
Mean	7.28	5.85
Range	4.8-12.7	4.6-7.1
HgbA1c (%)		
Mean	5.64	5.15
Range	5.1-6.6	5.0-5.3
Albumin (g/L)		
Mean	31.2	29
Range	27-36	26-32
LKC (x10^9/L)		
Mean	10.04	9.7
Range	4.4-23.8	9.4-10
CRP (mg/L)		
Mean	36.28	81.75
Range	3.9-144.2	72.8-90.7

Figure 3: Pain Level Progress



Results

Two patients with sacral PIs showed no significant improvement, indicating limited efficacy in this context. Among the five BKA patients, three demonstrated notable healing progress, including reduced wound size and improved granulation, suggesting partial effectiveness[Figure 1]. Among the five BKA patients, two showed decreased pain level[Figure 3].

Image 1: Right BKA Amputation

Image 3: Left BKA Amputation

Image 5: Sacral Pressure Injury

After 28 days of **NMES**

Image 2: Right BKA Amputation

Image 4: Left BKA Amputation

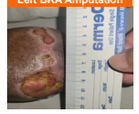


Image 6: Sacral Pressure Injury

Discussion

The geko™ device may support healing in BKA wounds but appears ineffective for sacral PIs. Further research is needed to refine patient selection and optimize treatment protocols for different wound types:
- In other health care settings and populations
- Using a larger sample size

An unexpected finding was the decrease in pain level, as reported by two of the BKA patients.

Conclusion

The study demonstrates potential benefit from the NMES on patients with non-healing BKA wounds. The study did not demonstrate benefit for the chronic sacral pressure injuries. While the NMES device has great evidence in improving venous leg ulcers, its efficacy in amputations and pressure injuries would require further research with larger patient populations.

References:
1. Harding et al: geko™ device Increases Microcirculatory Flux in Mixed Etiology Leg Ulcers. Advances in Skin & Wound Care 38(1):p 25-30, 1/2 2025. **2.** Stacey MC, Sibbald RG, Evans R. Continuous muscle pump activation by neuromuscular electrical stimulation of the common peroneal nerve in the treatment of patients with venous leg ulcers: A position paper. Int Wound J. 2024 Sep;21(9):e70040. **3.** Collarte A, Dee N. Muscle pump activation for hard-to-heal leg ulcers. J Community Nurs 39(1): 28–36 2025. 4. Tuson R, Metry A, Harding K. Cost-effectiveness analysis of the geko™ device (an NMES technology) in managing venous leg ulcers in UK healthcare settings. Int Wound J. 2024 Oct;21(10): e70048.

Implementation of a Transparent Dressing Protocol for Pressure Injury Prevention in Moderate to High-Risk Patients

Paulo Da Rosa RN, BScN, NSWOC, MCIScWH, WOCC(C)
Clinical Nurse Specialist for Wound Care at Parkwood Institute

Background

Pressure injuries (PIs) pose a significant risk to patients with limited mobility, particularly in rehabilitation settings[1,2]. Frequent dressing changes can be labor-intensive and may compromise skin integrity. This study evaluates the effectiveness of a transparent dressing with HydroCore™ technology in a PI prevention protocol[2].

Case History

A rehabilitation hospital identified 10 patients at moderate to high risk for PIs due to reduced mobility, nutritional deficits, and comorbidities(Table 2).

Clinical Situation

Patients were at risk for PIs in high-pressure areas: sacral region, back, scapulae, and elbows. Traditional foam dressings required frequent removal, potentially increasing skin breakdown risk.

Methods

A protocol incorporating a transparent dressing with HydroCore™ technology was implemented. This dressing allowed continuous skin assessment without removal and provided pressure redistribution and a cooling effect. Dressings were applied to at-risk areas, where wear times due to integrity were documented on an evaluation form by nursing staff; along with patient comfort, ease of application, ease of removal, and ease of skin assessment(Figure 1).

Inclusion criteria:

- •Identifiable bony prominences
- •Intact skin, including Stage 1 PI
- •Braden Score ≤15
- •<2 regular Bowel Movements daily
- •≥18 years of age

Exclusion criteria:

- •Incontinent of loose stool and/or urine
- •≥ 2 regular Bowel Movements daily
- •< 18 years of age
- •Third-degree Burns

Table 2: Demographic and Clinical Variables

Demographic Variable	Complex Care (n=4)	SCI/ABI (n=2)	Geriatric Rehab (n=3)
Age (years)			
Range	63-92	54-58	80-93
Mean	83	56	85
Gender			
Female	3	1	2
Male	2	1	1
Braden			
Range	14-15	14	14-15
Mean	14.8	14	14.6
Blood Glucose (mmol/L)			
Range	4.9-9.6	7.3-7.8	6.5-11.5
Mean	6.8	7.6	8.2
HgbA1c (%)			
Range	4.2-5.9	5.6-6.2	5.1-6.5
Mean	5.1	5.9	5.8
Albumin (g/L)			
Range	28-42	32-36	32-42
Mean	31.8	34	36
Pre-Albumin (g/L)			
Range	0.16-0.25	0.21-0.27	0.17-0.18
Mean	0.19	0.24	0.17
Acute Care LOS (days)			
Range	28-80	13-34	26-40
Mean	37	24	36

Evaluation Process:

Nurse notified NSWOC and/or Physician of eligible patient for evaluation of dressing. Consent was obtained. NSWOC provided instructions and dressings. Nurse applied dressing per protocol and documented accordingly using the Evaluation Form provided(Figure 1).

