



ABSTRACT BOOK

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INTERNATIONAL CLINICAL PRACTICE GUIDELINES TO IMPROVE PRESSURE ULCER/INJURY CARE: A SUCCESS STORY

Jan Kottner

Charité-Universitätsmedizin Berlin, Berlin, Germany

Clinical practice guidelines include recommendations intended to optimize patient care. Guideline recommendations support healthcare professionals to make evidence-based decisions. They are also high-level up-to-date evidence summaries. The National Pressure Injury Advisory Panel, European Pressure Ulcer Advisory Panel, and the Pan Pacific Pressure Injury Alliance have been jointly developing and disseminating international guidelines for the prevention and treatment of pressure ulcers/injuries for almost 20 years. Over time, there have been significant improvements in terms of international participation, stakeholder involvement and methodology. The guidelines have been translated into numerous languages, have been widely distributed, and have been cited hundreds of times internationally. In addition to these measurable achievements, the international guidelines also triggered important discussions about terminology and the role and the value of evidence in the field of pressure ulcer prevention and therapy. Numerous joint publications were published increasing the visibility of the guidelines and three sponsoring organizations. Although the international clinical practice guidelines cannot address all challenges and problems we have in the field of pressure ulcer/injury prevention and treatment, they currently present the best and most up-to-date evidence summaries following highest methodological standards.

Conflict of Interest

I have no financial interests or relationships to disclose regarding the subject matter of this presentation.

References

<https://internationalguideline.com/>



DEVELOPMENT OF THE 2025 INTERNATIONAL PREVENTION AND TREATMENT OF PRESSURE INJURIES CLINICAL PRACTICE GUIDELINE

Haesler, Emily (1); Cuddigan, Janet (2); Moore, Zena (3); Carville, Kerlyn (4)

1. *Guideline Methodologist, Adjunct Professor, Curtin University, Australia*
2. *GGG Chair and Chair for NPIAP, Professor, University of Nebraska Medical Center, USA, Country;*
3. *Chair for EPUAP, Professor, Royal College of Surgeons, Ireland;*
4. *Chair for PPPIA, Professor, Curtin University, Australia*

Introduction

The International Pressure Injury/Ulcer Guideline is a clinical guideline, developed by a team representing the European Pressure Ulcer Advisory Panel, National Pressure Injury Advisory Panel and Pan Pacific Pressure Injury Alliance. The first edition of the guideline was published in 2009. In February 2025, the fourth edition was launched online in a digital format. The purpose of this presentation is to provide an overview of the methods for development.

Methods

The Fourth Edition of the International Pressure Injury Guideline is being developed using GRADE methodology. The development process includes a survey to understand the priority of stakeholder, formation of a-priori clinical questions, a targeted and systematic literature search, screening and appraisal of identified research, conducting meta-analyses as driven by the clinical question, summation of the evidence into frameworks and a process to by which the Guideline Governance Group (GGG) reaches agreement on clinical recommendations relevant to the clinical questions.

Results

The GGG has published a-priori methods and clinical questions¹ on prevention and treatment of pressure injuries/ulcers that are available for all stakeholders to review on the project website. The literature review has been undertaken with input from over 250 clinicians from around the world, representing the NPIAP/EPUAP/PPPIA and its Associate Organisations. GRADE methodology² has underpinned development of clinical recommendations. When gaps in the evidence have precluded the making of a GRADE recommendation, the GGG has used Good Practice Statements to provide clinical guidance. Recommended practice is supported by implementation considerations.

Conclusions

This ongoing project has led to the development of clinical guidance for preventing and managing pressure injuries/ulcers based on the best available evidence. Health professionals and consumer stakeholders have provided input into the guideline at all levels. The guideline is intended for use as a part of evidence-based practice, informed by the clinical judgement of health professionals and the preferences of stakeholders.

Conflict of Interest

Please declare any funding of the research by industry here.

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2025 INTERNATIONAL PRESSURE ULCERS/INJURIES CLINICAL PRACTICE GUIDELINES: PREVENTION – WHAT’S NEW?

Professor Zena Moore

*School of Nursing ^ Midwifery, Royal College of Surgeon in Ireland,
University of Medicine and Health Sciences, Dublin, Ireland.*

The Guideline Governance Group (GGG), which includes representatives from NPIAP, EPUAP and PPPIA, have been working hard on the update of the 2019 pressure ulcers/injuries clinical practice guidelines. The 2025 guidelines have focused firstly on prevention and this will be followed by the treatment chapters. In February 2025, the following prevention chapters were launched: All these chapters are freely available on the International Guideline Web Page: <https://internationalguideline.com/the-international-guideline>. The webpage also includes information pertaining to other prevention chapters currently under preparation. To keep up to date with developments, please check the web page regularly.

This presentation will provide the audience with a synthesis of ‘what’s new’ from the currently available chapters for pressure ulcer/injury prevention. In doing so, the presentation will provide some food for thought for those involved in the care of those at risk of pressure ulcers/injuries. Further, the presentation will outline some key recommendations and best practice statements that can be used to guide decision making by health professionals and individuals throughout the world.

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TRACING HARM, DRIVING CHANGE: HOW FRONTLINE RISKS INFORM SYSTEMIC QUALITY AND SAFETY POLICIES

Valter R Fonseca^{1*}, Damir Ivankovic^{1*}, Nurshaim Tilenbaeva¹, Christos Triantafyllou¹, Joao Breda¹

¹ WHO Athens Quality of Care and Patient Safety Office, World Health Organization Regional Office for Europe, Athens, Greece

Pressure ulcers remain a persistent form of preventable harm in health systems and a key signal of underlying quality and safety challenges. Despite the availability of clinical guidelines, their prevalence continues to signal governance, capacity, data infrastructure, and accountability challenges. Beyond the clinical burden, the economic costs are substantial. This commentary highlights how pressure ulcer monitoring, when embedded into national strategies, can drive wider patient safety and quality reforms. Drawing on WHO-supported initiatives across the European Region, we demonstrate how tracer indicators such as pressure ulcers can catalyse improvements in risk management, performance intelligence, and long-term care quality. Addressing pressure ulcers thus serves not only a clinical imperative but a broader system goal: learning from harm to foster safer, more equitable, and resilient care.



STRATEGIC COMPETENCIES OF CLIENT AND PATIENT SAFETY - FINNISH STRATEGY TO BECOME A MODEL COUNTRY

Tuija Ikonen (1,2)

1. Finnish Centre for Client and Patient Safety, Wellbeing Services County of Ostrobothnia, Finland; 2. The University of Turku, Finland

All clinical activities are prone to errors. Beginning at the Millennium, several patient safety improvements are undertaken by governments and health care organizations around the world. In 2005, the World Health Organization (WHO) started to promote patient safety by Global Patient Safety Challenges, including clean care, safe surgery, and medication safety, respectively. All these three goals have connections to wound care and prevention. The most ambitious global effort was initiated, when WHO announced the Global Patient Safety Action Plan 2021-2030 (GPSAP), which was adopted by the World Health Assembly in 2021.

As many other WHO member countries, Finland conveyed the contents of the GPSAP to a national strategy. The Client and Patient Safety Strategy and Implementation Plan 2022–2026 promotes inclusion, measures that strengthen safety, and safety culture. The vision is to become a model country for client and patient safety by preventing avoidable harm. Implementation will introduce research-based recommendations for the benefit of the management, professionals, patients and clients at all levels of operation.

One of the four priorities in the Finnish strategy aims at thriving and competent professionals. Knowledge and skills acquired during the basic training and competence building throughout the career enhance patient safety. Ensuring safety competencies is an objective for educational institutions and social and health care providers according to the strategy. Education and training in client and patient safety focus on identifying and protecting against system failures while helping professionals to recognize their own responsibilities.

The Finnish Ministry of Social Affairs and Health initiated Nordic Collaboration to create a joint Nordic framework for patient safety knowledge and skills. The document consists of 15 competence areas originated from the WHO Patient Safety Curriculum, updated by a Nordic expert group to meet the demands and challenges of a modern Nordic society. The framework serves as a guideline for national educational and health care systems. In Finland, the Nordic competence areas will be adjusted to multi-professional learning objectives separately for the staff and leaders or managers. The learning objectives will be applicable to all educational institutions and social and health care organizations.

Wound care is one important field in social and health care that covers the whole system from highly specialized health care to social services for clients with special needs for care and support. Therefore, high quality wound care including meticulous preventive measures against pressure injuries is one of the strategic competencies of the care providers, and essential skills of the personnel and their managers and leaders. Educational institutions and care providers are encouraged to prioritize wound prevention, care, and follow-up metrics in their client and patient safety education and activities.

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EXPERIENCES AND RESULTS OF TEN-YEAR NATIONWIDE PRESSURE ULCER SURVEYS IN SWEDEN – AND WHAT HAPPENS THERAFTER?

Ulrika Källman (1, 2), Carina Bååth (3)

1. Södra Älvsborg Hospital, Borås, Sweden; 2. Gothenburg University, Gothenburg, Sweden;
3. Karlstad University, Karlstad, Sweden

Pressure ulcers (PUs) have been recognized as indicators of both patient safety and quality of care in hospital and community settings. They are also a key focus for reducing adverse events in many countries' ongoing patient safety programs.

In Sweden, the Swedish Association of Local Authorities and Regions (SALAR) launched in 2008 such a national patient safety program where pressure ulcers (PUs) were identified as one of several priority areas. Evidence-based clinical guidelines were developed and distributed throughout the country. To support follow-up efforts and raise awareness of PUs, SALAR also initiated nationwide annual PU prevalence surveys starting in 2011. The results of these surveys were summarized after ten years, showing that the PUs in hospital settings had decreased from 17.0% to 11.4%, while preventive measures such as the use of pressure-reducing mattresses, sliding sheets, heel protection, and repositioning plans had increased (1).

This keynote presentation will outline activities undertaken at the national and local level to conduct these surveys, share experiences regarding their implementation, explore key success factors in preventing PUs in hospital settings (2), and reflect on what it means when national surveys come to an end.

Attendees will gain insights from both a research and leadership perspective. Although results and experiences are shared from the hospital domain, this session can provide input for planning improvement efforts within various healthcare organizations.

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WHAT ARE DIGITAL TWINS AND THEIR VALUE FOR THE EPUAP COMMUNITY

Daphne Weihs (1), Pierre-Yves Rohan (2), Antoine Perrier (3), Steven Smet (4)

*1 Technion-Israel Institute of Technology, Israel, 2 ENSAM, France,
3 Grenoble Alpes University, France, 4 Ghent University Hospital, Belgium*

Digital twins and artificial intelligence are emerging as transformative tools for personalized prediction and prevention of pressure ulcers and deep tissue injuries. This session will bring together engineers and clinicians to critically examine the current state of the field and co-design priorities for clinically meaningful applications.

The session will open with an interactive audience engagement segment using live polling to assess familiarity with AI and digital twins in wound care and to set the context for discussion. Presentations will cover complementary perspectives: an overview of core AI methodologies and their translation to wound management; the principles of digital twin development with recent advances; and lessons learned from clinical practice on why promising AI and digital twin solutions often fail to transition into routine care, including challenges of representative data and outcome relevance. The session will also address the integration of multimodal sensing and computational models to support clinical decision-making, highlighting regulatory and practical considerations.

A collective discussion will conclude the session, focusing on defining the types of data truly needed, establishing clinically meaningful outcome measures, and fostering shared responsibility for data quality and model design. Through this participatory format, the session aims to align methodological innovation with clinical priorities and to outline a roadmap for robust, AI-enabled digital twins capable of impacting real-world wound prevention and management.



BODY IMAGE, SEXUALITY AND PRESSURE ULCERS

Birgitte Schantz Laursen

Aalborg University, Denmark & Aalborg University Hospital, Denmark

Background

The relationship between body image and sexuality is significant, as both encompass emotions, thoughts, and behaviors associated with the body. Research indicates that a negative body image adversely affects sexuality (1). Patients suffering from pressure ulcers face numerous challenges, including wound-specific symptoms like exudate, odor, and pain, as well as broader issues such as limited mobility, psychological distress, sleep disruptions, anxiety, depression, and altered body image (2,3). Although no studies have specifically examined the impact of pressure ulcers on patients' sexuality, it is reasonable to infer that the substantial effects on body image in comparison to other symptoms, likely lead to negative consequences for their sexual health. A recent systematic review highlighted notable links between positive sexual health and an improved quality of life (4).

Aim

The aim of the presentation is to explore the concepts of body image and sexuality further and to advocate for the integration of patients' sexual health into their care and treatment, which may enhance their overall quality of life.

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BEYOND THE BODY: NEEDS AND CHALLENGES IN PRESSURE ULCERS' MANAGEMENT FOR ADOLESCENTS

Valentina Vanzi^{1,2}

1. Centre of Excellence for Nursing Scholarship (CECRI), Board of Nursing (OPI) of Rome

2. JBI Italy Evidence-Based Practice and Health Research Center, Rome, Italy

The management of pressure injuries in adolescents presents a set of complex and often underestimated challenges that extend well beyond clinical wound care. During adolescence, a phase marked by intense physical, emotional, and social change, the presence of a chronic lesion such as a pressure ulcer can significantly affect body image, autonomy, and quality of life. Preventive strategies may be poorly adhered to due to psychological resistance, stigma, and a lack of developmental alignment in care plans. To this clinical and psycho-emotional complexity, it must be added the challenges linked to the transition of care settings, from pediatric to adult services. This shift often implies changes in the healthcare team, discontinuity in protocols, and loss of established therapeutic relationships, which may negatively impact continuity of care and timely interventions. This contribution aims to highlight the specific needs of adolescents with pressure injuries and to reflect on how care must evolve to address not only physical healing, but also the broader psychosocial and relational dimensions. Nurses and multidisciplinary teams play a crucial role in supporting young patients through personalized education, emotional support, and empowerment strategies that promote engagement and self-management. Managing pressure ulcers in this age group means going beyond the body, addressing the whole experience of the adolescent and ensuring continuity throughout their care journey.

Conflict of interest: The author declares no conflicts of interest.



THE POWER OF PATIENT-REPORTED OUTCOMES IN BODY IMAGE ASSESSMENT: INSIGHTS FROM BARIATRIC AND BODY CONTOURING SURGERY

Farima Dalaei¹, Claire E.E. de Vries^{2,3}, Manraj Kaur³, Sören Möller⁴, Lotte Poulsen¹, Anne F. Klassen⁵, Andrea L. Pusic³, Jørn Bo Thomsen¹, Jens A. Sørensen¹

1. Research Unit of Plastic Surgery, Odense University Hospital, Denmark; Clinical Institute, University of Southern Denmark, Odense Denmark; 2. Department of Surgery, OLVG West Hospital, Amsterdam, Netherlands. 3. Department of Surgery, Brigham and Women's Hospital, Harvard University, Boston, Massachusetts, United States; 4. OPEN – Odense Patient data Explorative Network, Odense, University Hospital and University of Southern Denmark, Odense, Denmark; 5. Department of Pediatrics, McMaster University, Hamilton, Canada

Introduction

Since 1975, the prevalence of obesity has tripled, with over 650 million people worldwide living with the condition¹. Weight loss interventions including lifestyle, medical, and surgical treatments aim to achieve long-term weight loss and remission of obesity-related comorbidities^{2,3}. However, massive weight loss often results in varying degrees of excess skin, for which body contouring surgery (BCS) may be needed.