Figure 1: Evaluation Form


PARKWOOD INSTITUTE
TRIAL EVALUATION FORM
Transparent Dressing

Figure 2: Evaluation Results Percentage

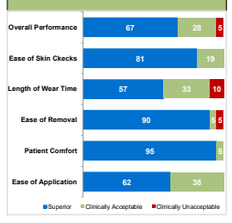


Table 1: List of all dressings used

Patient ID	# Days	Location	Cause of Removal	Dressing Used	Account for max of 7 days
A1	5	sacral/coccyx	edges lifting	7x7 Sacral	5
A2	5	sacral/coccyx	edges lifting	7x7 Sacral	5
A3	4	sacral/coccyx	edges lifting	6" Round	4
A4	4	sacral/coccyx	edges lifting	6" Round	4
A5	4	sacral/coccyx	edges lifting	6" Round	4
A6	9	sacral/coccyx	overdue change	7x7 Sacral	7
B1	13	spine	overdue change	6" Round	7
B2	9	spine	overdue change	6" Round	7
B3	5	spine	edges lifting	6" Round	5
C1	11	sacral/coccyx	overdue change	7x7 Sacral	7
C2	7	sacral/coccyx	due change	7x7 Sacral	7
D1	3	sacral/coccyx	edges lifting/soiled	7x7 Sacral	3
D2	5	sacral/coccyx	edges lifting/soiled	7x7 Sacral	5
D3	4	sacral/coccyx	edges lifting/soiled	7x7 Sacral	4
E1	4	sacral/coccyx	edges lifting	7x7 Sacral	4
E2	6	sacral/coccyx	edges lifting	7x7 Sacral	6
E3	7	sacral/coccyx	due change	7x7 Sacral	7
E4	7	sacral/coccyx	due change	7x7 Sacral	7
F1	3	sacral/coccyx	edges lifting	9x9 Sacral	3
F2	4	sacral/coccyx	edges lifting	9x9 Sacral	4
G1	3	sacral/coccyx	edges lifting/soiled	7x7 Sacral	3
G2	3	sacral/coccyx	edges lifting/soiled	7x7 Sacral	3
G3	5	sacral/coccyx	edges lifting	7x7 Sacral	5
H	11	sacral/coccyx	overdue change	7x7 Sacral	7
I	3	sacral/coccyx	edges lifting/soiled	7x7 Sacral	3
J1	3	sacral/coccyx	edges lifting/soiled	9x9 Sacral	3
J2	4	sacral/coccyx	edges lifting/shower	9x9 Sacral	4
Average Wear Time	5.6				4.9

Results

None of the 10 patients developed PIs in the treated areas. The ability to monitor skin without removing the dressing facilitated timely interventions and reduced dressing changes(Table 1).
Extended wear time average of ~5 days decreased nursing workload and may offer cost savings(Table 1).
Product evaluation data revealed high satisfaction among nursing staff: 100% rated patient comfort as either Superior or Clinically Acceptable, and 95% rated overall product performance positively(Figure 2). The dressing consistently demonstrated ease of application, removal, and skin monitoring(Figure 2).

Discussion

Transparent dressings with HydroCore™ technology, in conjunction with standard care, enhance PI prevention in at-risk patients by improving skin monitoring(Image 1,2) and reducing dressing change frequency. Their integration into prevention protocols may improve patient outcomes and nursing efficiency. Further research with larger samples is recommended to validate these findings.
An unexpected finding was some of the dressing wear times far exceeded the recommended or expected manufacturer's recommendations of 7 days(Table 1).

Conclusion

The implementation of transparent dressings with HydroCore™ technology demonstrated effective prevention of pressure injuries in moderate to high-risk rehabilitation patients. Continuous skin monitoring without dressing removal supported early intervention, while reduced dressing changes lowered nursing workload. Extended wear times beyond manufacturer expectations were observed without compromising skin integrity. These findings support the integration of transparent dressings into PI prevention protocols, though these do not replace the standard care guidelines in PI Prevention.

Image 1: Sacral 7x7 Dressing Sacrococcygeal

Image 2: Round 6" Dressing Mid-Back Spine

References:
1. Registered Nurses' Association of Ontario (2024). Pressure injury management: Risk assessment, prevention and treatment, Fourth 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. 64 pp. Retrieved from: www.woundscanada.ca/docman/public/health-care-professional/bpr-workshop/172-bpr-prevention-and-management-of-pressure-injuries-2/file. **3.** LeBlanc K, Heerschap C, Bresnai-Harris J, Butt B, Chaplain V, Wiesenfeld L. 2020. NSWOCC Best Practice Recommendations for Skin Health Among Critically Ill Patients: with an emphasis on critically ill patients suffering from COVID-19. Available from: www.nswoc.ca 4. Guzman, Sandra et al. Pressure Distribution Properties in Wound Dressings Using Heel and Sacrum Indenters Under Clinically Relevant Loads. Advances in Skin & Wound Care 38(4):p 189-194, May 2025. | DOI: 10.1097/ASW.0000000000000294

Varicose Vein Sclerotherapy Post-Procedural Complications: A Systematic Review

TEMERTY FACULTY OF MEDICINE
UNIVERSITY OF TORONTO

Nicholas J. Chronis[1], Sara Pollanen, Andy Lee[1], Hong Yi He[1], David Croitoru[2]

[1] Temerty Faculty of Medicine, University of Toronto, Toronto, Ontario, Canada

[2] Division of Dermatology, Department of Medicine, Women's College Hospital and Temerty Faculty of Medicine, University of Toronto, Toronto, ON, Canada

Introduction

- Varicose veins are distended vessels that arise from damaged vein valves and subsequent pooling of blood, commonly occurring with chronic venous insufficiency
- Varicose veins affect 10-30% of the adult population worldwide (Callam., Br J Surg., 1994; Criqui et al., J Vasc Surg., 2008)
- Sclerotherapy is widely used for treating varicose veins and involves injecting affected veins with a chemical that induces vein scarring and collapse
- When used alone or in combination with other therapies, sclerotherapy has various complications and risks that have not been comprehensively reviewed in the literature

Objectives

To descriptively assess postoperative complications following sclerotherapy for varicose veins.

Hypothesis: Occurrence of sclerotherapy complications is minimal, and does not differ significantly from non-sclerotherapy comparators

Methods

Inclusion Criteria:
- English studies
- Non-review articles
- Varicose veins
- Sclerotherapy
- Post-operative infections or complications

Primary Outcomes:
- Infection, complications (phlebitis, ecchymosis, hematoma, bleeding)

Secondary Outcomes:
- Management, course of resolution

Study Sampling

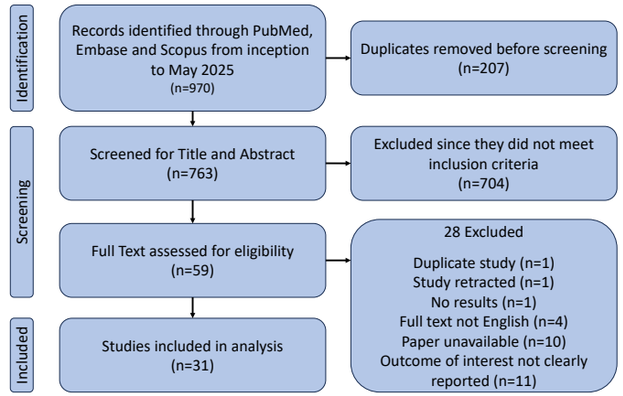


Figure 1. Flow diagram for study sampling according to Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines

Results

Polidocanol and Foam Sclerosants were Most Commonly Used

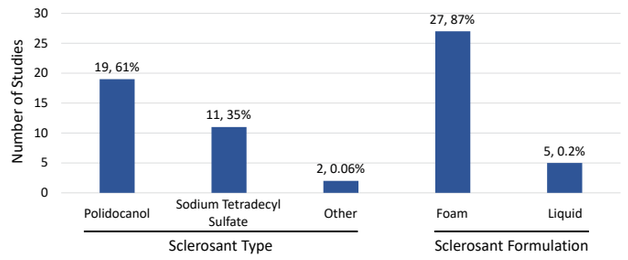


Figure 2. Sclerosant types and formulations used across 31 studies

Sclerotherapy Yielded Low Infection Rates

Sclerotherapy Group	Cases of Infection
Sclerotherapy Alone (n=14,075)	17 (0.1%)
Sclerotherapy + Surgery (n=798)	5 (0.6%)
Sclerotherapy + Ablation (n=660)	4 (0.6%)
Sclerotherapy + Multiple Surgery/Ablation Techniques (n=125)	0 (0%)

Table 1. Total cases of infection categorized by sclerotherapy group

Common Surgical Complications were Reported with Sclerotherapy

Sclerotherapy Group	Reported Surgical Complication in Literature			
	Phlebitis	Ecchymosis	Hematoma	Bleeding
Sclerotherapy Alone	66% (n=7)	11.1% (n=2)	28% (n=3)	–
Sclerotherapy + Surgery	20% (n=6)	33% (n=2)	0.8% (n=3)	–
Sclerotherapy + Ablation	NR (n=1)	4.7% (n=2)	8.0% (n=2)	32.7% (n=1)
Sclerotherapy + Multiple Surgery/Ablation Techniques	3.1% (n=2)	4.7% (n=2)	–	–

Table 2. Highest rates of specific surgical complications in the literature reported among n out of 31 studies, categorized by sclerotherapy group *NR: percentage not reported

Sclerotherapy Displayed Similar/Lower Infection than Comparators

Sclerotherapy Group	Comparator	Infection
Sclerotherapy Alone	Surgery Alone	Significantly Less (3 studies)
Sclerotherapy + Surgery	Surgery Alone	No Difference (3 studies)
Sclerotherapy + Ablation	Ablation Alone	No Difference (2 studies)

Table 3. Infection in various sclerotherapy groups in contrast to comparator groups

Conclusions

- Sclerotherapy: safe, low infection, common surg. complications
- Minimize severe infection with aseptic technique and ultrasound
- Future research: compare sclerotherapy treatment modalities

Driving Health Equity: An AI-Powered Imaging Technology for Early Detection of Pressure Injuries

Stephanie Rintoul[1], Stephanie Furtado[1], John Gregory[2], Srinath Samaranayake[1], Ari Collerman[1], Danielle Petruccelli[1], Leanne Tremain[1], Denise Johnson[1], Linda Chan[1], Hiya Shah[1], Kim Hornby[1], Ted Scott[1], Leslie Gillies[1]

[1]Hamilton Health Sciences, Hamilton, Canada. [2]Opencity Inc., Kitchener, Canada

Introduction: Project Need

Pressure injuries (PIs) occur when prolonged pressure on bony areas of the body reduces blood flow, damaging the skin and underlying tissue. Early signs include changes in texture, tone, temperature, and pain. Without timely intervention, PIs can progress into deep wounds that may expose cartilage or bone, and in severe cases, cause life-threatening infections such as sepsis. At Hamilton Health Sciences (HHS), an audit conducted between 2005 and 2018 revealed a historically high pressure injury (PI) prevalence of 24% and an incidence rate of 8.9%, underscoring the substantial burden of PIs and the critical need for more effective prevention.[1,2] These tools are subjective, time-consuming, and less accurate for individuals with dark skin tones—who are 1.8 times more likely to develop later-stage PIs.[2] This initiative focuses on earlier and more objective detection, with particular attention to improving equity in patients with dark skin tones. Its importance was reinforced at the 2024 Canadian Pressure Injury Advisory Panel Summit, which called for more equitable prevention strategies.[3]

Project Aim

An artificial intelligence (AI)-powered imaging solution, the MIMOSA Pro imaging device, was evaluated at HHS across adult and pediatric inpatient units—including surgical, intensive care, and complex care units. Digital, thermal, and oximetry images were collected over four months and compared to standard Braden assessments (Braden Scale and Braden QD) to evaluate each tool's ability to detect PI risk. This quality improvement initiative aimed to enhance patient outcomes and improve health equity by enabling earlier identification of PI risk, while assessing the MIMOSA Pro device's efficacy against the Braden assessments.

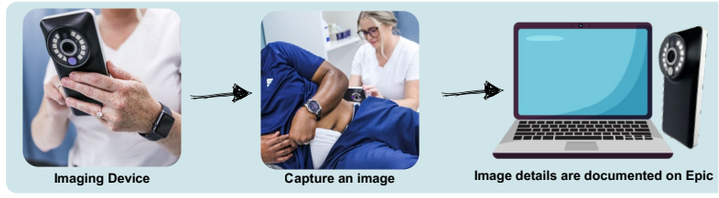


Figure 1. MIMOSA Pro imaging device workflow

Findings and Results

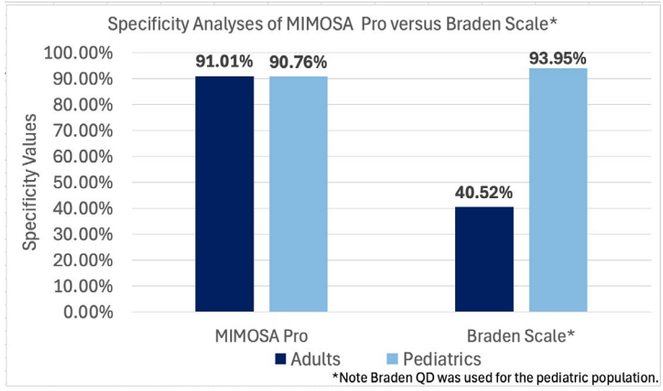


Figure 2. Specificity Analyses of MIMOSA Pro Imaging Tool versus Braden Scale (Braden QD for Pediatrics)

Over a course of four months from December 2024 to March 2025, more than 3,500 imaging assessments were completed using the MIMOSA Pro imaging device. The Kappa analysis indicated fair agreement in pediatrics (κ = 0.299) but slight agreement in adults (κ = 0.053). In pediatrics, the Kappa test indicates that the MIMOSA Pro and Braden QD classify patients similarly; however, in adults, it reveals significant differences in classification between the MIMOSA Pro and the Braden Scale. Pediatric specificity remained high (Braden QD: 93.95%, MIMOSA Pro: 90.76%), indicating both tools effectively identify non-risk patients. In adults, however, the MIMOSA Pro demonstrated notably higher specificity (91.01%) compared to the Braden Scale (40.52%), highlighting its stronger ability to identify non-risk patients and reduce unnecessary interventions. Alongside these performance outcomes, feedback from research nurses and assistants emphasized that the MIMOSA Pro was straightforward to learn and integrated well into workflows, supporting early intervention without causing fatigue or safety concerns. The clinical impact was further underscored by cost comparisons: in fiscal year 2023–2024, patients who developed PIs incurred costs approximately 7.6 times higher than general medicine patients. Sensitivity analysis was excluded due to sample size limitations, unrepresentative patient distribution (particularly among those with dark skin tones), the absence of an untreated control group, and early intervention bias.