The long-term impact of the weight loss trajectory: from obesity to treatment, massive weight loss, and ultimately BCS, remains underexplored from the patient's perspective, particularly in terms of body image. To capture these subjective outcomes, patient-reported outcome measures (PROMs) play a critical role⁴⁻⁶.

The BODY-Q is a rigorously developed PROM specifically designed to assess changes in body image, health-related quality of life (HRQL), and satisfaction with appearance in patients undergoing bariatric and body contouring surgery⁷. Over the past decade, new scales have been added, and the BODY-Q has undergone extensive linguistic and psychometric validation⁸⁻¹¹. Normative reference values have also been established, enabling meaningful interpretation of scores¹²⁻¹⁵.

This study leverages the power of PROMs to provide new insights into how bariatric and body contouring surgery impact patients' body image and overall well-being.

Methods

Prospective BODY-Q data were collected from six European countries (Denmark, the Netherlands, Finland, Italy, Poland, and Germany) between June 2015 and February 2022 in a cohort of patients who underwent bariatric surgery and body contouring surgery. Mixed-effects regression models were used to analyze changes in HRQL and appearance scores over time, comparing patients who did and did not undergo BCS and examining the influence of patient-level covariates¹⁶.

Normative BODY-Q scores were established using crowdsourcing platforms (PROLIFIC and Amazon Mechanical Turk) in 12 North American and European countries. General linear models were used to compare normative means between countries and continents, adjusting for relevant covariates. Reference values were stratified by age, body mass index (BMI), and gender^{12,13}.

Results

The longitudinal study included 24,604 assessments from 5,620 patients. Bariatric surgery initially led to improvements in HRQL and appearance scores during the first postoperative year, followed by a gradual decline. In contrast, patients who underwent subsequent body contouring surgery experienced sustained or stable improvements in HRQL and appearance for up to 10 years postoperatively. For the normative reference dataset, 4,051 general population participants (2,052 from North America and 1,999 from Europe) completed the BODY-Q.

Conclusions

Patients who underwent body contouring surgery maintained significant improvements in HRQL and satisfaction with appearance—particularly in body image domains—compared to patients who only underwent bariatric surgery, whose scores declined 1–2 years postoperatively. These findings underscore the power and



value of patient-reported outcomes in understanding the lived experience of massive weight loss and highlight the pivotal role of BCS in completing the weight loss journey.

Conflict of Interest

The BODY-Q is co-developed by Drs. A. Pusic and A. Klassen, and as such, they receive a share of any license revenue based on their institution's inventor-sharing policy. A. Klassen owns EVENTUM Research, providing consulting services to the pharmaceutical industry. The remaining authors declare that they have no conflicts of interest.

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IMPROVING EARLY DETECTION OF PRESSURE ULCERS IN MELANIN-RICH SKIN THROUGH STANDARDIZED EDUCATION FOR ASSISTANT NURSES in MALMÖ MUNICIPALITY

Author: Zainab Jones

Institution: Malmö Municipality, Competence Centre

Email: zainaba.ismail@malmo.se

Background / Aim

Pressure ulcers are one of the most common healthcare-related injuries, often leading to physical, psychological, and economic burdens. Early identification is particularly challenging in patients with melanin-rich skin due to a lack of knowledge among healthcare providers and the absence of representation in clinical education materials. This project aimed to improve knowledge and practice regarding skin assessment in melanin-rich skin among assistant nurses in Malmö Municipality's home care services.

Methods

The project began in 2020 with a review of academic textbooks and internal educational material used in nursing and wound care training. The analysis revealed a complete lack of images or clinical descriptions involving melanin-rich skin. In response, a structured and continuous education program was implemented as part of the delegation process for wound care. The program included:

- In-person training sessions for all assistant nurses
- Visual materials illustrating skin changes in melanin-rich skin
- Use of simulation mannequins with darker skin tones
- Updates to EMR systems to support inclusive documentation
- Lectures for registered nurses, students, and specialists at Swedish universities

Results

The initiative led to increased awareness and a greater sense of preparedness among healthcare staff when assessing melanin-rich skin. Participants describe having gained useful tools, knowledge, and insights into the risks of pressure ulcers in patients with darker skin tones. Several assistant nurses have provided feedback indicating that, after the training, they were able to reconsider previous assumptions such as mistaking early signs of pressure damage for bruising. While formal outcome data is not yet available, the feedback suggests a positive shift in clinical awareness and practice.

Discussion / Clinical Relevance

The lack of inclusive education contributes to delayed diagnosis and more severe pressure ulcers in patients with melanin-rich skin. By addressing this gap through structured training and updated resources, the project promotes health equity, patient safety, and person-centered care.

Conclusion

A standardized, inclusive educational model can significantly improve early detection of pressure ulcers in melanin-rich skin, contributing to safer and more equitable care across healthcare systems.

MECHANISMS LEADING TO FRAGILE SKIN MORE LIKELY TO DEVELOP PRESSURE ULCERS

Bérengère FROMY (1)

1. *Tissue Biology and Therapeutic Engineering Laboratory, UMR 5305, CNRS / University of Lyon, France.*

An adaptive vascular response to pressure in healthy skin

Constantly exposed to various mechanical stresses, the healthy skin has a specialized structure, the ability to detect different pressure ranges and physiological mechanisms adaptive to the applied pressures, ensuring it to effectively protect our body most of the time. Indeed, a local microvascular response to low pressures (<20kPa), called pressure-induced vasodilation (PIV), exists in healthy skin in humans and rodents. This helps maintain an optimal level of oxygenation of the skin even when exerting light pressure on it.

PIV alteration in diabetes and aging

This physiologically appropriate pressure-induced adjustment of local vasomotor function is reduced in diabetic patients and elderly people, even in those without peripheral sensory neuropathy [1,2]. This reduction of PIV was confirmed in non-neuropathic old mice [3] and in non-neuropathic 1-week diabetic mice [4,5], associated with endothelial dysfunction likely based on an alteration of the nitric oxide (NO) pathway during aging and diabetes. The growing sensory neuropathy contributes, at least partially, to the age-related decrease of PIV in rats [6], strengthening the major contribution of sensory nerve endings in PIV. In the presence of peripheral sensory neuropathy, PIV was totally absent in older subjects [2] and in 8-week diabetic mice [7], pathological conditions known to increase the risk of pressure ulcer formation. This emphasizes that PIV defect may be directly or indirectly associated with a higher risk of pressure ulcer formation.

The clinical impact of PIV alteration

Individuals without a normal PIV response show an early decrease of cutaneous blood flow to the application of very low pressures, reflecting a vascular fragility of the skin associated with higher risk of pressure ulcer formation, as shown in mice [8]. Consistent with this, among patients with diabetes, those with diabetic foot ulcer have a more severe alteration of PIV than those without [9]. The inability to mount a proper PIV response is not merely a marker of sensory deficit, but a reflection of impaired neurovascular coupling that increases vulnerability to even low-intensity pressures. Identifying patients with altered PIV responses could serve as a valuable marker of intrinsic tissue fragility, especially in those who appear externally intact.

This keynote presentation will provide an overview of this cutaneous neurovascular response to pressure and discuss the changes occurring during aging and diabetes that may place the skin at risk for pressure ulcers.

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A TRANSLATIONAL BIOMECHANICAL APPROACH IN CLINICAL PRACTICE FOR EARLY DETECTION AND PREVENTION OF PRESSURE ULCER: THE DIABETIC FOOT EXAMPLE

Antoine Perrier (1),(2)

1. Podiatry Unit, Diabetes Department, APHP, Hospital Pitie Salpêtrière, Paris, France; 2. TIMC Laboratory, University Grenoble Alpes, CNRS, UMR 5525, VetAgro Sup, Grenoble INP, TIMC, 38000 Grenoble, France;

To enable early detection and prevention strategies for pressure ulcers—particularly in patients with diabetic foot—it is essential to understand the principles of primary, secondary, and tertiary prevention. Each clinical situation must be linked to a biomechanical context in order to formulate hypotheses explaining the origin of the wound, its impaired healing, or its recurrence.

Insights from mechanobiology, advances in medical imaging, functional anatomy knowledge, available measurement tools, and a clear understanding of the patient's ecological situation all contribute to developing progressive care strategies. These approaches aim not only to shorten healing time but, more importantly, to support patients in resuming activity and quality of life, despite the need for daily vigilance.

It is through the integration of 3D anatomical reconstruction, pressure distribution analysis, clinical assessment of muscular retractions and joint mobility, and motion quantification that the biomechanical approach enhances the evaluation of vascular and infectious conditions.

Through concrete examples from clinical practice combining biomechanical analysis and patient care, we will share our experience—successes and mistakes alike—within a healthcare system that is otherwise highly supportive. We will also illustrate how this knowledge is being transferred, through the International Committee of the Red Cross, to caregivers working in health systems that are either non-existent or severely overstretched

Conflict of Interest

No conflict of interest



BUILDING A STRONG HEALTH ECONOMIC CASE FOR PRESSURE ULCER PREVENTION: DATA RELEVANCE, RELIABILITY, AND CONTEXT AS KEY INGREDIENTS

Dimitri Beeckman (1)

1. Ghent University, Belgium; Örebro University, Sweden

Background

Pressure ulcers (PUs) are a major health and economic burden worldwide. They are associated with significant morbidity, reduced quality of life, and increased healthcare costs.¹ Despite this, prevention efforts often struggle to secure sustained investment due to the lack of clear and compelling economic data.² Building a strong health economic case requires more than numbers—it demands contextually relevant, reliable, and timely data.³

Aim

This presentation explores how to develop a persuasive economic argument for pressure ulcer prevention by focusing on the quality, source, and context of the supporting data.

Discussion

Health economic evaluations are only as strong as the data underpinning them.³ This includes accurate incidence and prevalence rates, cost of treatment and prevention, and robust outcomes data. However, generalizability across settings, populations, and countries remains a challenge. Integrating local, regional, and national context is essential to ensure relevance and resonance with stakeholders.² Furthermore, aligning data use with policy priorities and organizational goals improves impact and credibility. The presentation will provide case examples and recommendations on how to improve the reliability of data inputs and the way they are interpreted and communicated to decision-makers.³

Conclusion

Effective pressure ulcer prevention can be cost-effective and cost-saving. However, the strength of the economic case depends on using data that is not only accurate and reliable but also relevant and context-sensitive. This presentation provides a framework to support clinicians and researchers in advocating for smarter investments in PU prevention.

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TOWARDS STANDARDIZED PERFORMANCE TESTING OF PROPHYLACTIC DRESSINGS: ENABLING BETTER CLINICAL AND COST-EFFECTIVE DECISION-MAKING

David Brienza (1), Amit Gefen (2)

(1) *of Rehabilitation Science and Technology and Bioengineering and the McGowan Institute of Regenerative Medicine, University of Pittsburgh, Pittsburgh, Pennsylvania, USA.*

(2) *School of Biomedical Engineering, Faculty of Engineering, Tel Aviv University, Tel Aviv, Israel. Department of Public Health and Primary Care, Skin Integrity Research Group (SKINT), University Centre for Nursing and Midwifery, Ghent University, Ghent, Belgium. Department of Mathematics and Statistics and the Data Science Institute, Faculty of Sciences, Hasselt University, Hasselt, Belgium.*

The development of standardized test methods for prophylactic dressings, which is the mission of the Prophylactic Dressing Standards Initiative (PDSI) task force, is essential to ensure reliable performance evaluations and informed clinical use. This presentation outlines progress on laboratory-based moisture management test methods which replicate human perspiration and skin-like conditions to quantify dressing absorption, evaporation, and spillover over intended clinical use periods. Preliminary data from multiple commercial dressing types confirm the repeatability, sensitivity, and ability of the methods under development to distinguish product performance, which is the key goal. Establishing these standard test methods supports consistent product comparisons and lays the groundwork for evidence-based and cost-effective dressing selection.

HEALTH ECONOMICS AND VALUE-BASED HEALTHCARE APPROACHES TO PREVENTING A 'NEVER EVENT'

Juha Laine

University of Turku, InFLAMES, Finland; Roche Oy, Finland

Background

Literature on pressure ulcers and health economics provides evidence on the cost and burden of disease, as well as the cost-effectiveness of various preventive interventions. In addition to health economics, value-based healthcare (VBHC) principles may offer a valuable perspective for preventing pressure ulcers and improving the performance of healthcare provider organizations.

Objective

This presentation introduces the concepts, measures, and frameworks of health economics and value-based healthcare in the context of preventing and treating pressure ulcers.

Discussion

Burden of illness and cost-of-illness studies provide insight into the magnitude of the health problem. However, resource constraints and opportunity costs necessitate cost-effectiveness analysis to support the optimal allocation of resources across diseases and interventions. VBHC emphasizes the provider's perspective and patient value through systematic outcome measurement, benchmarking, and value-based payment models.

Conclusion

Health economics and VBHC are not competing approaches, but complementary tools—together, they enable a deeper understanding and advancement of both efficiency and patient-centered value in the prevention and treatment of pressure ulcers.

□ COMPREHENSIVE ASSESSMENT OF PATIENT WITH A WOUND/ULCER

Kirsi Isoherranen, Adjunct Professor, Specialist in Dermatology and Allergology

1. Helsinki University Hospital and University of Helsinki, Wound Healing Centre, Finland

Learning objectives and aim of the presentation

A patient with a wound/ulcer should be examined holistically and with a person centered approach. The use of checklists is highly recommended, as there are several aspects that should be considered. An increasing number of patients with wounds have several etiologies behind the wound and therefore interprofessional assessment is important.

The examination starts with a thorough patient history including mobility, walking aids, comorbidities, medication, smoking and other lifestyle factors and previous history of wounds and operations, continued by the evolvement and treatment history of the current wound. Vascular assessment should be performed within two weeks in every patient with a lower leg ulcer. In addition to ischemia; infection, diabetes, leg oedema, pressure injury and atypical causes should be excluded in a systematic clinical examination. If the wound has an atypical appearance or has not responded to proper treatment within 4-12 weeks, a biopsy from the wound edge and wound bed should be taken.

In addition to biopsy, often laboratory tests are needed (e.g. glucose and lipide profile, nutritional parameters). Recognizing and treating comorbidities properly increases healing outcomes. Person centered approach with an empathetic attitude increases adherence to treatment, and comprehensive assessment is one important factor in achieving a trustable relationship with the patient.