Implications and Applications

Early findings from this quality improvement initiative support the use of AI-powered imaging, specifically the MIMOSA Pro, to enhance standard PI prevention pract-ices. By enabling earlier and more objective detection, this technology may reduce hospital-acquired PIs and improve patient outcomes. The project increased awareness of PI protocols among participating clinical units and prompted a review of adherence to Braden Scale and Braden QD guidelines. Clinical teams expressed a strong interest in adopting technology to improve care, and insights were shared with other healthcare organizations to inform broader implementation.

Next Steps

The next steps involve proceeding with Epic integration by enabling image uploads and streamlining documentation workflows. In parallel, there are plans to publish the outcomes of this project. To strengthen the analysis, additional data will be collected at high-risk HHS sites using the MIMOSA Pro devices, with a particular focus on enrolling patients with dark skin tones.

References

1. Huang C, Ma Y, Wang C, Jiang M, Yuet Foon L, Lv L, Han L. Predictive validity of the braden scale for pressure injury risk assessment in adults: A systematic review and meta-analysis. Nurs Open. 2021 Sep;8(5):2194-2207. doi: 10.1002/nop2.792. Epub 2021 Feb 25. PMID: 33630407; PMCID: PMC8363405. https://hign.org/consultgeri/try-this-series/predicting-pressure-injury-risk
2. Oozageer Gunowa N, Hutchinson M, Brooke J, Jackson D. Pressure injuries in people with darker skin tones: A literature review. J Clin Nurs. 2018 Sep;27(17-18):3266-3275. doi: 10.1111/jocn.14062. Epub 2017 Oct 4. PMID: 28887872.
3. Canadian Pressure Injury Advisory Panel. Report on a nation under pressure: Canadian pressure injury summit. Nurses Specialized in Wound, Ostomy and Continence Canada; 2024, Nov 18. 28 p. Available from: https://www.cpiap.com

Ontario Health atHome

Ontario Health atHome

Keeping Patients Home: Nurse Practitioner Avert Emergency Visits for Minor Skin and Wound Infections

Jenny Su NP-PHC, MClSc-WH, PhD (student)

South West Regional Wound Care Program

Introduction

In Ontario, nurse practitioners (NPs) practice within their advanced scope of practice that encompasses formulating and communicating diagnoses based on comprehensive assessments, and ordering to interpreting diagnostic tests to guide pharmacological and non-pharmacological interventions (College of Nurses of Ontario [CNO], 2017)

Patients receiving home care for wounds commonly develop minor skin and wound infections. Coordinating timely access to their primary care provider during a home visit is rarely feasible, prompting the patient to go to the emergency department (ED) for non-emergent treatment. This practice often compromises patient comfort, disrupt continuity of care, and reduce overall healthcare system efficiency.

Procedure / Methods

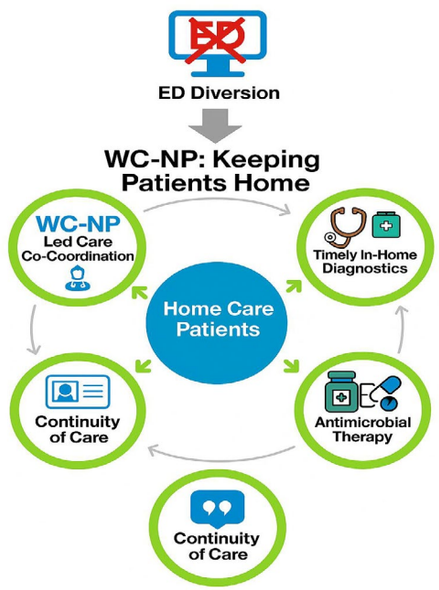
1. Regular Assessments	• Patients with wounds are assessed in regular intervals by their community wound care specialist nurse (WCS)
2. NERDS/ STONEES	• Utilization of the NERDS/STONEES (Sibbald et al., 2021) framework to assess for localized and systemic infection at each visit
3. Contact the WC-NP for ER diversion	• If three or more clinical signs are present, the WCS nurse contacts the WC-NP to initiate ER diversion
4. WC-NP Assessment	• The WC-NP conducts an assessment of the medical history, current medications, and recent antimicrobial use
5. ED Diversion is Initiated	• WC-NP initiates antimicrobial therapy, relevant diagnostics, wound care treatment, patient education and follow up plan

Purpose

To highlight the role of a wound care NP (WC-NP) in managing minor skin and wound infections in home care. This aims to divert and reduce non-emergent visits to the ED, to ultimately improve patient comfort and satisfaction, enhance continuity of care, and maximize health care system efficiency.

Results

- By following the established method, the WC-NP successfully diverted 20 patients with minor skin and wound infections from the ED between January-December 2024



Key Takeaways

Home care system: Improves continuity of care in an asynchronous home care system with a consistent practitioner conducting the initial assessment, timely follow up on diagnostic tests, communicating treatment plans to the home care team, and ongoing oversight to ensure infection resolution.

Improved patient outcomes and satisfaction: ED diversion allows patients to avoid lengthy ED wait times, repeated explanations of their clinical situation to multiple practitioners, and risks of infections. Patients expressed high satisfaction with receiving care in their comfortable and familiar home environment.

Health care system: Diverting non-emergent cases from the ED supports system sustainability and optimizes allocation of limited ED resources by reducing wait times, easing staff workload, preventing repeated ED visits, and lowering healthcare system costs for all patients.

Implications & Next steps

- Expansion of WC-NP roles on wound care teams in home care.
- Enhance specialized wound care education and training to NPs.
- Establishment and streamlining wound care infection clinical pathways for NPs.
- Evaluation of outcomes including system cost effectiveness, patient satisfaction and wound healing outcomes.

References

1. College of Nurses of Ontario. (2017). *Practice standard: Professional standards, revised 2002*. https://www.cno.org/globalassets/docs/prac/41038_strdrnec.pdf
2. Sibbald, R. G., Elliott, J. A., Persaud-Jaimangal, R., Goodman, L., Armstrong, D. G., Harley, C., Coelho, S., Xi, N., Evans, R., Mayer, D. O., Zhao, X., Heil, J., Kotru, B., Delmore, B., LeBlanc, K., Ayello, E. A., Smart, H., Tariq, G., Alavi, A., & Somayaji, R. (2021). *Wound bed preparation 2021*. **Advances in Skin and Wound Care**, **34**(4), 183–195. https://doi.org/10.1097/01.ASW.0000733724.87630.d6

Offloading Strategies for the Diabetic Neuropathic Foot

Allan Blyt, Melanie Freedman, Linda Laakso, John Rahman, Mary Catherine Thiessen Orthotics Prosthetics Canada www.opcanada.ca

Purpose: To explore and evaluate custom offloading strategies for the prevention, treatment, and long-term management of neuropathic foot complications in patients with diabetes, with an emphasis on prevention, pressure redistribution, wound healing, and recurrence reduction.

- **Key Statistics:** Up to 25% of people with diabetes will develop a foot ulcer

- Canadians with diabetes are over 20 times more likely to undergo a non-traumatic lower limb amputation compared to the general population.
- Approximately 85% of diabetes-related amputations are preceded by a foot ulcer.

Procedure/Method: Custom offloading interventions examined include:

- Total contact casting
- Custom-made total contact orthoses
- Custom modified removeable cast walkers
- Custom-made cast walkers
- Pressure-relieving footwear with individual modifications

Detailed assessment

Shape Capture

References:
Scan QR Code

Prevention: Custom Total Contact Orthoses and Footwear

Modified or Custom Shoes

Results:

Prevention of Foot Ulcers: Evidence shows that preventive efforts significantly reduce DFU incidence and related morbidity.

Prevention begins with early identification of neuropathy and targeted intervention:

- Diabetes education programs are essential for patient awareness, routine foot screening, and early detection of risk factors.
- Interdisciplinary teams including a Certified Orthotist play a crucial role by prescribing and fabricating appropriate footwear and total contact foot orthoses designed to protect at-risk feet.

Short-Term Offloading Goals

The primary goal during the acute phase of treatment is wound closure or remission. Offloading strategies are selected based on the wound's location, severity, underlying pathology, and patient mobility.

Common Offloading Devices:

- Total Contact Cast (TCC) – Gold standard
- Custom-modified Removable Cast Walkers (RCWs)
- Custom-modified Wound Shoes (e.g., Darco, Podartis)
- Custom Total Contact Foot Orthoses – Often used within the above devices to enhance pressure distribution

Total Contact Cast (TCC)

Removeable Cast Walker (RCW)

Wound Shoes

Charcot Restraint Orthotic Walker (CROW)

Long-Term Offloading in Remission

Wound closure is not the endpoint of care. In fact, 40% of healed DFUs recur within the first year, and 65% within three years. Continuous offloading is essential to prevent recurrence, especially given that 90% of DFUs result from repetitive pressure over bony prominences.

For patients with chronic or "maintenance" wounds, ongoing offloading is critical to reducing infection risk and preventing further breakdown.

Proven Interventions:

Research confirms that custom total contact foot orthoses significantly reduce recurrence by:

- Redistributing plantar pressures
- Controlling shear forces
- Improving lower limb biomechanics

Patient adherence to orthosis use during all weight-bearing activities is essential for long-term success.

Long-Term Offloading Options

Offloading solutions must be tailored based on biomechanical assessment and the presence and severity of foot deformities.

- Appropriate Footwear:
  - Off-the-shelf: For patients without deformities
  - Modified footwear: For mild deformities
  - Custom-made footwear: For significant deformities
- Custom Total Contact Foot Orthoses:
  - Multilayered design; suitable for mild deformity
- Custom Ankle-Foot Orthoses (AFOs):For significant deformity, muscle weakness, or limited ankle ROM
- Charcot Restraint Orthotic Walkers (CROW):For advanced Charcot deformity and joint instability

Conclusion

- Custom offloading strategies are essential tools in the comprehensive management of the diabetic neuropathic foot.
- A multidisciplinary, patient-centered approach is vital to improve adherence and clinical outcomes.
- Health professionals should advocate for improved access to custom offloading solutions and integration of technology to individualize treatment.
- Next steps should aim to incorporate biomechanical data and wearable technology into long-term management protocols for sustainable impact.

INNOVATIVE WOUND CARE DELIVERY

Interior Health

Centralized NSWOC and Digital Solutions Driving Productivity, Enhanced Recruitment and Retention, and Improved Population Health Outcomes

CASE STUDY HISTORY

In 2005, Interior Health Authority (IH) implemented digital wound management software.

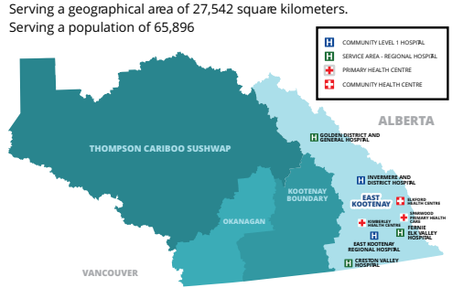
Initially adopted for homecare, its use has expanded to acute care, urgent primary care, long-term care and community outreach to unhoused citizens. Over 20 years, digital wound management software has supported 75,000 patients.

CLINICAL SITUATION

In 2022, IH centralized its NSWOC operations to improve team efficiency, resource allocation and equity of patient care across the region. This transition became a crucial business continuity enabler during a 10-month period in 2024 when the East Kootenay region experienced a prolonged NSWOC vacancy. With the nearest NSWOC located 3 hours away, remote coverage was required.

IH HOSPITALS & HEALTH CENTRES

Serving a geographical area of 27,542 square kilometers.
Serving a population of 65,896



ACTIONS TAKEN & RESULTS

By leveraging its centralized NSWOC structure and digital wound management software—including up-to-date charts and photos for remote client care, IH was able to meet or exceed its standard of care objectives while there were no NSWOCs in the region.

Specifically, during the NSWOC vacancy there was an average of 211 NSWOC referrals per month. IH maintained its standard of care for urgent referrals of 24 to 28 hours and for clinical reviews of 24-168 hours while patient wound healing times improved.

MAINTAINING SERVICE LEVELS DURING NSWOC VACANCY

MEASURE		PRIOR TO NSWOC VACANCY (NOV 2023- APR 2024)	WITH NSWOC VACANCY (MAY - DEC 2024)
MEDIAN DAYS TO HEAL		WITHIN RANGE	WITHIN RANGE
MEDIAN HOURS REFERRAL TO RECOMMENDATION	URGENT 24-48 HRS	ACHIEVED ✓	ACHIEVED ✓
	CLIENT REVIEW 24-168 HRS	ACHIEVED ✓	ACHIEVED ✓

DIGITAL WOUND MANAGEMENT SOFTWARE HAS ALSO HAD A PROFOUND IMPACT ON NSWOC EFFICIENCY AS ILLUSTRATED BELOW.

EXPERIENCED NSWOCS AVERAGE DAILY VOLUME OF PATIENT CONSULTATIONS

MEASURE	AMBULATORY CLINIC: NSWOCS TRAVELING TO ALL APPOINTMENTS	AMBULATORY CLINIC WITH NO TRAVEL	FULLY REMOTE NSWOCS WITH SUPPORT OF DIGITAL WOUND MANAGEMENT SOFTWARE
NSWOC PATIENT APPOINTMENTS PER DAY	7 PATIENTS PER DAY	19 PATIENTS PER DAY	52 PATIENTS PER DAY

AUTHORS

Mary Ann MacLean - Clinical Nurse Specialist –Skin & Wound
Scott Chisholm Lamont Nursing Informatics Specialist

UNFORESEEN HEALTH HUMAN RESOURCE BENEFITS

Centralizing the coordination of its NSWOC team has yielded additional benefits. IH has observed increased retention among NSWOCs, with staff reporting reduced stress regarding vacation and sick leave coverage since NSWOC scheduling was centralized.