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A TOOLBOX FOR PREVENTING PRESSURE ULCER/INJURY RECURRENCE IN INDIVIDUALS WITH SPINAL CORD INJURY: OUTCOMES OF AN INTERDISCIPLINARY, PERSON-CENTERED EWMA-WOUNDS AUSTRALIA PROJECT

Dimitri Beeckman (1), Hayley Ryan (2), Paulo Ramos (3), Samantha Holloway (4), Knærke Søgaard (5), Cátia Borges (6), Susan Flavin (7), Srinivasa Budithi (8), Sebastian Probst (9), Andrea Pokorná (10)

1. Ghent University, Belgium; Örebro University, Sweden; 2. University of Newcastle, Australia; 3. ULS Póvoa de Varzim/Vila do Conde, Portugal; 4. Cardiff University, Wales, UK; 5. Odense University Hospital, Denmark; 6. ULS Póvoa de Varzim/Vila do Conde, Portugal; 7. Rehabilitation Engineering Department, Swansea Bay University Health Board, Wales, UK; 8. Robert Jones and Agnes Hunt Orthopaedic and District Hospital NHS Trust, UK; 9. HES-SO University of Applied Sciences and Arts Western Switzerland, Switzerland; 10. Masaryk University, Czech Republic

Background

Pressure ulcer/injury (PU) recurrence in individuals with spinal cord injury (SCI) presents a persistent clinical and economic challenge. The complex interaction of physiological, psychological, and social factors necessitates a person-centered, interdisciplinary approach to prevention and care.¹ The European Wound Management Association (EWMA) and Wounds Australia have launched a focused initiative to create practical tools and guidance designed to help reduce the risk of pressure ulcer or injury recurrence in this high-risk group.²

Aim

This presentation highlights the development and key outcomes of a joint EWMA–Wounds Australia project that brought together experts from various disciplines and countries, alongside patients, future users, and industry partners, to co-create a comprehensive toolbox for use in both clinical and community settings.

Discussion

The toolbox was developed through expert consensus, enriched by real-world clinical experience, an extensive literature review, and valuable contributions from individuals living with SCI. It includes key components such as evidence-based clinical pathways, tools for patient education and empowerment, and strategies to support effective interdisciplinary collaboration. The content addresses critical areas including the pathophysiology of PU development in SCI, risk factors, skin and holistic patient assessment, nutritional care, hospital-to-home transitions, prevention strategies, and educational support. Special emphasis is placed on continuity of care and long-term follow-up. Grounded in person-centered values and informed by implementation science, the toolbox offers a structured, flexible, and sustainable framework to support the reduction of pressure injury recurrence.²

Conclusion

PU recurrence in individuals living with SCI requires a holistic, personalized approach to care. The toolbox provides a practical, evidence-based framework designed to assist clinicians, researchers, and policy-makers in supporting individuals at risk of recurrence. This comprehensive resource, available at <https://ewma.org/upcoming-resources/prevention-of-pressure-injury/>, is tailored for both hospital and home settings, ensuring it is valuable to all those involved in SCI care.

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THE PROBLEM OF PRESSURE ULCERS RECURRENCE – PREVALENCE OF PRESSURE ULCERS IN SPINAL CORD INJURED PERSONS

Andrea Pokorná (1)

1. Masaryk University in Brno, Faculty of Medicine, Department of Health Sciences, Brno, Czech Republic

Introduction:

Pressure ulcers remain a significant clinical challenge, particularly among individuals with spinal cord injury (SCI), who are at heightened risk due to impaired mobility and sensation (Kumar et al., 2021).

Methods:

The evidence about the PUs incidence and prevalence was revealed from the literature search based on the PCC clinical question which stands for Population, Concept, and Context.

Results:

Pressure ulcers are a significant and persistent complication among individuals with spinal cord injury (SCI), imposing substantial health and economic burdens worldwide. Epidemiological data indicate that the incidence of pressure ulcers in SCI populations ranges broadly from 22% to 36%, depending on the study and population characteristics (Chen et al., 2020; Xu et al., 2025). Globally, prevalence rates vary from 20% to over 50%, highlighting the widespread nature of this problem (Shiferaw et al., 2020). The high recurrence rate – estimated at approximately 30–50% within a year – further complicates management and underscores the chronicity of pressure ulcers in this vulnerable group (Black et al., 2020). Factors contributing to persistent pressure ulcer risk include sustained immobility, inadequate pressure relief strategies, comorbidities such as diabetes, and poor wound care practices. PUs are leading to prolonged hospital stays and aggravation of SCI patients and could further cause an increase in medical and economic burden. The most common locations where the PUs in SCI people occur are: sacrococcygeal area (highest prevalence among all the other locations), ischial tuberosity, trochanteric area, hips, feet and especially heels. Despite the fact that the prevalence of PUs in non-specific areas is rare, there is still a need to monitor it very carefully. These areas which are mainly affected during the acute phase after the SCI occur, are: face, occipital, torso, elbow, genital. The most common category of PUs reported in SCI patients are PUs category II. the incidence of PIs in men is higher than that in women. Despite the information that the incidence of PUs in men is higher than that in women (Labeau, 2021) this information must be accepted with caution due to difference in PUs etiology (e.g., car accidents etc.). The impact of recurrent PUs in SCI people is not only on the health of people with SCI itself, but also on their quality of life and last but not least on the quality of life of their beloved ones (lay carers).

Conclusion:

Despite advancements in prevention and treatment, recurrence remains a common and costly challenge, emphasizing the need for continuous risk monitoring, patient education, and tailored intervention plans. Addressing these issues through multidisciplinary approaches is essential to reduce the prevalence and recurrence rates, ultimately improving quality of life for SCI patients and reducing the overall healthcare burden.

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IMPLEMENTING VIRTUAL REALITY (VR) IN WOUND MANAGEMENT ENHANCES COMMUNICATION AND DECREASES MORAL DISTRESS

Andrea Pokorná (1)

1. Masaryk University in Brno, Faculty of Medicine, Department of Health Sciences, Brno, Czech Republic

Introduction:

Virtual Reality (VR) is emerging as a transformative tool in healthcare, offering new possibilities for innovation in wound management and **education**. By providing immersive, real-time three-dimensional visualizations of wound conditions and treatment strategies, VR not only enhances **communication** among multidisciplinary teams, patients, and caregivers but also serves as a powerful **educational platform** (Jones et al., 2020). Through **simulated clinical scenarios** and **interactive learning experiences**, VR facilitates **deeper understanding** of wound assessment, treatment planning, and care delivery, improving both **patient and professional knowledge**. A novel application of VR involves **training clinicians in breaking difficult news** related to wound outcomes, such as non-healing wounds, surgical interventions, or limb loss. VR simulations can effectively support the application of structured communication frameworks like the **SPIKES strategy** (Baile et al., 2000), helping clinicians to navigate sensitive conversations with greater empathy, clarity, and patient-centeredness. Additionally, VR interventions contribute to reducing moral distress among healthcare providers by supporting **clinical confidence**, **ethical decision-making**, and **reflective learning practices** (Rushton, Schoonover-Shoffner, & Kennedy, 2017). VR-based techniques for pain management further enhance **patient education** by empowering individuals to participate more actively in their care (Wiederhold & Wiederhold, 2018).

Methods:

Based on the identification of challenging situations when communicating breaking news to wound patients (Delphi study), we identified possible scenarios for practicing communication strategies to more effectively deliver patient-centered care and promote understanding and collaboration.

Results:

We created a set of scenarios using virtual reality to deliver breaking news to wound patients. Based on repeated personal experiences and requests from clinical colleagues, we focused on a real-life situation where the wound/injury worsened - deterioration of the condition occurred. We leveraged a collaboration with a well-known company that specializes in creating VR scenarios in this area and based our communication strategy on the SPIKES protocol.

Conclusion:

As evidence accumulates, it becomes increasingly clear that VR optimizes communication, strengthens **educational outcomes**, improves patient experiences, and promotes professional well-being. This presentation will review current findings, discuss strategies for integrating **VR-based education** and **communication training** into clinical practice, and identify future research priorities to maximize the educational and clinical potential of VR in wound care.

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PRESSURE ULCERS IN NURSING EDUCATION: LEARNING GOALS, CONTENT AND TEACHING METHODS

Emilia Kielo-Viljamaa

1. Novia University of Applied Sciences, Finland; 2. University of Turku, Finland

Pressure Ulcers in Nursing Education

Pressure ulcer prevention and care is one of the competence areas in wound care education within undergraduate bachelor's level nursing programmes (1). Pressure ulcers, their aetiology, and particularly their prevention, should be taught from the outset of nursing studies (2). Pressure ulcer prevention and care can be viewed as an independent nursing competence. Nevertheless, several other wound-related competencies are also relevant to pressure ulcer education, as the same methods and interventions employed in wound management for different types of wounds, such as wound dressings, can be utilised for pressure ulcer prevention and care.

Learning Goals

The primary learning goal for pressure ulcer education should be for nursing students to understand the aetiology and characteristics of pressure ulcers, as well as to learn the principles of their prevention and care (3). For the management and care of already developed pressure ulcers, learning goals related to all types of wounds can be applied to pressure ulcer care. This includes, for example, understanding the principles of caring for an open wound and recognising the various methods of wound debridement.

Content

Pressure ulcer education should encompass nursing interventions to relieve pressure, friction and shear, as well as interventions to care for and protect the skin (3). These interventions include, for example, repositioning, pressure ulcer risk assessment, and skin assessment. General teaching content related to all types of wounds can also be applied to pressure ulcer education, such as the signs and classification of wound infections, and the importance of nutrition in wound healing.

Teaching Methods

Pressure ulcer prevention and care can be taught by combining various teaching methods. The theoretical aspects of pressure ulcers can be delivered through traditional lectures or discussions, whether face-to-face or online, and either teacher-driven or via self-directed learning. Practical interventions, such as repositioning practices, should be taught in class through simulations or demonstrations. These hybrid or blended learning approaches, which combine self-study and in-class training, have demonstrated potential in wound care education due to their flexibility in studying (4,5). Contemporary teaching methods in the prevention and care of pressure ulcers include, for instance, augmented reality (6).

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DEVELOPMENT OF EPUAP PRESSURE ULCER E-LEARNING IMPROVING KNOWLEDGE IN PRESSURE ULCER/INJURY MANAGEMENT

Beáta Grešš Halász (1), Andrea Pokorná (2)

1. Pavol Jozef Šafárik University in Košice, Faculty of Medicine, Department of Nursing, Košice, Slovakia; 2. Masaryk University in Brno, Faculty of Medicine, Department of Health Sciences, Brno, Czech Republic

Abstract

The integration of digital learning tools in healthcare education, including e-learning, dates back more than a decade and is linked to rapid advancements in information and communication technologies. E-learning platforms have been refined to offer increasingly sophisticated learning experiences that support both theoretical knowledge and practical clinical skills.(1) It is a reliable method of improving outcomes, providing an immersive, low-risk and user-friendly environment for knowledge and skills enhancement.(2) Pressure ulcers/injuries (PUs/Is) remain a critical problem in healthcare systems.(3) A foundation of education is essential for systematic improvement.

The aim is to present the preparation and development process of one of the EPUAP Pressure Ulcer Curriculum modules to facilitate orientation in the content and individual components of e-learning.

In 2023, the EPUAP Education Committee work group developed an EPUAP PU Curriculum (4), aligned with the EPUAP Guidelines (5,6), intended for healthcare professionals in managerial positions who are responsible for managing processes within the prevention and treatment of patients with PUs. Module 3 of the curriculum was developed as a pilot by experts in epidemiology of PUs who work in clinical practice, education and research. The e-learning was divided into two major sections: content (“what to teach”) and didactic (“how to teach”).

Through detailed theory and practical examples of the three main domains of defining prevalence and incidence, how to set up a prevalence and incidence study, and demonstrations of such studies, participants can advance their ability to collect, analyze and interpret critical data that informs evidence-based practices. The didactic part is primarily designed for educators, but we strongly recommend that participants also view this material as a broadening of their horizons in the field of epidemiology of PUs in education and research. E-learning contains video presentations and quizzes to assess acquired knowledge and skills in the given subject. The plan is certification depending on the capabilities. The developed e-learning meets the expected conditions of applicability in clinical practice, flexibility and accessibility, user-friendliness, technological and institutional support, interactivity and feedback.(7)

This e-learning encourages professionals to engage in continuing professional development, which is particularly relevant in today’s multifaceted healthcare environments, where rapid adaptation to evolving clinical guidelines is crucial for quality outcomes. This e-learning platform provides a robust framework for both immediate skill acquisition and long-term professional growth in PU/I management, and can be used and adapted locally and/or nationally. In cooperation with industry, without their ability to influence the expert content, the EPUAP Education Committee will develop the entire curriculum into e-learning format.

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PRESSURE ULCER RISKS AND RISK ASSESSMENT IN ADULT INTENSIVE CARE UNITS

Maarit Ahtiala

1. Turku University Hospital, Finland

Patients in intensive care units (ICUs) are at high risk of developing pressure ulcers (PUs). The DecubICUs study, which included 13,254 patients across 1,117 ICUs in 90 countries, reported a prevalence of 26.6% and an incidence of 16.2%.⁽¹⁾ Adult ICU patients form a heterogeneous group with varying conditions, from post-operative care to multi-organ failure, making risk identification complex.

Critically ill patients often cannot reposition themselves, increasing their vulnerability. A hospital stay longer than three days is a known risk factor, and PU incidence is significantly higher among internal medicine patients than surgical ones.⁽²⁾ Medical devices further increase PU risk by potentially damaging both skin^(3,4) and mucous membranes.⁽⁵⁾

The Braden, Braden-ALB, Norton, and Norton-MI risk assessment scales are used in ICUs, although they were not originally designed for critically ill patients. In response, several ICU-specific tools have been developed, including Cubbin & Jackson, Jackson/Cubbin, EVARUCI, CALCULATE, COMHON Index, CAVE, EFGU, and RAPS-ICU scales.

Common feature in several assessment tools is mobility, activity, level of consciousness/alertness, and skin exposure to moisture. In tools designed for intensive care units, factors related to oxygenation, circulation, and hygiene are emphasized too. According to AUROC (60%–95%), sensitivity (37.5%–97%), specificity (37.4%–92%), positive predictive value (13.3%–69%), and negative predictive value (80.6%–99%), there is considerable variation in the performance of risk assessment tools designed for intensive care units. Since all ICU-specific risk assessment scales haven't all been tested in the same patient populations, the most effective tool remains unclear.

In addition to scoring systems, predictive models using electronic health record data—such as logistic regression^(6,7) and Bayesian networks⁽⁸⁾—are being explored. Technologies like sub-epidermal moisture measurement⁽⁹⁾ and infrared thermal imaging⁽¹⁰⁾ aims to support early detection.

A detailed analysis of risk assessment scales⁽¹¹⁾, combined with validated ICU-specific tools, may improve the identification of high-risk patients⁽¹²⁾. Multicenter studies are essential to optimize the use of these tools and models, enabling targeted prevention and better patient outcomes.

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HOSPITAL-ACQUIRED-PRESSURE-INJURIES (HAPPIs) AND ACUTE SKIN FAILURE IN PEDIATRIC CRITICAL SETTINGS: “UNAVOIDABLE“ AND “PREVENTABLE“. TWO SIDES OF THE SAME COIN COIN

Ciprandi Guido, Pace Mauro, Dotta Andrea

Bambino Gesù' Children's Hospital, Division of Plastic and Maxillofacial Surgery, PICU,
NICU, Rome, Italy*

Pressure ulcers that develop during hospitalization represent a serious, underestimated problem that can significantly impact the quality and life prospects of the injured child. Safety in a hospital is measured through risk assessment, incident reporting and safety systems audit.

Risk assessment identifies and evaluates potential hazards, incident reporting allows adverse events and risks to be reported, and safety systems audit ensures that prevention measures are effective. **(1)**

Prevention of HAPPIs and reduction of associated risks require robust prevention and control (HAPPIsPC) programs, which include:

- 1.Dedicated team composed of interdisciplinary professionals, including Intensivist, Plastic Surgeons, WOCN, Microbiologists, RareDisease Experts, Psychologists and Pharmacists;
- 2.Education and training of HCP steadily working in NICU-PICU-CTICU-ECU **(NPCE)**;
- 3.Immediate identification of newborn/infant at greatest risk for wound injuries;
- 4.Labeling of pediatric risk factors that differentiate avoidable from unavoidable HAPPIs. **(2)**
- 5.Implementation and systematic update of PUs appropriate prevention and control strategies, such as the adoption of both direct and indirect skin protection strategies (DPS, prophD).