IMPLICATIONS FOR PRACTICE

Digital Wound Management Software has been instrumental in IH's clinical operations decision making and will be leveraged especially when it comes to future workforce management and business continuity planning.

pixalere™

Using Smart Glasses for Virtual Wound Care in Northwestern Ontario

no. 69

St. Joseph's Care Group







Opportunity/Problem Statement

Peripheral cameras no longer supported by OTN & insufficient resolution on OTN Guest Link web cameras for clinical decision making

The Test of Change

In 2022, St. Joseph's Care Group leveraged the Health Innovation Fund to pilot smart glasses by TeleVU across clinical settings from September 2022 to March 2023. Partners included NOSH McCausland Hospital/Wilkes Terrace LTC, Matawa Health Co-operative, Kenora Chiefs Advisory, and Sioux Lookout Meno Ya Win Health Centre. Patient-facing clinicians wore smart glasses linked to a dashboard monitored by an Advanced Practice Clinician, supported by TelePresence AR Technology.

Pilot Results

Over four months, 99 wounds were assessed across four sites using smart glasses. Clinicians reported greater confidence due to real-time support and improved image quality. Wound healing outcomes met or exceeded targets, and clients received faster assessments without needing to travel. Voice command features allowed single-clinician visits, preserving sterility and reducing HHR demand. Due to its success, the program expanded to 16 smart glasses sites and 4 dashboard hubs with 80+ trained users under the Lower Limb Preservation Strategy. Findings show the technology is scalable and effective for wound care and other visual-dependent specialties.

Increase in Clinician Confidence

Survey Scores (Average score out of 5)

- Ease of Use – 4.9
- Coordination of Care – 4.4
- Satisfaction with Virtual Care – 4.3
- Confidence in Wound Care (Pilot) – 4.5
- Timeliness of Care – Average wait 1.67 days (20 visits same day)

(Data from first 4 months of pilot- Northwestern Ontario)

Scale & Spread

Currently, 18 smart glasses by TeleVU are in use across Northwestern Ontario in a variety of care settings, including patients' homes, day medicine and ambulatory care, emergency departments, long-term care homes, acute care, and community nursing stations/clinics. The technology supports real-time assessments with the ability to capture images, record video, enable voice communication, and use remote control features. This functionality allows clinicians to guide care in real time while also supporting the development of emerging professionals and learners.

Lower Limb Preservation & Vascular Consults

In 2024/2025, the addition of vascular surgeons on smart glasses has expanded access to follow-up care. Post-surgery appointments can now be scheduled with frontline clinicians closer to the patient's home, eliminating the need for travel to Thunder Bay. This provides patients with a smoother care experience, timely access to surgical expertise, and continuity of care within their own communities.

Access to Wound Care Increased

Improved Outcomes

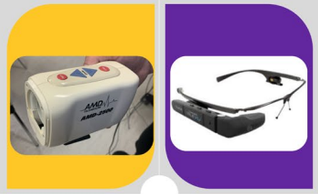
- 38 of 99 wounds fully closed
- 7 wounds >76% closed by end of pilot
- Average wound size reduction: 56%

Best Practice Care

- Dressing choice aligned with national standards in 86% of cases (target 75%)

(Data from first 4 months of pilot- Northwestern Ontario)

Old vs New Hardware



Wound Image Resolution with TeleVU Tracking Wound Progression

Decrease in travel to Assessment

- **44,481** km of patient travel avoided
- 38 cases supported
- 99 wounds treated (vs. target 150 cases)

(Data from first 4 months of pilot- Northwestern Ontario)

Proposed Expansion

Community Paramedics

- Expanding Innovative partnership with Community Paramedicine Programs to increase access for patients who have barriers to accessing care in traditional environments but are not eligible for home care including in rural and remote locations
- Enabled by satellite internet in no service or low service areas

Autofluorescence

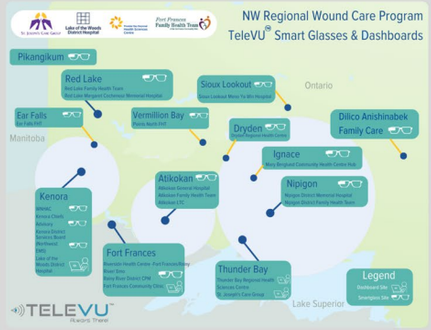
- Piloting autofluorescence to enhance real-time clinical decision-making related to the bacterial burden
- Supports targeted wound care including sampling, debridement, monitoring & optimizing treatment

New Therapeutic Areas

- Exploring the use of smart glasses in additional therapeutic areas where resolution matters in the treatment of hard to heal wounds
- Disciplines targeted include Plastic Surgeons, Dermatologists and Orthopedic Surgeons

Long Term Care

- Deploying smart glasses in long-term care and supportive housing settings, allowing frontline clinicians to facilitate assessment for residents at the bed side without the need to transport them, reducing challenges and costs for caregivers and families



Authors Jackie Wesley - HB Com: BAIS, CMP; Prachi Sharma - BTech CS, PGDM, CMP; Allison Luther - BScOT Reg. (Ont)., BKIN, MClSc-WH; Judy Vondrasek, BScN, RN, NSWOC, WOCC(C); Amanda Hogan; HBA, RSW

Acknowledgements The authors wish to acknowledge our many strategic clinical partners, Ontario Health and Boehringer-Ingelheim Canada for supporting the pilot; Ontario Health-CorHealth Ontario for supporting the expansion of access and the technology vendor, TelePresence AR Technology for continually developing the offering to meet the needs.

Cost effectiveness of Muscle Pump Activation in treating Venous Leg Ulcers

Michael Stacey[1], Connie Harris, Amanda Loney, Graham Corke

1. McMaster University and Hamilton Health Sciences, Hamilton

BACKGROUND

A recently published randomized controlled trial (RCT) has demonstrated that Venous Leg Ulcer (VLU) healing is significantly improved when the Muscle Pump Activation Device (MPA), geko™, is added to standard of care compression therapy (SOC) for the initial 4 weeks of treatment[1]. The time to healing is significantly reduced. This work was also confirmed in a further cohort study in Canada[2]. Use of the MPA had also been identified to have a role in the mainstream treatment of patients with VLUs in the recent Canadian Consensus Statement on the Management of VLUs[3]. A cost effectiveness study based on this study and using data on the costs of treating VLUs in the UK has shown benefits both in ulcer free days for patients and in the costs of treating patients with VLUs[4].