A retrospective study was done on a pool of 120 pediatric patients admitted to one of the crucial settings reported above and called **NPCE (3)**. Fifty-five HAPPIs (45,8%) were unavoidable.

All these patients were pertinent to one of these categories: 1.newborn classified as “Boxed Children”, or 2.with a concomitant rare disease, or 3.with a late discovered metabolic myopathy causing immobility, or 4.carriers of more than 5 devices at the same time from birth onwards , or 5. chemically sedated (OR, 0.38; 95% CI, 0.20-0.72; P = .003) and were more likely to have an unavoidable HAPPIs. When OT LLSP and length of stay were considered and included into the regression model, for each 1-hour and/or one day increase in stay, the odds of an unavoidable pressure injury developing increased by 7,5%.

Finally, newborn who had multiple pressure injuries were 7 times more likely to have an unavoidable HAPI.

Modern neonatology must review in an ultra-critical way the immediate and active risk factors from birth and the heavy anesthesiological and intensive care problems **(3,4)** from the early stages of life and consider a pre-prevention of the risk without caring whether or not there are yet signs of skin breakdown. A multifactorial pediatric risk detection scale seems to be much more appropriate than other systems evaluating single factors.

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MEDICAL DEVICE-RELATED PRESSURE ULCERS IN CRITICAL CARE

Lenka Krupova (1), Andrea Pokorna (2)

1. Department of Dermatology, University Hospital Ostrava, Czech Republic;

2. Department of Health Sciences, Faculty of Medicine, Masaryk University, Brno, Czech Republic

Medical device-related pressure ulcers (MDRPUs) are a growing clinical concern in critical care settings, where patients are frequently exposed to prolonged use of life-sustaining medical technologies (Barakat-Johnson et al., 2019). These injuries most commonly occur at anatomical sites where medical devices exert sustained pressure, such as the nose, ears, lips, sacral area, and extremities. They often result from a combination of pressure, friction, and moisture accumulation (Gefen et al, 2022; Fang et al. 2025).

This keynote presentation will explore the development of MDRPUs in critically ill patients and the multiple risk factors involved, including immobility, mechanical ventilation, malnutrition, and extended length of stay during the hospitalization. Injuries to mucosal membranes, which are often not part of routine skin assessments, will also be discussed in the context of underreporting and diagnostic challenges.

Based on recent findings from the Czech healthcare institutions (Krupová et al., 2025) and aligned with international clinical guidelines, the session will present evidence-based prevention strategies. These include the use of silicone foam dressings before device application, staff education, and the integration of targeted risk assessments into daily practice. Preliminary results from a multicenter evaluation indicate a reduction in MDRPU incidence following the implementation of such protocols, particularly in patients undergoing non-invasive ventilation (NIV), high-flow nasal oxygen (HFNO), prone positioning, or immobilization with rigid cervical collars.

By combining clinical data with practical insights, this session will support healthcare professionals in recognizing, preventing, and managing MDRPUs across the continuum of critical care.

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FROM HOME TO HOME VIA OR-A MULTIDISCIPLINARY APPROACH

Leena Berg¹

1. Unit for translational medicine, Department of Surgery, University of Oulu, Finland

Pressure ulcers in adult patients present a significant clinical challenge, particularly in advanced stages requiring surgical intervention. Reconstructive plastic surgery is often necessary to achieve durable wound closure, restore function, and improve quality of life. The patient journey before and after surgery is complex and demands a coordinated multidisciplinary approach to optimize outcomes and minimize complications.

Preoperatively plastic surgeons collaborate closely with wound care specialists, internists, physiotherapists, occupational therapists and nutritionists to prepare patients for surgery. Prevention of postoperative complications should start before operation and it is not limited only to the choice of postoperative dressings. Postoperative care is equally critical and requires vigilant monitoring for complications, including flap necrosis, seroma, hematoma, wound dehiscence, and surgical site infection. Early detection and prompt management of these complications are essential to prevent surgical failure and prolonged hospitalization. The plastic surgery team plays a key role in managing these issues, alongside nursing staff and infection control specialists. It is also equally important to inform adequately the primary care about the postoperative regimen. Rehabilitation involves gradual reintroduction to mobility, pressure redistribution strategies, and psychological support. Long-term follow-up includes education on pressure ulcer prevention and lifestyle modifications to maintain surgical results.

A multidisciplinary model centered around plastic surgery enhances healing, reduces recurrence, and addresses both functional and psychosocial aspects of recovery. Recognizing and managing postoperative complications is vital to ensure a successful and sustainable outcome in adult patients undergoing reconstructive surgery for pressure ulcers.



MORE THAN JUST HEALING: PERSONAL STORIES OF CARE AND RECOVERY IN NORWAY

Ingebjørg Irgens (1),

1. Sunnaas Rehabilitation Hospital, Norway

Objective:

Pressure injuries remain a significant challenge in both hospital and community-based care in Norway. Despite being largely preventable, prevalence remains high, with serious consequences for patients, caregivers, and the healthcare system. Our digital wound projects have explored the lived experiences, systemic burden, and innovative responses to pressure injury prevention and care, drawing from both quantitative data and qualitative insights.

Methods:

In this presentation, a mixed-methods study combines Norwegian pressure injury prevalence data with thematic analysis of semi-structured interviews conducted with patients, relatives, and district nurses. The qualitative data focused on the experience of living with or managing pressure injury, with particular attention to continuity, competence, and the role of digital innovation in wound care. A focus group interview with health care professionals and a manager discussed implementation barriers to digital innovation.

Results:

Patients describe reduced quality of life due to isolation, and lack of consistent care. Caregivers report a need for support from wound care specialists. Health professionals highlight challenges including a cooperative financial model to cover increased costs in the municipalities, limited resources, training gaps, and fragmented communication across care levels. Digital wound care was positively received, improved access to the health care service, continuity in the service, and patient safety, despite occasional technical issues. However, the current reimbursement model poses financial challenges towards the municipalities.

Conclusion:

Pressure injuries remain a significant clinical and systemic burden in Norway. While digital solutions and national safety initiatives show promise, sustainable improvement requires investment in training, leadership, and cross-sector coordination. Patients and nurses emphasize that relational continuity and accessible specialist knowledge are critical to effective pressure injury prevention. The project supports a shift toward integrated, patient-centered wound care models that blend digital innovation with local competence and continuity across care levels. However, the misalignment in costs hinders widespread implementation and perpetuates reliance.



PLASTIC SURGERY PATHWAY FOR PAEDIATRIC PRESSURE ULCERS: GUIDING PATIENT'S SELECTION, AVOIDING UNDUE OVERTREATMENT, COMPLICATIONS, RELAPSE

Ciprandi Guido, Grussu Francesca (1)

1. Bambino Gesù' Children's Hospital, Division of Plastic and Maxillofacial Surgery, Rome, Italy

The current discovery of many causes of pressure ulcers from the early stages of life and the robust development of intensive care therapeutic measures in the neonatal and pediatric age contribute to understanding how surgical therapy is today very active in the field of tissue repair in pediatric wound care.(1) Over 25% of all pressure ulcers, 32% of MDRI and 36% of atypical ulcerative lesions are of relevance to the neonatal and pediatric age. But unlike the past, today there is great attention to the different timings that range from the accurate analysis of the wound bed, to the preparation of the patient, the search for a skin-sparing procedure method. A retrospective analysis was done on a group of 135 children affected by a pressure ulcer. Times dedicated to presurgical and surgical procedures were differently considered and evaluated as follows:

• Project counseling	10%	
• Child's status (nutrition)	5%	pre and post
• Infection assessment	7%	pre and post
• Wound Bed/P Preparation	18%	
• Dressings	9%	
Planning	8%	
Operating Time	33%	
I.O. Schedule	10%	

Physical therapy and Occupational Therapy have played an essential role in the wound bed and patient preparation when predisposing factors must be relieved (local undue pressures, spasms, contracture). Often, if all of these factors are improved, the ulcer may heal on its own, and surgical intervention may not become necessary. The 4 most important intraoperative recommendations limiting local movement of tissue blocks and reduce distant flaps were: 1.the choice of the most favourable position on the operating room; 2.the ulcer excision, including abnormal skin, false granulation and necrosis and perifibrotic tissues; 3.chose a local flap that will not violate adjacent flap areas to preserve future options; 4. Use a flap that is as large as possible, and minimize tension on the incisions at the closure.(2) The full analysis of the 3 most important surgical procedures clearly demonstrate a reduction in distant (DF) and local flap (LF) procedures and an increase in the number of SS use and skin grafts (PTSG):

	2020	vs	2024
DF	21%		6%
LF	38%		11%
PTSG	32%		83%
MajorS	59%		17%
Secondary Closure*	23%		58%

*advanced dressings, NPWT (Fig 1.)

Despite the accuracy and precision of technical details including how to prepare, draw, cover, reconstruct and fix tissues (3), the choice of the best surgical option is strictly dependent on how the wound bed has been prepared and on how the accuracy of counseling of patients and their parents or caregivers is pursued.



Fig.1. Preconditioning the wound bed and essential points for regeneration and repair of pressure ulcers in pediatric patients

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WORKING WITH REGULATORS IN ACHIEVING MEDICAL DEVICE RESEARCH IN WOUND CARE

Prof Declan Patton (1),

1. RCSI University of Medicine and Health Sciences, Dublin Ireland

The focus of this talk will be on how best to navigate regulatory requirements when setting up and delivering medical device wound care research. The talk will draw heavily on the infrastructure in place within an Irish context, but this is applicable to what is happening across the EU and beyond. The talk will have a number of strands. First, how best to establish industry collaborations in a way that ensures a close-knit agreement from day one. Second, ethical considerations will be talked about, including the key elements to any ethical submission for a medical device study involving humans. Finally, regulatory requirements will be talked through. Overall, the purpose of this talk is to enhance understanding around the key parts to a successful industry-academic medical device relationship.



THE IMPACT OF EDUCATION ON HEALTH CARE ASSISTANT'S KNOWLEDGE, SKILLS AND ATTITUDES AND PRESSURE ULCER PREVALENCE IN A COMMUNITY OLDER PERSON SETTING

Background: Pressure ulcer prevention in community long-term care settings is a particularly important clinical issue as older adults are at a greater risk of pressure ulcer development due to the presence of co morbidities and reduced mobility. Health care assistants represent the majority of the workforce in community long-term care settings. Studies have provided an insight into the positive effects of pressure ulcer education on health care professionals' knowledge, skills and attitudes. However, the precise impact of pressure ulcer education for HCAs is under reported. Therefore, this study set out to address this gap.

Method: A quasi-experimental design was employed. This involved assessment of HCAs' knowledge skills and attitudes pre-and-post delivery of an education intervention. The Shanley Pressure Ulcer Prevention Programme (SPUPP)¹ and the PU Classification system (PUCLAS) programme² (modules 3 and 4) were delivered. The combined PU programmes were delivered face-to-face, using multiple teaching strategies. Knowledge, skills and attitudes were assessed and analysed over time using a repeated measures mixed-model analysis (unadjusted) and additionally adjusted for demographic variables.

Findings: Of the 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). Knowledge scores were positively impacted by time; (time 2 v time 1: Mean difference (MD): 3.37; 95% CI: 3.11 to 3.64, $p = <0.001$; time 3 v time 1: MD 3.01; 95% CI: 2.67 to 3.35, $p = <0.001$). There was evidence of a small decrease in mean knowledge scores from time 2 to time 3 (MD: -0.36; 95% CI -0.70 to -0.02). Similarly, skill scores were positively impacted by time; (time 1 v time 2: 2.13; 95% CI 1.97 to 2.28, $p = <0.001$; time 2 v time 3: -0.59; 95% CI -0.78 to -0.39, $p <0.001$; time 1 v time 3: 1.54; 95% CI 1.34 to 1.73, $p <0.001$). Mean attitude scores were also positively impacted by the education intervention. With regard to pressure ulcer prevalence a decrease of 3.9%, (95% CI 2.5% to 5.4%; $p = 0.0004$) was observed across all sites between the beginning and the end of the study.

Discussion and conclusion: The educational intervention achieved its aim, with a statistically significant increase knowledge, skills scores and pressure ulcer prevalence attained post-intervention compared to pre-intervention. This study has provided valuable data into the impact of a pressure ulcer education programme on health care assistants working in community long term care settings. The results from the present study can be used to support future research and inform the development of future pressure ulcer education programmes.

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INNOVATING DEVICE DESIGN AND APPLICATION TO PREVENT PRESSURE ULCERS

Peter R Worsley (1)

1. Skin Sensing Research Group, School of Health Sciences, University of Southampton, United Kingdom,

Introduction

Medical devices which interface with the skin can cause areas of local pressure, shear and altered microclimate which put the skin at risk of pressure ulcers. The geometric and materials of the devices can have a profound effect on the boundary conditions and risk posed to the skin and sub-dermal tissues [1]. In recent years there has been an increase in access to population-based imaging, material manufacturing e.g. 3D printing, sensing, and computational models which can aid in the development of novel medical devices to prevent pressure ulcers [2]. The aim of this session is to discuss how these innovations have been translated into care settings and discuss the future prospects for preventing device related pressure ulcers.

Methods

The research to date has utilized an array of approaches to analyse existing and develop new medical devices, including in-vitro (bench), in-vivo (human trials) and in-silico (computer models) models. Targeted innovations have been developed for prosthetics, orthotics and respiratory interfaces to improve device design, materials and technologies to support selection. This also includes attachment methods, including adhesive devices [3]. These approaches have been used in clinical trials to monitor the effectiveness of new devices and evaluate the skins response to improved device design.

Results

Improved geometry and material interfaces have been shown to significantly reduce interface pressure, shear and microclimate to create a safer interaction with the skin. This has been demonstrated across all models (in-vitro, in-vivo and in-silico) and simulated across populations, where each approach has corroborated the findings of the other. Platforms to improve device design have been evaluated in a range of care settings, revealing improved device comfort, reduced skin vulnerability and improved clinical outcomes [4].

Conclusions

The research supported the development of new interfaces (prosthetic sockets, respiratory interfaces and adhesives), clinical and procurement guidelines, and education materials to help prevent device related pressure ulcers. More innovation is needed to ensure devices are fit for purpose across all populations (children and adults) and to provide opportunities for individuals to self-manage their own device related pressure ulcer risk.

Conflict of Interest

This research is funded by the Engineering and Physical Sciences Research Council (EPSRC, EP/W031558/1)

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PRESSURE ULCER CARE AND PREVENTION FOR INDIVIDUALS RECEIVING PALLIATIVE AND HOSPICE CARE

Sharon Latimer (1)

1. NHMRC CRE in Wiser Wound Care & School of Nursing and Midwifery, Griffith University, Australia.

Background

Pressure ulcer (PU) incidence rates among individuals receiving palliative or hospice care is about 12.0% (1). Palliative and hospice care are distinct forms of care related to *serious health-related suffering* (2). Palliative care, which may commence at diagnosis and delivered over many years, is curative and life prolonging care that focusses on symptom management and quality of life. Hospice care is delivered in the final hours, days, weeks or months of life when curative treatment is not possible, and shifts the focus to comfort, emotional, and spiritual care. The complex and often changing medical condition of these individuals means their PU risk is higher due to immobility, the effects of medications (sedatives, opioids) and treatment (radiation therapy) or the result of organ failure at the end of life. In this population, other wounds such as end-of-life or fungating wounds, can also develop which can make PU assessment and treatment challenging.

Pressure ulcer care

PU development in this population is problematic. Depending on the individual's condition, the PU stage, and other factors such as medications (corticosteroids) and malnutrition, the goal of wound care will range from complete healing to comfort care. PU treatment and wound care may include surgery, specialised dressings, pain management, infection prevention, odour control and emotional support. PU treatment should be guided by the individuals' preferences and overall care goals (3).

Pressure ulcer prevention

PU prevention in this population has specific challenges. Individuals will receive PU prevention care in a range of palliative and hospice care settings (home, hospitals, aged care) that often requires a multidisciplinary approach. Specific PU prevention considerations are needed regarding nutrition, pressure redistribution surfaces and repositioning. All PU prevention care should be guided by the patient's condition and preferences, with every effort made to prioritise comfort and control symptoms. Good oral and lip care are needed to facilitate the maintenance of adequate nutrition and hydration based on the individual's preferences. Consider using an alternating active surface that meets the overall care goals and comfort. Individualised repositioning that prioritises comfort and care goals should be developed in collaboration with the individual and family (3).

Conclusions

Individuals receiving palliative or hospice care have specific PU care and prevention needs. Their complex and changing medical conditions means their care should be individualised to meet their preferences and care goals.

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PRESSURE ULCER PREVENTION IN PEOPLE WITH SPINAL CORD INJURIES

Knaerke Soegaard (1,2,3), Fin Biering-Sørensen (4,5), Sofie Verhaeghe (6), Dimitri Beeckman (6,7),
Jens Ahm Sørensen (1,2)

1. Research Unit for Plastic Surgery, Odense University Hospital, Denmark

2. Department of Clinical Research, University of Southern Denmark

3. SKINT research group, Ghent University, Belgium

4. Department of Clinical Medicine, University of Copenhagen, Denmark

5. Department for Brain and Spinal Cord Injuries, Bodil Eskesen Centre, Rigshospitalet, Denmark

6. Department of Public Health and Primary Care, University Centre for Nursing and Midwifery, Ghent University, Belgium

7. Swedish Centre for Skin and Wound Research, Faculty of Medicine and Health, School of Health Sciences, Örebro University, Örebro, Sweden

Background

People living with spinal cord injuries (SCI) are at high risk of developing pressure ulcers (PU/PI), with lifetime prevalence estimates reaching up to 95%. Impaired mobility, altered sensation, and physiological changes in skin and tissue integrity increase their vulnerability, while prevention requires continuous, person-centred effort in both clinical and community settings. Addressing these challenges through structured, evidence-informed care is crucial to reducing morbidity, healthcare costs, and the significant impact on quality of life.

This presentation introduces a newly developed Danish clinical practice guideline (CPG) tailored to the prevention and treatment of pressure injuries in individuals with SCI. The aim is to strengthen prevention strategies and support consistent, high-quality care across healthcare sectors.

Methods:

The CPG was developed through adaptation of existing high-quality international guidelines, applying the ADAPTE methodology to ensure contextual relevance for the Danish healthcare system. The process involved multidisciplinary input and active involvement of people living with SCI.

Results:

The final guideline comprises 121 recommendations across 22 clinical topics, including skin monitoring, risk assessment, seating and support surfaces, nutrition, and patient education. The recommendations prioritise proactive, individualised risk management, early detection, and the involvement of individuals with SCI in their own care.

Conclusion:

Effective PU/PI prevention in people with SCI requires more than access to knowledge—it demands tailored, context-specific guidance and implementation support. The new Danish CPG provides a comprehensive foundation for improving PU/PI prevention in this high-risk population. Continued efforts will focus on dissemination, clinical training, and evaluation of implementation to ensure lasting impact in both inpatient and community-based care.

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PRESSURE ULCER CARE AND PREVENTION FROM BIRTH TO CHILDHOOD

Valentina Vanzì^{1,2}

1. *Centre of Excellence for Nursing Scholarship (CECRI), Board of Nursing (OPI) of Rome*

2. *JBI Italy Evidence-Based Practice and Health Research Center, Rome, Italy*

The prevention and management of pressure injuries in the pediatric population, from birth (congenital pressure injuries) through to childhood and adolescence, presents unique and multifaceted challenges. Unlike adults, pediatric patients represent a highly dynamic and heterogeneous group, ranging from extremely preterm neonates to emerging adults. Each developmental stage carries specific anatomic-physiological and neurocognitive characteristics that directly influence risk factors, skin integrity, pain perception, and the ability to participate in care. One of the most critical aspects is the constant growth and rapid evolution of these patients, which requires continuous reassessment and adjustment of clinical and nursing interventions. Preventive strategies must be modulated not only according to weight, gestational age, or comorbidities, but also based on developmental needs, relational context, and environmental conditions. Despite the growing awareness of the burden and impact of pressure injuries in pediatrics, the available scientific evidence remains limited and often of low quality. This makes it difficult to define standardized protocols and impedes the widespread application of robust, evidence-based practices. Many existing recommendations are extrapolated from adult care, with limited validation in younger populations. This contribution reflects on the complexity of delivering effective and tailored pressure ulcer care in pediatric settings, underlining the need for high-quality research, context-sensitive guidelines, and interdisciplinary approaches capable of adapting to the evolving needs of this fragile and diverse group of patients.

Conflict of interest: The author declares no conflicts of interest.



PREVENTION AND MANAGEMENT OF PUS AMONG FRAILTY ELDERLY PEOPLE

Kirsti Ahmajärvi, PhD, MD, General practitioner and Geriatrician¹

¹Helsinki Hospital, Laakso hospital, City of Helsinki

Definition and diagnostics of frailty: Frailty is considered as a syndrome of elderly which includes vulnerability and loss of strengths. Frail elderly have difficulties in daily life and decreased resilience related to acute stress and changes. Definition by Fried frailty phenotype includes five criteria: weight loss, exhaustion, slow gait speed, weak grip strength and low energy. (Fried et al., 2001) Frailty is a holistic syndrome rather than cognitive impairment and the definition includes sarcopenic obesity considered as “fat – frailty “. Sarcopenia may occur as independent condition but often as part of frailty syndrome. Different tools for measuring frailty have been used, such as Clinical frailty scale (CFS), Frailty index (FI), Frailty phenotype and multidimensional Comprehensive geriatric assessment (CGA) (Clegg et al., 2016, Chong et al., 2017, Church et al., 2020). Prevalence of frailty among elderly living at home is 10%-14% (Collard et al., 2012).

Frailty and ageing – dermatoporosis: Frail gerastenic skin is called dermatoporosis. Aging skin gets thinner, breaks easily and loses its functionality. The number of cells of the skin is decreasing and their function is declining due to aging. Infections occur more easily and risks for skin tears, incontinence related dermatitis, pretibial injuries and PIs/PUs rises. In addition to age ultraviolet light, smoking and genetic factors are associated to dermatoporosis. (Dyer et al., 2018)

Chronic inflammation – inflammaging and wounds: Frailty, sarcopenia and immunesenescence are common among elderly. These changes are somewhat reversible, but all of these have inflammatory drivers. It has been discussed whether these three are separate conditions that co-occur or are they linked by the same underlying cellular mechanisms. Ageing is related to low inflammatory state, which is in addition related to several chronic diseases (diabetes, hypertension, immunological diseases, cancer) and chronic wounds (Wilson et al. 2017).

Frailty and PUs: Frailty increases risk of falling, immobilization and decreased functional ability, delirium, under nutrition and weight loss, hypoalbuminemia, incontinence and side effects of medication → All of these risks are also connected to increased pressure ulcer risk (Ottaviani et al., 2024).

Management of PUs initiates from prevention, especially among frail elderly. Frailty has effect on outcomes and increases risk for longer hospitalization. (Ottaviani et al., 2024). Thus, early detection of frailty could be part of risk assessment of PUs alongside conventional risk assessment protocols.

Aims of wound care, palliative treatment and advanced care planning should be considered and discussed with a patient and care givers. Defining the aims of the wound care and determining the treatment plan, whether surgery or conservative care. Palliative pressure ulcer treatment must include good quality of care, proper treatment of pain, skin condition, nutrition and re-positioning aiming for good end of life treatment.

Discussion: Frailty rather than age was seen to have a greater physiological impact on outcome, resilience and wound healing. (Upton, 2020) Considering pressure ulcers and frailty there is an open question is frailty a predictor of a PU or is a PU determinant of frailty?

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WOUND CARE ACROSS SECTORS: A COLLABORATION BETWEEN COMMUNITY AND HOSPITAL WOUND SPECIALIST NURSES

Britt Hansen (1)

1. Odense University Hospital, Department of Plastic Surgery, Denmark

At the Department of Plastic Surgery, a wound specialist nurse is employed with the primary responsibility of managing and preventing pressure ulcers (PUs) among hospitalized patients across all departments within the hospital. In some cases, pressure ulcers are severe, requiring long and complex healing processes. These ulcers often develop as a result of prolonged immobility following incidents such as falls—where patients may lie on the floor for extended periods without repositioning—or due to critical illnesses such as sepsis, where reduced mobility plays a central role.

Upon discharge, many patients with pressure ulcers require continued care that necessitates interdisciplinary collaboration between hospital-based services and community healthcare providers. To ensure a seamless transition and continuity of care, a joint home visit is often arranged.

Ideally, the following individuals participate in the home visit:

- The patient
- Relatives
- The community-based wound specialist nurse
- The occupational therapist
- A personal assistant (if applicable)
- The hospital-based wound specialist nurse

The purpose of the visit is to provide support and guidance to the community wound care team and to jointly develop a comprehensive plan for ongoing treatment and prevention of pressure ulcers. This interdisciplinary approach enhances the quality of wound care and ensures that the patient remains at the center of care planning.

The presentation will include cases focusing the interdisciplinary approach.



EVALUATING POST-DISCHARGE RECOVERY OF PATIENTS WITH HOSPITAL ACQUIRED PRESSURE ULCER (HAPU): PROSPECTIVE COHORT STUDY

Michelle Venâncio Hong⁽¹⁾, Bruna Cristina Velozo⁽¹⁾, Meire Cristina Novelli e Castro⁽¹⁾, Aglecia Moda Vitoriano Budri⁽²⁾, Luciana Patrícia Fernandes Abbade⁽¹⁾

1. São Paulo State University (UNESP), Medical School, Botucatu, São Paulo, Brazil; 2. School of Nursing & Midwifery, Royal College of Surgeons in Ireland Skin Wounds and Trauma Research Centre, Dublin, Ireland

Introduction

Pressure ulcers (PUs) develop as a result of intense and/or prolonged pressure, often in combination with shear forces^[1]. These injuries are frequently acquired during hospitalization and may persist until discharge ^[2], requiring targeted guidance to ensure continuity of care beyond the hospital setting. This study aimed to evaluate the recovery and care provided to adult patients with hospital-acquired pressure ulcers (HAPUs) following discharge.

Methods

This was a prospective cohort study conducted with patients who developed PUs during their hospitalization and were discharged from a tertiary hospital complex in Brazil. We included adult who developed PUs and were assessed by the Wound Care Committee during hospitalization. Data collection began in January 2022 and ended in January 2023. After participants consent, information was obtained post-discharge using electronic medical records, primary health care and phone calls. The authors developed a checklist instrument for data collection to obtain hospital and post-discharge information on instructions adherence, dressing changes, healthcare services received, overall clinical and PU healing status. Data were collected on days seven (D7), fifteen (D15), thirty (D30), and sixty (D60) post-discharge.

Results

Among the 113 patients included, 55.8% were male, with a mean age of 64.6 years (SD = 15.1), and 75.2% (n = 85) self-identified as white. The median hospital length of stay was 40.0 days (IQR: 22.0–57.0). The leading causes of hospitalization were external trauma (e.g., falls) in 22.1% (n = 25) and neurological disorders in 21.2% (n = 24). Hospital-acquired infections were common, affecting 46.0% (n = 52) of patients.

A total of 246 PUs were identified, with the sacral region being the most affected site (37.0%, n = 91). Stage 2 ulcers were the most prevalent, accounting for 47.6% (n = 117) of cases. By D60, 32.7% of patients (n = 37) had been re-hospitalized, and 22.1% (n = 25) had died. Wound healing or significant improvement was observed in 42.5% (n = 48) of participants. Kaplan-Meier survival analysis revealed that stroke was significantly associated with delayed or impaired healing (p = 0.021) (Figure 1).

Conclusions

HAPUs remain a prevalent and severe complication, with many patients experiencing persistent or worsening conditions up to 60 days post-discharge. These unfavorable trajectories are associated with high rates of mortality, re-hospitalization, and non-healing wounds. Our findings underscore the urgent need for enhanced post-discharge follow-up and tailored interventions to support recovery and wound healing. Identifying high-



risk individuals, such as those with stroke, and implementing targeted preventive strategies are critical for improving the quality of care and clinical outcomes for patients with HAPUs.

Conflict of Interest

None

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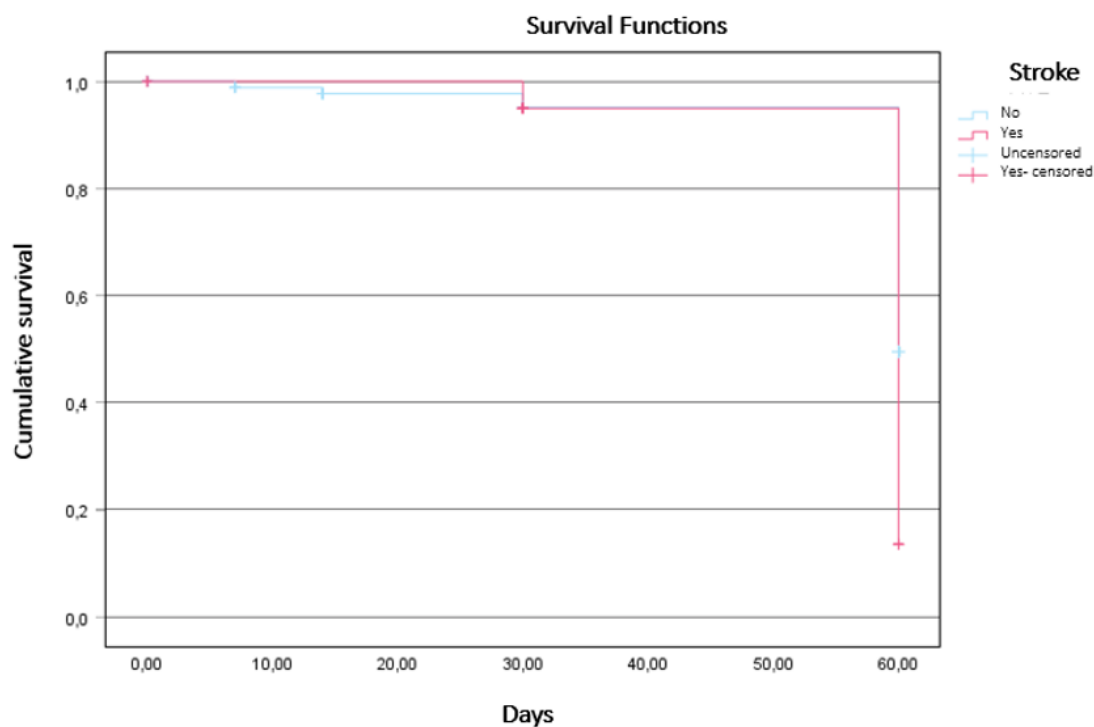


Figure 1. Survival curve in relation to the healing process of hospital pressure ulcers in patients with stroke.