OBJECTIVE

The aim of this study was to evaluate the cost-effectiveness of treating patients with Venous Leg Ulcers (VLUs) with the Muscle Pump Activation device in Canada, using the costs of treating patients with VLUs in Canada.

METHOD

The costs of treating patients with VLUs in Canada were determined using the best estimates of the costs of nursing time, the costs of dressing and bandaging materials and the frequency of dressings. The costs were determined by consensus by the authors with information obtained from multiple Canadian sources. (Table 1).

The healing curves were extrapolated from data within the RCT from the UK[1]. The average frequency of wound dressings was determined to be every2.5 days, based on a common frequency of dressings, but knowing that some patients have dressings more often initially and some have dressings less often when the wounds are actively healing

References:
1. Int Wound J. 2023;20:2260-8. 20.. Bull RH, Clements D, Collarte AJ, Harding KG
2. Adv Skin Wound Care 2025;00:00-00. Murray H, Duong R, Bain D
3. Int Wound J. 2025;22:e70415. Stacey M, Sibbald RG, Evans Ret al
4. Int Wound J. 2024;21:e70048. Tuson R, Metry A, Harding K.

FINDINGS – All patients with VLUs

The cost per visit to a nursing clinic for the treatment of a VLU, including nursing time and dressing supplies, was estimated to be $109.71 CAD (Table 1). The assumption was that these patients would have their treatments performed in a nursing clinic.

The average dressing frequency was estimated to be every 2.5 days, knowing that for the duration of the treatment some patients would have dressings more frequently and some would be less frequent. The average number of dressings per week over the full course of treatment would therefore be 2.8.

The healing rates were extrapolated to a 12-month period, based on the healing from the UK paper. Using these data the model indicated that treatment using MPA for 4 weeks in addition to SOC resulted in a cost savings of $983.61 CAD per patient compared to SOC alone.. The average increase in ulcer free days with MPA plus SOC was 56.6 days per patient.

Table 1. The costs of treating patients with VLUs in Canada

Nursing costs

- Based on 7.5 hours per day and 42 weeks per year allowing for leave, admin, & education time
- Average annual salaries RPN - $65,000; NSWOCC - $115,000; RN - $90,000
- RPN (80% of visits) - 30 mins; NSWOCC (10% of visits)– 60 mins: RN (10% of visits) – 60 mins
- **Average nursing cost per visit - $38.38**

Dressing costs

• Disposable materials	$11.93
• Dressing and absorbent layer	$20.41
• Compression wraps	$38.99
• **Dressings costs per visit**	**$71.33**
Total cost per dressing visit	**$109.71**

Table 2. Annual costs of treating VLU patients with SOC v SOC plus MPA for 4 weeks

	Average ulcer days per patient	Costs per patient
SOC	234.9 days	$10,307.41
SOC Plus MPA	178.3 days	$9,323.80*
Average increase in ulcer free days SOC plus MPA		**56.6. days**
Average savings per patient		**$983.61**

* Including MPA costs of $1,500 for 4 weeks treatment

FINDINGS – Patients with hard to heal VLUs

Table 3. Annual costs of treating patients with long standing non-healing ulcers with SOC v SOC and continuous MPA

	Av. treatment time per patient	Av. cost per patient
Standard of Care	365 days	$16,016.20
Standard of Care plus MPA	60 days	$5,632.80*
Average increase in ulcer free days SOC plus MPA		**305 days**
Average savings per patient		**$10,383.40**

* Including MPA costs of $2,000 for 8 weeks treatment

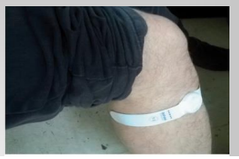


Figure 1. MPA device (geko™) on a patient's leg

Separate data from the UK have identified the healing rates of patients with VLUs that have been present for many years. These data have shown that with the continuous use of MPA and SOC until the wounds heal, these patients heal their wounds in an average of 2 months.

Canadian data were applied to these healing rates and were compared to continued non-healing over the course of one year. With the use of SOC plus continuous use of MPA, the average savings per patient were $10,383.40 per year and there was an average of 305 more ulcer free days per patient per year (Table 3.).

DISCUSSION

The findings of this study support a cost effectiveness analysis from the UK, using UK costing data, that showed that treating patients with VLUs with MPA for the initial 4 weeks in addition to SOC, resulted in 86 more ulcer free days and cost savings of 774GBP ($1,442 CAD) per patient.

CONCLUSION

This study has demonstrated that combining MPA with SOC compression therapy for treating patients with VLUs, results in both increased ulcer free days for patients and in lower costs to the health care system. The patient benefits and cost savings are even greater for patients who have long standing non-healing ulcers. The estimated costs of an ulcer treatment are conservative, hence real cost savings could be far greater.

QR code for the Canadian Consensus Statement on the Management of Venous Leg Ulcers

Email: staceymi@hhsc.ca

KANE BIOTECH

Cleansing and Antimicrobial Efficiency of a Novel Antimicrobial Skin and Wound Cleanser

Jeyachchandran Visvalingam, PhD; Miloslav Sailer, PhD; Rohan Pointer, MD; Robert B Huizinga, PhD, RN, CNeph(C)

Kane Biotech Inc,
Winnipeg, Manitoba, Canada
Contact: jvisvalingam@kanebiotech.com

revyve™
ANTIMICROBIAL SKIN AND WOUND CLEANSER

Introduction

Effective wound management requires both thorough cleansing and antimicrobial action to promote healing.[1] This study investigates the dual functionality of a novel antimicrobial cleanser (NAC) formulated with a non-ionic surfactant and polyhexanide (PHMB).

Objective

The objective of this study is to evaluate the cleansing and antimicrobial potential of a novel antimicrobial skin and wound cleanser (NAC) containing a non-ionic surfactant and polyhexanide (PHMB).

References

1) International Wound Infection Institute (IWII). Therapeutic Wound and Skin Cleansing: Clinical Evidence and Recommendations; Wounds International: London, UK, 2025.

Methods

Washing efficacy of cleanser

Plasma coated wells of 12-well plates were prepared by adding 50 µL of 8:2 mixture of pooled Human Plasma and 1.8 M $CaCl_2$ and placing on orbital shaker operated at 150 rpm for 15-20 min to evenly coat the bottom of each well. Then plates were dried overnight at 37°C. NAC, Saline, Ringer's solution, and prominent surfactant-based antimicrobial cleanser (SAC) were used as controls. Three coated wells were used for each prototype or each control and 2 mL of wash solution added to each corresponding well. Washing was carried out on an orbital shaker operated at room temperature and at 150 rpm for 10 min and 50 µL samples were collected at 0, 2, 5 and 10 min to estimate protein in wash liquid. Protein content was estimated using BCA assay using commercial kit (Fisher Scientific). Experiment was repeated three times.

Biofilm removal

NAC were tested for their ability to remove biofilm of *Staphylococcus aureus, Staphylococcus epidermidis, Acinetobacter baumannii,* and *Pseudomonas aeruginosa* using Crystal Violet assay.