A REALIST EVALUATION OF PATIENTS LIVING IN THE COMMUNITY AT HIGH RISK OF DEVELOPING PRESSURE ULCERS USING 'CPM'

Nicci Aylward-Wotton (1,2), Joanna Pendray (1), Rebecca Hardwick (3), Peter Worsley (1)

1, University of Southampton, UK;

2, Cornwall NHS Foundation Trust, UK; 3. University of Plymouth, UK.

Introduction

Pressure ulcers (PUs) represent a major burden to populations worldwide, impacting on a patients' quality of life (QoL). Continuous Pressure Monitoring (CPM) can both monitor and promote mobility, helping to support self-management and timely interventions. A previous quality improvement project (PROMISE[1]) demonstrated several benefits to patients including pressure ulcer healing, and better selection of support surfaces across the South-West of England. However, during the study several technological challenges were identified. The aim of the present study was to use a realist evaluation framework to explore the mechanisms and context which underpinned the use of CPM in the community setting.

Methods

This study explored what works, for whom, why and under what circumstances [2], identifying the context, mechanisms and outcomes underpinning the use of CPM in the community setting. Initial Programme Theories (IPTs) were developed from 'hunches' identified from PROMISE [1] documents in addition a literature review for theory refinement [3]. Prospectively, 42 participants provided data which was analysed from focus groups (n=5), observations (n=6), interviews (n=28), stakeholder appreciative inquiry approach [4] meeting (n=1). The IPTs were iteratively refined using NVivo.

Results

Analysis of the PROMISE documents and literature review identified 35 'hunches', which were later refined to four program theories (figure 1), accompanied by 34 context-mechanism-outcome configurations, with several recommendations. Four mid-range theories supported the role played by the patient, carers and clinicians.



Figure 1. PROMISE logo (left) and program theories (right)

Conclusions

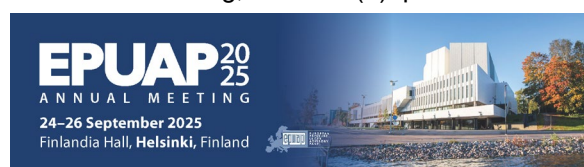
The evaluation identified key areas that are required for CPM to be successfully implemented and sustained within a community team with additional recommendations for improvements of the technology. These will be assessed in a prospective human factors trial in 2025-2026.

Conflict of Interest

We have no conflicts of interest to declare

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PRESSURE INJURIES IN LONG-TERM AND COMMUNITY HEALTH SERVICES AS INDICATORS OF PATIENT SAFETY AND QUALITY

Jaana Kalliokoski (1,2,3), Susanne Salmela (1), Auvo Rauhala (1,2) Tuija Ikonen (1,2,3)

1. The Wellbeing Services County of Ostrobothnia, Finland. 2. Finnish Centre for Client and Patient Safety, Finland. 3. Turku University, Finland.

Introduction

Pressure injuries (PIs), previously called pressure ulcers (PUs), are a challenge for individuals, society, and the healthcare system. PIs cause pain, reduce quality of life, and increase morbidity and mortality (1). PIs are significant indicators of patient safety and quality of care. The aim of this study was to investigate the point prevalence of pressure injuries (PIs), the level of their documentation, and the role of medical devices in their development in the context of different types of long-term care in a wellbeing services county in Finland.

Methods

The target group of the cross-sectional study was clients of home care (HC), general medicine (GW) and long-term care (LTC) $n = 779$. The material was collected by two separately questionnaires developed by HoiVerke (2). The data were statistically analysed with Fisher's test, Chi Square (χ^2) test and Kruskal-Wallis test.

Results

One or more PIs occurred in 159 clients (20%). A total of 272 PIs were recorded. PI prevalence was highest in the torso (36%) and lower limbs (46%). PIs showed no association with age, gender, or BMI of the subjects. Impaired mobility and PIs appear to be related: 37% of wheelchair users or bedridden subjects had PIs, compared with 12% of subjects who moved independently or with assistance. Medical devices (MDRPI) contributed to 128 (47%) PIs. The mattress or sheet was involved in 76% of PIs. PIs were recorded in 72% of clients with PI, and the PI diagnosis number (ICD-10) was recorded in only 13% of documents.

Conclusions

In this study, the relationship between client background data and PI prevalence appear to be in line with previous research (3–5). MDRPIs in long-term care differs from acute care PIs (1). In our analyses PI were typically located in the back and pelvis area, whereas in acute care, they are more commonly found in the head area and are related to breathing devices (1). Previous studies (6, 7) support our findings of deficient PI recording, which is thought to be due to a lack of PI identification. Based on the above, it can be concluded that the competence, monitoring, and documentation of PI prevention should be integral to patient safety and quality of care, and should be further developed in long-term care settings.

Conflict of Interest

There are no conflicts of interest in connection with this study.

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NURSES' KNOWLEDGE OF PRESSURE ULCER PREVENTION IN OLDER PEOPLE CARE SETTINGS – A CROSS-SECTIONAL STUDY

Elina Hätinén (1, 2), Sirpa Mäki-Turja-Rostedt (1,2), Anne Kuusisto (2), Lotta Nikki (2), Heli Björilin (2), Riikka Kleemola (2), Jaana Korhonen (2), Miko Pasanen (1), Minna Stolt (1, 2)

1. Department of Nursing Science, University of Turku, Finland;

2. Wellbeing Services County of Satakunta, Finland

Introduction

Nurses' knowledge in pressure ulcer (PU) prevention is important to promote quality of life of the patients and provide effective preventative and therapeutic interventions. Prevention of pressure ulcer in cost-effective once conducted with adequate practices. However, to implement consistent practices, knowledge of pressure ulcers and their prevention is important. The aim of the study was to analyze nurses' knowledge in evidence-based pressure ulcer prevention in older people care settings and identify associating factors.

Methods

A cross-sectional study was conducted where data were collected with the Pressure Ulcer Prevention Knowledge test (PUPK, Copyright 2018 © Haavisto, Hietanen) in 4-5/2025. Total sampling was applied to nurses (N=1864, registered nurses, licensed practical nurses) working in the older people care (home care and long-term institutional care) within one wellbeing services county in Finland. The PUPK instrument measures evidence-based knowledge in pressure ulcer prevention practices. It consists of 35 items divided into seven domains (5 items each): PU development and risk factors, PU classification, PU risk assessment, repositioning, pressure relief devices, skin assessment and care, and nutrition. Response scale is dichotomous answer options (1=yes, 2=no) with option I do not know. Sociodemographic, education and work-related questions will be asked as background information. The data will be analysed with statistical analysis.

Results

Data collection is in progress. The results will be presented in the EPUAP annual meeting in September 2025. There will be description nurses' knowledge in evidence-based PU prevention in older people care and associating factors, in one wellbeing services county in Finland.

Conclusions

The results of the study can be used to identify knowledge gaps in pressure ulcer prevention. With this information is possible to develop targeted in-service education for nurses to enhance their competence in pressure ulcer prevention. As pressure ulcer incidence is a key indicator of care quality, nurses' knowledge in pressure ulcer prevention is important to keep the incidence levels as low as possible and thus improve patients' quality of life.

Conflict of Interest

None.



ENHANCING COMFORT AND SAFETY: EVALUATING THE HISTORY OF USE ON A DYNAMIC MATTRESS FOR PRESSURE ULCER MANAGEMENT WITHIN SOCIAL CARE ENVIRONMENT

Ross Joannides (1),

1. Barchester Healthcare, United Kingdom

Introduction: Technologies that enhance safety while reducing PU risk are crucial in Social care (1). This 12-week study, conducted by Barchester Healthcare, evaluated the use of an active mattress system (2) with integrated usage history to support comfort, skin integrity, and the emotional well-being of residents, particularly those living with dementia .

Methods: Sixteen participants were recruited and placed on a dynamic mattress (mean age 85.0 ± 7.3 years; 68.8% with dementia). Hours of system usage was measured and compared using the digital electronic care planning system which records all interventions and individualised care plans. For those residents that were unable to communicate the PAINAD (Pain Assessment in Advanced Dementia) tool was used, to identify compliance and measure comfort (3). As part of the study Toe Brachial Pressure Index (TBPI) readings were also taken to assess changes in lower limb perfusion and monitor healing rates (4).

Results: It was identified that a total of 32,256 hours of use over the 12 week period, which when compared with the systems History of use(HoU) and the electronic care plans, evidenced that resident interactions occurred on average every 2.41 hours. The HoU identified the positional changes along with any alarms. The changes in cell pressures led to notable improvements in comfort. Residents living with Dementia — who may experience distress reactions (5), appeared less anxious and more relaxed, suggesting the intervention contributed to emotional reassurance and physical well-being. No skin breakdown occurred throughout the study. One resident with a long standing bilateral VLU who was non-compliant with compression experienced complete tissue healing without any additional interventions. This unexpected recovery may be linked to positive changes observed in TBPI values, suggesting improved peripheral circulation potentially attributable to the mattress design. TBPI data were collected on four high-risk residents, all with complex comorbidities including dementia, diabetes, CKD, CVA, and AFib. Despite being in end-of-life or severely deteriorated health states, 37.5% of limbs showed improvement, 12.5% remained stable, and 50% showed no decline—an encouraging outcome in a group typically expected to worsen.

Conclusions: This study highlights the clinical and emotional benefits of combining advanced mattress technology with person-centred care. The use of an active support surface with HoS enhanced both comfort and care transparency, while supporting skin health and emotional wellbeing. These findings support WHO's goals for high-quality end-of-life care (6) and reinforce the importance of innovative, evidence-based tools in aged care—especially for individuals with complex needs like dementia. Further research is recommended to explore the observed links between mattress intervention and vascular improvements.

Conflict of Interest: None

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COMPARATIVE EVALUATION OF FIVE PRESSURE INJURY RISK ASSESSMENT TOOLS IN ADULT ICU PATIENTS: A PROSPECTIVE COHORT STUDY

Bruna Cristina Velozo (1), Aglecia Moda Vitoriano Budri (2), Larissa Cristina Bernardo (1), Meire Cristina Novelli e Castro (1), Luciana Patricia Fernandes Abbade (1)

1. São Paulo State University (UNESP), Medical School, Botucatu, Brazil; 2. School of Nursing & Midwifery, RCSI, Dublin, Ireland

Introduction

Pressure injuries (PIs) remain a frequent and costly complication in intensive care units (ICUs), despite advances in prevention strategies. ICU patients are at increased risk due to clinical instability, impaired mobility, and therapeutic interventions. While several risk assessment approaches exist, no consensus has been reached regarding the most accurate and reliable option for critically ill adults. This study aimed to compare the predictive validity and reliability of five PI risk assessment tools in adult ICU patients.

Methods

A prospective cohort study was conducted in adult ICUs with patients aged ≥ 18 years, hospitalized for ≥ 24 hours, and without pre-existing PIs. Participants were assessed daily using five tools—Braden Scale, CALCULATE, Cubbin & Jackson, EVARUCI, and Sunderland—until PI development, discharge, death, or ICU stay completion (maximum 21 days). Predictive validity was determined by area under the ROC curve (AUC), sensitivity, specificity, and relative risk (RR). Reliability was evaluated using Cronbach's alpha, Kuder-Richardson-20, Intraclass Correlation Coefficient (ICC), and Cohen's Weighted Kappa.

Results

Among 150 participants, 26.7% ($n=40$) developed 55 PIs. While none of the five assessed tools demonstrated adequate predictive validity ($AUC > 0.7$), high-risk classifications according to Sunderland, Cubbin & Jackson, and EVARUCI were associated with a 3.0, 2.5, and 2.1 times higher likelihood of PI development, respectively. The Cubbin & Jackson scale was the only tool to reach acceptable internal consistency. All tools exhibited excellent inter-rater reliability ($ICC > 0.90$; Cohen's weighted Kappa between 0.81 and 1.00), although broader confidence intervals were observed for all but the Sunderland tool, Table 1.

Conclusions

Although none of the tools demonstrated sufficient predictive validity, the Sunderland, Cubbin & Jackson, and EVARUCI scales showed greater ability to identify high-risk ICU patients who developed PIs. Among the five tools, Cubbin & Jackson was the only one to exhibit acceptable performance across all reliability parameters. These findings highlight the need for a critical re-evaluation of the clinical utility of existing PI risk assessment tools. Future research should aim to refine assessment models based on patient-specific risk profiles and emphasize modifiable risk factors to enhance early detection and prevention strategies in critical care environments.

Conflict of Interest

None

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TABLE 1. Predictive validity of tools according to cut-off scores by receiver operating characteristic (ROC) curve.

Tools	Cut-off	AUC (95%CI)	Sensitivity (95%CI)	Specificity (95%CI)	PPV (95%CI)	NPV (95%CI)	RR (95%CI)
BRADEN	<9.5	0.610 (0.519-0.700)	45.0 (29.6-47.7)	67.1 (52.5-69.6)	4.0 (-2.1-5.1)	97.5 (92.7-98.4)	1.6 (0.9-3.0)
CALCULATE	>3.5	0.608 (0.529-0.686)	60.0 (44.8-62.7)	52.2 (36.8-54.9)	3.7 (-2.1-4.7)	97.7 (91.1-98.5)	1.6 (0.9-3.0)
CUBBIN&JACKSON	<32*	0.692 (0.616-0.798)	57.5 (42.2-60.2)	70.8 (56.8-73.3)	5.8 (-1.5-7.0)	98.2 (94.1-98.9)	2.5 (1.4-4.6)
EVARUCI	>12.25*	0.605 (0.520-0.691)	62.5 (47.5-65.1)	55.7 (40.3-58.4)	4.2 (-1.0-5.2)	98.0 (93.6-98.7)	2.1 (1.1-3.8)
SUNDERLAND	<33*	0.687 (0.607-0.767)	55.0 (39.6-57.7)	69.8 (55.5-72.3)	5.3 (-1.6-6.5)	98.1 (93.8-98.8)	3.0 (1.6-5.6)

AUC: area under the curve; CI: confidence interval; PPV: positive predictive value; NPV: negative predictive value; RR: relative risk. A significant p-value is indicated in *(p<0.005).



A NEW PRESSURE ULCER RISK SCALE FOR INTENSIVE CARE

Esa Soppi (1), Maarit Ahtiala (2)

1.None, Finland; 2.Turku University Hospital, Finland

Introduction

Numerous risk indicators have been identified but their role currently as surrogate markers of PU risk is not clear [1]. Due to the complexity of PU development, it is improbable to assume that there would be a risk assessment tool that would accurately identify patients at risk. The goal should be to stratify the patients based on magnitude of the risk to be able to effectively target the correct patients with appropriate preventive measures to reduce overall costs, human suffering and risk of death.

Patients in intensive care (ICU) are at high risk for PU development. Their risk assessment is complicated by the fact that their mobility is limited, the main risk for PUs [1]. Numerous risk scales have been tested in ICUs, but the populations have been rather small and/or selected [2,3]. One widely used scale is Jackson/Cubbin (J/C) scale, which was implemented as part of care/quality improvement project in a large medical-surgical ICU in 2010. The results showed that the J/C scale performed moderately in predicting PU development, and not all patients are in equal risk [4]. An effort was undertaken to improve the performance of the scale.

Methods

This was a retrospective registry study, and the data was collected from an electronic patient record system. The performance of risk indicators within J/C scale [5] was reevaluated (ICU population N=1629, PU incidence 11.1%) and supported by other relevant indicators [6]. A new, simpler scale (Modern ICU scale, mICUs) was developed, and its performance was tested statistically in two large independent ICU populations.

Results

Reevaluation of J/C scale [4] revealed the only 5 items contributed to the PU risk and furthermore they did not contribute linearly to the risk. Reducing the risk indicators from 15 (J/C) to 7 (mICUs) improved the ROC from 0.59 to 0.76 ($p<0.001$). The mICUs was validated in two large independent populations (N=1600+, PU incidence 6%) with sensitivity 53.0, specificity 83.1, positive predictive 27.2 and negative predictive value 93.7.

Conclusions

The increasing score correlated continuously to the increases PU risk, although for practical purposes patients are categorized to low, medium and high-risk groups, which can be further modified based on the clinical assessment. This highlights that not all severely ill patients have an equal risk for PU development. mICUs facilitates cost effective allocation of preventive measures, such as workforce, dressings and support surfaces.

Conflict of Interest

None.

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DEVELOPMENT AND IMPLEMENTATION OF PRESSURE ULCER PREVENTION OPERATING MODEL IN ADULT INTENSIVE CARE

Mikael Juoperi (1), Jenni Haaranen (2), Jenni Kiiskinen (3), Niina Hietamies (4), Krista Rouvinen (5)

(1,5) Department of Intensive Care, Tampere University Hospital, Wellbeing District of Pirkanmaa, Finland;
(2,3,4) Heart Hospital, Tampere University Hospital, Wellbeing Services County of Pirkanmaa, Finland

Introduction

Critically ill patients are susceptible to pressure ulcers (PU) [1], and systematic approaches in PU prevention are needed. PU prevention can be reinforced by utilizing the patients' PU risk level assessment tool in the nursing care plan [2]. A need for standardized practice in PU prevention concerning intensive care units (ICU) was identified. The aim of this project was to develop a PU prevention operating model for adult patients in ICUs, and to implement the developed operating model as part of intensive care nursing. The object was to enforce PU prevention in ICUs.

Methods

The Nursing Research Foundation's (NRF) operational model* [3] was used as a framework for development and implementation of evidence-based practice (EBP). The project team consisted of nursing professionals. The team acknowledged existing organizational protocols for PU prevention and identified a PU risk level assessment tool relevant to ICUs according to NRF's clinical practice guideline [4]. Existing protocols were reinforced with knowledge of specializations in ICUs before compiling them into a single operating model along with a selected risk assessment tool (modified Jackson/Cubbin PU risk Scale). The model was implemented with the selected nurses. Multi-method education was used. Visibility was increased with posters and pocket-size guides. Instructions were integrated in the patient management system.

Results

The model consists of three parts. The first part includes regular PU risk level and tissue condition assessment. The second part focuses on systematic PU prevention techniques and the third part provides guidance for the documentation of actions. The first part helps with identifying high PU risk patients and assessing nursing plan functionality. The second part focuses on ICU specialties. Implementation of the model has started, and nursing staff is learning to include the new model as part of the nursing care plan. The implementation of the model is monitored using statistical methods with the working group.

Conclusions

Enabling registered nurses from related patient care units to be involved in the development and implementation of the operating model was seen as an important asset. In the future, ongoing education on PU prevention is needed and the effectiveness of the PU prevention operating model as part of the nursing care plan in ICUs should be studied.

Conflict of Interest

No funding.

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PRESSURE ULCER RISK ASSESSMENT IN EMERGENCY ROOM: THE FIRST STEP FOR PRESSURE ULCER PREVENTION

Liliana Candeias (1-2), Patrícia Cardoso (1-2), Pedro Sardo (2-3)

1. Universidade de Aveiro, Portugal; 2. Unidade Local de Saúde da Região de Aveiro, Portugal; 3. Associação Portuguesa de Tratamento de Feridas, Portugal

Introduction

Pressure ulcers continue to be a challenge for healthcare professionals and institutions. [1–4] The pressure ulcer prevalence in emergency departments ranges from 5.2% (on admission) to 12.3% (on discharge) and the incidence from 4.5% to 78.4%. [5] Pressure ulcer (risk assessment and prevention) in emergency departments [4,6–9] is an emerging challenge. So, the aims of this study were: to analyse the pressure ulcer risk assessment in adult patients admitted in the emergency room of a Portuguese hospital; To analyse some clinical and demographic variables that may influence the risk; and to assess the pressure ulcer prevalence and incidence rates.

Methods

Quantitative, prospective, observational, cross-sectional study carried out from November 2024 to February 2025 with adult patients admitted to the emergency room of a Portuguese hospital. A specific data form collection with the Skin Assessment Tool and Braden Scale was used [10]. Data collection was performed at admission and when the participant left the emergency room, after the initial emergency care. This study has been approved by the Ethics Committee for Research in Life and Health Sciences (Ref.^a CE-ICVS/CAC-EMHA/27.08.2024). All participants (or legal representatives) consented to participate in the study by signing an informed, free and informed consent form. Descriptive statistics were calculated for the demographic and clinical variables and sample characterisation. The t-test for paired samples was used to compare the means of the total Braden scale score (admission vs. exit), and Cohen's d was used to assess the magnitude of the effects detected. Odds ratio (OR) were calculated by logistic regression.

Results

Sample of 156 adult patients admitted to the emergency room. Most participants (n=85; 54.5%) were male. The mean age of the participants was 66.9 ± 17.4 years. The median length of stay in the emergency room was 1 hour and 47 minutes. After the emergency room care, most of the participants (n=102; 65.4%) were transferred to another clinical areas of the emergency department, 35 (22.4%) were directly transferred to inpatient settings and 19 (12.2%) were transferred to another hospitals. Regarding the pressure ulcer risk assessment through Braden Scale, it was found that 87 (55.8%) participants were at “high risk” of developing a pressure ulcer on admission, and 105 (67.3%) were at “high risk” of developing a pressure ulcer in the moment that they left the emergency room, with a statistically significant difference between those two assessments. The study recorded a pressure ulcer prevalence of 2.6% on admission. No new pressure ulcers were recorded in emergency room during the study period, with an incidence of 0%. Using logistic regression models, it was identified that people with “obesity” or “consciousness state alteration” are more likely to be classified as “high risk” of pressure ulcer development according to the Braden Scale. The Odds Ratio of being at “high risk” of pressure ulcer development increases with age.

Conclusions

This study identified that a large percentage of the patients admitted to the emergency room were at “high risk” of pressure ulcer development (total Braden Scale Score ≤ 16). Compared to the time of admission, the number of patients at “high risk” is significantly higher when they left the emergency room, after the initial emergency care. This data is especially important because most of the participants admitted to the emergency room remained in the clinical areas of the emergency department after the initial care. There were some clinical and demographic variables that are not assessed by the Braden Scale which increased the odds of being classified



at “high risk” of pressure ulcer development. Those data support that pressure ulcer risk assessment and prevention should be a priority and a standard practice in emergency departments.

Conflict of Interest

The authors declare no conflict of interest.

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PRESSURE INJURY PREVENTION IN NEONATES: MAXIMISING OUTCOMES WHILE MITIGATING RISKS

Asha Ali Abdi, Abdulkadir Noorshe, Amal Saber, Afzal Ali, Beulah Koilpitchai, Annabelle Millera Naval, Rincy Francis, Ashwaq Ali Haji Nuuh, Fatima Kasem El Ahmad, Ajitha Rajendran, Jessie Mendoza
Sheikh Shakbout Medical City, United Arab Emirates

Introduction

Infants requiring support in intensive care units (ICU) are a vulnerable cohort with complex medical needs, including an elevated risk of skin breakdown [1,2]. Use of medical devices accounts for 50%–90% of pressure injuries (PI) in hospitalised children [2]. Despite increased awareness of the specific considerations for paediatric patients as compared to adults [2,3], there is a dearth of data on PI development, treatment and prevention in this population [4]. Herein, we analysed the various factors contributing to respiratory device-related PI in neonatal ICU (NICU) patients, and identified practices to mitigate these factors.

Methods

Sheikh Shakbout Medical City (SSMC) in Abu Dhabi is one of the largest hospitals in the United Arab Emirates, offering state-of-the-art neonatal intensive care services. Upon completion of a needs analysis, a PLAN-DO-CHECK-ACT (PDCA) continuous quality improvement and learning model was initiated at SSMC in Q1 2021. Comparative data were collected retrospectively via monthly audits from 2020 to 2022. The primary outcome was PI incidence pre- and post-implementation, whilst the secondary outcome was knowledge assessment. Preventative strategies included the use of appropriately sized Continuous Positive Airway Pressure prongs, masks and endotracheal tubes, with frequent rotation of interfaces to minimise localised pressure to the skin. Care was taken to avoid securing devices too tightly, and frequent skin assessments were undertaken to detect early signs of PI. Neonates were weaned off respiratory support as soon as clinically feasible, and non-invasive respiratory devices were preferred. Previously, an extra-thin hydrocolloid dressing was used under devices, but the strong adhesive, trapped moisture and shearing forces caused skin damage. A key intervention at SSMC was switching to a lightweight, soft foam dressing with a silicone adhesive-based contact layer that minimises trauma and pain on removal. This helped optimise skin protection in ICU neonates through effective, gentle pressure redistribution and moisture management to prevent friction.

Results

The incidence of respiratory device-related skin integrity issues decreased following implementation of the quality improvement programme, as shown by a marked downward trend from 12.5% in Q2 2021 to 4.3% in Q3 2021 (Figure 1). These outcomes were sustained through the subsequent year, with no new skin integrity issues reported in Q1 and Q2 2022 (Figure 2). At the November 2022 audit, 66.7% of NICU nurses displayed adequate knowledge of PI classification and staging, 60% maintained appropriate documentation, and 60% routinely reported skin integrity issues. Compliance with the proposed preventative measures was 100%.

Conclusions

Skin injury prevention is a marker of the quality of care and a crucial component of patient safety. The quality improvement programme at SSMC led to measurable, sustained reductions in the incidence of respiratory device-related skin injuries in ICU neonates. Key factors for success included adherence to the proposed practices, optimisation of the techniques and products used, and ongoing training and education. Our findings reinforce the effectiveness of targeted, standardised interventions for paediatric PI prevention.

Conflict of Interest

Medical writing support for this abstract was funded by Mölnlycke Health Care. The authors report no other conflicts of interest.

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Figure 1. Percentage and trending of respiratory device-related skin integrity issues from Q4 2020 to Q4 2021

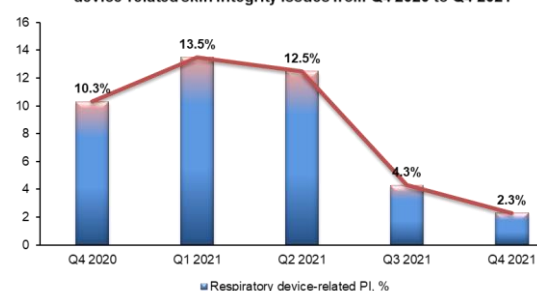
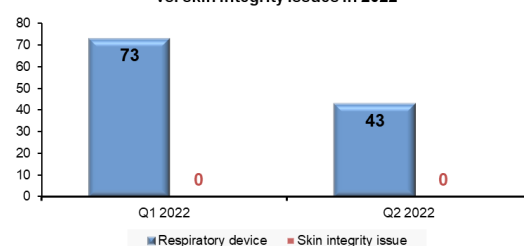


Figure 2. Number of patients with respiratory devices vs. skin integrity issues in 2022



SAFETY IN NUMBERS: REDUCING PRESSURE ULCERS IN A THORACIC INTENSIVE CARE UNIT

Ulrika Grenholm

Karolinska University Hospital, Sweden

Introduction

Thoracic intensive care patients are particularly at risk to develop (serious) pressure ulcers (PU) due to surgical, treatment related, and intrinsic factors [1]. In Swedish in-hospital settings most PUs could have been avoided if adequate measures had been taken [2]. The Safety II perspective entails focusing on doing things right and a good quality of care [3]. The need for improvement regarding PU-care at the local Thoracic Intensive Care Unit (TICU) was identified in 2022 and resulted in an ongoing improvement effort.

Methods

The PU guideline [4] was adapted to the local context. The SHIFT-Evidence framework [5] was used to structure the improvement effort, engage and empower the nursing staff. Patients staying at least three days at the TICU were included in monthly measurements which are conducted by reviewing nursing records. Several outcome measures are used and reported monthly.

Results

The majority of nursing staff adopted and still provides care according to the adapted PU care activities. The goal of increasing the proportion of patients without PU to 80% has been achieved several times. The number of PU per patient has been reduced over time, figure 1, and periods with non-random improvements have been achieved. Presumably, 286 PUs have been avoided based on 24 review months, figure 2.

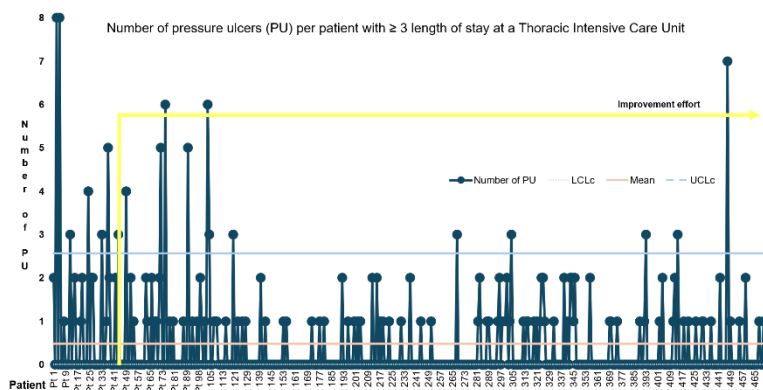


Figure 1: Number of pressure ulcers/patient based on nursing records reviews

Conclusions

PUs and PU-related suffering have been reduced. A behavioural change has been achieved and maintained. But the challenge to prevent PU starts anew for every new patient. Achievements can never be taken for granted. The sense of urgency must be maintained.

Conflict of Interest

The author declares no conflict of interest.