Antimicrobial activity using time kill procedure (Planktonic kill)

Antimicrobial activity of NAC was assessed using organisms, *S. aureus*, *S. epidermidis*, *A.baumannii*, *E. coli*, and *P. aeruginosa.* Treatment was carried out for 1 and 5 min and sample aliquots were neutralized using Polyhexanide (PHMB) neutralizer and serially diluted and plated onto agar plates. Plates were incubated at 37°C for 18-24 h and colonies were counted. Each culture diluted in PBS was used as positive control. Experiment was performed in triplicate and repeated at least twice. Viable numbers determined from colony count were converted to Log_{10} CFU values and log reduction was calculated.

Results and Discussions

Washing efficacy of cleanser

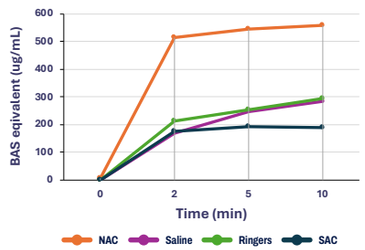


Figure 1. Protein removal by wound cleanser prototypes as expressed in BSA equivalent.

Removal of plasma proteins from microwells by NAC was significantly higher than saline or SAC (P=0.0015) after 2 minutes of washing.

Biofilm removal

Table 1: Biofilm removal by wound cleanser

Prototype	Biofilm removal (Percent)			
	P. aeruginosa	*A. baumannii*	*S. aureus*	*S. epidermidis*
NAC	96.3	79.4	87.9	93.0
Saline	89.0	68.0	63.0	43.1
SAC	88.7	76.2	89.9	93.1

NAC and SAC removed 80–96% of *S. aureus, S. epidermidis,* and *A. baumannii* biofilms, while NS only removed 40–70% of the biofilm after 6 minutes of washing.

Antimicrobial activity using time kill procedure (Planktonic kill)

Table 2: Reduction in bioburden after 60 s and 5 min treatment with NAC

Organism	Log reduction at different treatment duration	
	1 min	5 min
E. coli	5.34	5.34
P. aeruginosa	5.41	5.41
A. baumannii	3.05	6.00
S. aureus	5.33	5.59
S. epidermidis	5.36	5.36

Antimicrobial activity of NAC against *E. coli* and *P. aeruginosa* did not differ and all prototypes caused >5 log CFU reduction in 60 s. NAC inactivated all test organisms by ≥99.999% in 5 minutes.

Implications/Applications

The presence of debris and biofilms in chronic wounds serves as a barrier to effective wound healing. Thus, their removal facilitates wound healing. This novel wound cleanser is specifically formulated with a non-ionic surfactant (poloxamer) and PHMB to provide both cleansing and antimicrobial properties. NAC may serve as a promising option for cleaning acute and chronic wounds to promote healing.

Conclusions

NAC can effectively remove debris and biofilm, as well as inactivate major wound-related pathogens within a standard wound-washing duration in *in-vitro* models. Additional *in-vivo* studies could provide further evidence to support its use.

KANE BIOTECH

Case Report: Healing Chronic VLU Using a New Protease, pH, Moisture, and Bioburden Control Gel

Miloslav Sailer PhD; Iris Noland MD; Rohan Pointer MD; Robert B. Huizinga PhD RN, CNeph(C)

Kane Biotech Inc,
Winnipeg, Manitoba, Canada
Contact: msailer@kanebiotech.com

revyve™ ANTIMICROBIAL WOUND GEL

Introduction

Chronic venous leg ulcers (VLUs) present a significant challenge in wound care, particularly in patients with multiple comorbidities. This case study explores the treatment of a 66-year-old male patient with a long-standing VLU, managed at Colborne Clinic in Ontario using Kane's thermoreversible wound gel and a vibrational debriding system as part of a comprehensive wound care plan.

Case Description

Patient MH, a 66-year-old male, was enrolled in a clinical study on January 6, 2026. His medical history included diabetes, venous insufficiency, obesity, osteoarthritis, and a remote history of varicose vein stripping. He was a smoker with a family history of diabetes. The primary wound, located on the left lower leg, had been present intermittently for approximately ten years and was classified as C6.

At intake, the wound was full-thickness with slough tissue and calloused periwound. The edges were unattached, and the skin appeared dry and yellow. Exudate was minimal, clear to amber, and thin in consistency. Pain was rated at 5/10, and a swab confirmed ciprofloxacin-resistant Pseudomonas aeruginosa. The patient consented to all aspects of the study, including photography.

Treatment Approach

The patient followed a comprehensive wound care regimen that included compression garments and Kane's thermoreversible wound gel and a vibrational debriding system with dressing changes occurring every three to four days.

Clinical Outcomes

Over the 12-week study period, multiple wounds were monitored across various anatomical sites. The left posterior tibia wound reduced from 20.0 cm^2 to 1.1 cm^2, and the left anterior tibia from 14.4 cm^2 to 1.7 cm^2. The right anterior tibia wound closed completely by week 10, and the left foot dorsal medial reduced from 6.2 cm^2 to 2.8 cm^2. Tissue composition evolved from slough, eschar, and necrosis to granulation and epithelial tissue. Pain levels fluctuated, peaking at 8/10 during debridement and improving to 4/10 by week 12.

Discussion

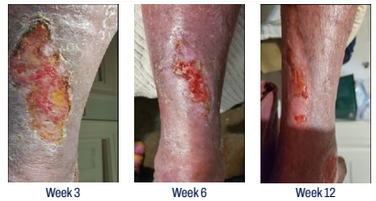
Despite challenges with compression adherence and fluid overload, the patient experienced meaningful improvements in wound healing and comfort. The patient reported improved tolerance to treatments and enhanced quality of life through reduced pain and better wound appearance. Systemic concerns such as heart failure and septic arthritis required concurrent management and impacted overall healing.

Conclusion

This case demonstrates the potential of using the thermoreversible wound gel and the vibrational debriding system in managing complex VLUs. The thermoreversible wound gel facilitated autolytic debridement and exudate control, while vibrational debridement provided effective mechanical debridement. The integrated approach led to significant wound size reduction and improved patient comfort, even in the presence of multiple comorbidities.

	Start of Study	End of Study
Left posterior tibia	20.0 cm^2	**1.1 cm^2 (Week 12)**
Left anterior tibia	14.4 cm^2	**1.7 cm^2 (Week 12)**
Right anterior tibia	2.4 cm^2	**Healed (Week 9)**
Left foot dorsal medial	6.2 cm^2	**2.8 cm^2 (Week 12)**

Left posterior tibia



Week 3 | Week 6 | Week 12

Left anterior tibia

Week 2 | Week 6 | Week 11

Right anterior tibia

Week 1 | Week 4 | Week 10

Left foot dorsal medial

Week 3 | Week 6 | Week 11