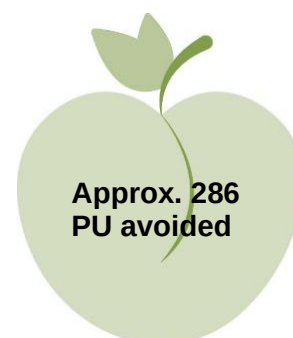


Figure 2: Estimation based on nursing record reviews

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"Incidence and Predictors of Intensive Care Unit Acquired Skin Injury in Intensive Care Unit patients' of a Greek University Hospital"

Georgios Nikolaou ¹, Maria Nystazaki ¹, Eirini Karampekiou ¹, Panagiotis Mpesikos ¹, Aikaterini Panagiwttopoulou ¹, Panagiota Andreadaki ¹, Eleni Pisimisi ¹, Theodoros Katsoulas ²

1. General University Hospital of Athens, "Attikon";

2. National and Kapodistrian University of Athens, Department of Nursing

Introduction

Intensive Care Unit (ICU) patients are at high risk of developing ICU-acquired Pressure Injuries (PIs), due to prolonged bed rest, hemodynamic instability, and the use of life-support devices¹. The incidence of PIs is significantly higher in the ICU compared to other contexts ², for this reason, recent guidelines' propose early detection of Stage I-II PIs, particularly in high-risk ICU populations.³ The Norton Scale remains widely used in Mediterranean ICUs however, no ICU-acquired PIs risk-prediction tool demonstrates adequate predictive validity in the ICU population⁴. The purpose of this study was to identify the incidence and predictors of PIs in adult patients admitted to the ICU unit of a large University Hospital in Athens.

Methods

A retrospective observational cohort study was conducted, analysing records of ICU patients with ICU-acquired PIs from January 2024 to December 2024 in a 28-bed ICU of a Greek University Hospital. All adult patients admitted for >24 hours were included. PI incidence was adjusted in a multivariate analysis using the EPUAP/NPIAP classification. Clinical and demographic variables were assessed. The Norton scale was used as the Pressure Risk Assessment Tool.

Results

The average incidence rate was 6%. Of 1.499 ICU patients' 83 patients developed 112 PIs, predominantly Stage II (20%) and Stage III (65%). Out of the 83 incident cases, four-fifths (80%) of the study patients developed PIs within 7 days of their admission to the ICU. Pressure ulcers were most commonly found on the sacrum, followed by the heels. The mean Norton scale score was 15,3 presenting a low risk for the development of PIs. Only age was independently associated with the development of ICU-acquired PIs.

Conclusions

Identifying key risk factors and the consequences of comorbidities and associated geriatric conditions is of critical importance for the prevention of PIs in the ICU. The Norton Scale has limitations in its use especially in ICU patients. Risk assessment with an additional tool could provide data on the sensitivity and specificity of the Norton tool in this clinical population, and on the scale's cut-off value.

Conflict of Interest

No conflict of Interest.

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HEAD NURSES' VIEWS ON IMPLEMENTATION OF PRESSURE ULCER PREVENTION

Maarit Ahtiala (1, 2), Hannele Turunen (1, 3), Tarja Tervo-Heikkinen (3)

1. University of Eastern Finland, Finland; 2. Turku University Hospital, Finland; 3. Wellbeing Services County of North Savo, Finland and Kuopio University Hospital, Finland

Introduction

Pressure ulcers are adverse events in health care [1]. Prevention of pressure ulcers, rather than treatment, is a better option for maintaining adequate quality of life for patients and for curbing costs to society. Thus, head nurses at the University Hospitals should identify which circumstances facilitate, and which hinder the implementation of pressure ulcer prevention. Previous study has shown that head nurses within special health care have an unrealistically optimistic view on what has taken place in terms of evidence-based actions [2]. The aim of this study was to describe how head nurses perceive pressure ulcers, the measures taken to prevent pressure ulcers and the circumstances that facilitate and hinder the implementation of methods to prevent pressure ulcers within special health care.

Methods

This was a qualitative and descriptive study [3]. Ten head nurses in two University Hospitals located in two well-being services counties were interviewed. The data of semi-structured interviews were analysed by inductive content analysis.

Results

The participants described that pressure ulcers prevention protocols are important with respect to patient safety, the workload of health care professionals and health care costs. The participants emphasised that active actions taken by the nursing staff and the responsibility for prevention implementation are the factors that, under optimal conditions, promote pressure ulcer prevention. The organization's strategy, active hospital development services, and proactive upper management were also considered important. Additionally, the operational culture in the wards and the active participation of team leaders were found to impact efforts to prevent pressure ulcers. Two important facilitators were regular and repeated educational sessions, and a treatment chain of patient management that is reliable and well-functioning from beginning to end.

The participants also identified several barriers to implementation of pressure ulcer prevention. Tasks are prioritized when the workload of the personnel increases due to a lack of nursing staff. The level of proficiency is not always sufficient, attitudes need to be developed, and motivational deficiency has been witnessed. In this study the wellbeing services counties have increased the workload of head nurses and pressure ulcer prevention protocols have not been carried out. This was the case also among severely ill patients.

Conclusions

The head nurses were aware of the pressure ulcer prevention methods and could name facilitators and obstacles associated with these methods. The head nurses need help and support from the hospital management. There should be more nursing staff, and sufficient and continuous education is essential if the focus on pressure ulcer prevention is to be targeted correctly to the benefit of patients.

Conflict of Interest

None

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BRIDGING THE GAP: ICU NURSES' EXPERIENCES IN DETECTING PRESSURE INJURIES ACROSS DIVERSE SKIN TONES

Herminigildo Il Lo (1), Eleanor Hollywood (2), Rosemarie Derwin (3)

1. St. James's Hospital, Ireland; 2. Trinity College Dublin, Ireland; 3. Trinity College Dublin, Ireland

Introduction

Pressure injuries are a common yet serious concern in healthcare settings, often leading to increased patient distress, higher mortality rates, and prolonged hospital or ICU stays [1], [2]. While international classification systems offer evidence-based strategies for prevention and management, early detection remains challenging—particularly for patients with darker skin tones, where erythema may not be visibly apparent [3], [4]. Timely and accurate assessment is crucial in preventing complications, making it essential for healthcare providers to recognize how pressure injuries manifest across diverse skin tones and adapt their evaluation techniques accordingly [4], [5].

Methods

The study adopted a qualitative descriptive approach. Following ethical approval, eleven intensive care nurses who met the study inclusion criteria were interviewed in-person using a semi-structured interview format. The interviews were audio recorded and transcribed verbatim. The collected data were managed using NVivo (v. 14), and analysed using thematic analysis.

Results

The thematic analysis revealed three key themes. 1. The Role of Education – Nurses emphasised the crucial role of education in preventing pressure injuries. Many reported gaps in their undergraduate and professional training, leaving them underprepared to assess and manage pressure injuries effectively. Inadequate knowledge often led to suboptimal patient care and hindered the implementation of evidence-based interventions. 2. Skin Tone Disparity – Participants highlighted a lack of diverse representation in educational materials, which primarily focus on lighter skin tones. This deficiency contributed to difficulties in recognizing early-stage pressure injuries in patients with darker skin. Late-stage detection was often linked to unconscious bias, insufficient multicultural education, and knowledge gaps, exacerbating health disparities, patient discomfort, and financial burdens. 3. Opportunities for Improvement – Nurses expressed a need for more inclusive training and advanced diagnostic tools to enhance pressure injury detection.

Conclusions

Promoting diversity and inclusivity in educational resources, both in classroom instruction and clinical practice, is vital to equipping nurses with the skills to provide equitable care to all patients. By fostering cultural competence and addressing unconscious bias, this approach enhances patient outcomes and ensures more effective pressure ulcer prevention across diverse populations. Furthermore, healthcare institutions must support nurses by integrating advanced diagnostic tools to improve pressure ulcer detection, helping to mitigate disparities experienced by patients with darker skin tones.

Conflict of Interest

The authors declare no conflict of interests related to this study.

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A METHODOLOGICAL APPROACH TO ESTABLISHING A PATIENT AND PUBLIC INVOLVEMENT PANEL FOR PRESSURE ULCER RESEARCH

Hannah Wilson (1), Declan Naughton (1,2), Wendy Chaboyer (3) Georgia Tobiano (3) Declan Patton (1) Zena Moore (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, Ireland; 2. National Rehabilitation Hospital, Dublin, Ireland; 3. National Health and Medical Research Council Centre of Research Excellence in Wiser Wound Care, Griffith University, Gold Coast, Queensland, Australia*

Introduction

Involving patients and caregivers in research question development and study design enhances the relevance of research outputs, improves study design, and ensures alignment with the needs of those impacted¹. Effective pressure ulcer (PU) prevention and treatment depend on addressing individual needs, preferences, and values². This project aimed to establish a diverse patient and public involvement (PPI) panel to identify future research priorities and address the gap in patient and caregiver involvement in PU research in Ireland.

Methods

A structured methodological framework was developed to establish a diverse PPI panel comprising of patients and caregivers with lived experience of PUs. The framework included five key stages: (1) building networks; (2) securing funding; (3) engaging partners with lived experience early; (4) co-developing a diverse and accessible communication strategy; and (5) embedding PPI values and principles throughout all interactions^{3,4,5}.

Results

Key enablers included collaboration with wound care experts with experience in PPI, national PPI stakeholders, and clinical partners to develop an inclusive communication strategy. Seed funding from the European Pressure Ulcer Advisory Panel facilitated PPI reimbursement. Outreach was initiated through Ireland's national PPI Ignite Network opportunity noticeboard in July 2024, inviting patients and caregivers to collaborate. Accessible materials, written at a 7th-grade reading level, were distributed through local communities, charities, and wound care organisations. A patient advisory partner with lived experience of PUs co-developed lay summaries, a graphic illustration, and a voice message to engage potential panel members from diverse backgrounds.

Conclusions

The use of varied communication strategies, including multimedia tools, broadened outreach and inclusivity within the PPI panel. Early involvement of an advisory partner strengthened connections with local charities and emphasised the project's importance. This approach ensured meaningful representation of patients and caregivers in PU research, aligning research outcomes with their needs, experiences, and preferences.

Conflict of Interest

The authors have no conflict of interest to declare.

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A STRUCTURED PU DIAGNOSTIC & DISCOVERY PROGRAMME, UNDERPINNED BY QUALITY IMPROVEMENT METHODOLOGY, USING A CO-DESIGN AND APPRECIATIVE ENQUIRY APPROACH

Jacqui Fletcher (1), Jane Murkin (2), Donna Nussey (3)

1. 2. NHS England UK; 3. Nottingham and Nottinghamshire ICS UK

Introduction

Pressure ulcers (PU) are an unwanted and often avoidable complication of care and continue to be one of the most common causes of harm for patients, being within the 'top ten' harms reported nationally.

There is considerable variation in the delivery of PU care across NHS England, including in: assessment of risk, delivery of evidence based best practice, preventative care, categorisation, recording and treatment of the PU once it occurs.

Although clinical guidelines were published in 2023 there was no strategy for implementing them into practice nor consideration of the current processes and barriers to implementation.

Improving outcomes and experiences for patients is fundamental to delivery of high-quality care within the NHS. It is imperative that prudent use is made of scarce NHS resources and efforts are made to support staff in improving care delivery.

Methods

In 2024 a structured PU diagnostic and discovery programme, underpinned by quality improvement methodology, using a co-design and appreciative enquiry approach was undertaken.

Aimed at learning from excellence, understanding what is currently working well and using to better understand the variation in practice, current state at both provider and Integrated Care System level to use this as a basis for scaling up and spreading best practice..

This was underpinned by a systematic literature review examining the methods used to implement pressure ulcer prevention guidelines internationally.

This work was undertaken in partnership with the National Wound Care Strategy Programme, Nursing Directorate, and Integrated Care System, composed of 3 hospitals and 2 community organisations, with input from social care settings.

Key lines of enquiry were prioritised and agreed with the providers and ICS:

- Leadership and governance
- Patient safety
- Education and clinical pathways
- Digital, data and information
- Coproduction with patients and families

Regular codesign meetings and forums were facilitated. data were gathered, shared, explored and interrogated.

Results

We identified examples of best practice in each individual provider which were included in the diagnostic finding report.

A thematic analysis of the findings was conducted, drawing insights and learning and providing an opportunity to identify priority areas of focus and develop recommendations for the ICS and for national consideration..

Themes identified were:

- Reducing Harm, Improving Outcomes & Experiences
- Involvement
- Data & Digital



- Inefficiencies & Productivity
- Education & Training

Conclusions

This work has realised many insights, learning and benefits for participating providers, ICS, and national teams and has been shared with provider organisations and ICS, the recommendations discussed, agreed, and prioritised.

It provided an opportunity to assess and understand the PU problem through a system wide lens; providing invaluable insights, knowledge and learning to support further improvements, making recommendations to inform further work aimed at reducing patient harm, improving outcomes and experiences.

Collective leadership, a system wide and collaborative approach in gaining a shared understanding of the current state, underpinned by a quality improvement approach are important elements to create effective system wide improvement. In depth findings and plans being progressed to address the diagnostic work and share the insights and learning to benefit of others will be shared.

Conflict of Interest

NONE



DELIVERING MULTIDISCIPLINARY WOUND CARE: THE SPECIALIZED OUTPATIENT WOUND CLINIC AT ODENSE UNIVERSITY HOSPITAL

Josephine NES Benckendorff (1), Mette Lund Madsen (1), Britt Hansen (1), Knaerke Soegaard (1,2,3)
Rikke Falsig Vestergaard (1)

1. Department of Plastic Surgery, Odense University Hospital, Denmark
2. Research Unit for Plastic Surgery, University of Southern Denmark
3. Skin Integrity Research Group (SKINT), Ghent University, Belgium

Introduction

Pressure ulcers (PU) occur frequently, and have a significant negative impact on the quality of life of affected patients [1]. PU's may develop at home or during hospitalization, with reported prevalence rates in European hospitals as high as 23% [2]. PU treatment is often lengthy and costly, involving a wide range of strategies and wound-care products, with no single option showing definitive superiority [3,4]. This underlines the need for specialized, multidisciplinary care, as outlined in the international guideline for prevention and treatment of PU's [5]. The aim of this abstract is to present the novel, multidisciplinary approach to PU care implemented at the Specialized Outpatient Wound Clinic (SOWC) at Odense University Hospital (OUH).

Methods

We reviewed the local guidelines and flowcharts for PU assessment and treatment used at the SOWC at OUH.

Results

Initial assessment at the SOWC is conducted by the highly specialized SOWC-nurses and plastic surgeons. Referrals are received from hospital departments or general practitioners. Each patient is assessed by a SOWC-nurse, a junior plastic surgeon, and a consultant plastic surgeon to determine the appropriate treatment pathway (see Figure 1).

A comprehensive assessment includes physical examination, blood tests, medication review, review of nutritional status, pressure relief routines, sitting position, and lifestyle factors. Most patients are offered an optimization pathway supported by a tele-health model. In this model, home nurses, carefully instructed by SOWC-nurses with open lines of communication, perform wound treatment. Re-assessment in the tele-health model is carried out via photo documentation and written updates. When needed, patients are called in for in-person evaluation at the SOWC.

The SOWC also operates a mobile nursing team for on-site assessments, both in-hospital and in patients' homes. While most patients achieve healing through conservative care, reconstructive surgery is available when indicated - either as a primary option or after a course of optimization. Reconstructive surgery options are facilitated by the close integration of plastic surgeons within the SOWC, removing the need for additional referral. If a PU needs surgical debridement due to necrosis or infection, doctors from the department of orthopedic surgery affiliated with the SOWC provide additional support.

Conclusions

The SOWC at OUH offers multidisciplinary, specialized and effective treatment and care of patients suffering from PU's, focusing on reducing the burden for patients whilst also addressing the significant socioeconomic cost associated with PU's.

Conflict of Interest

The authors declare no conflicts of interest.

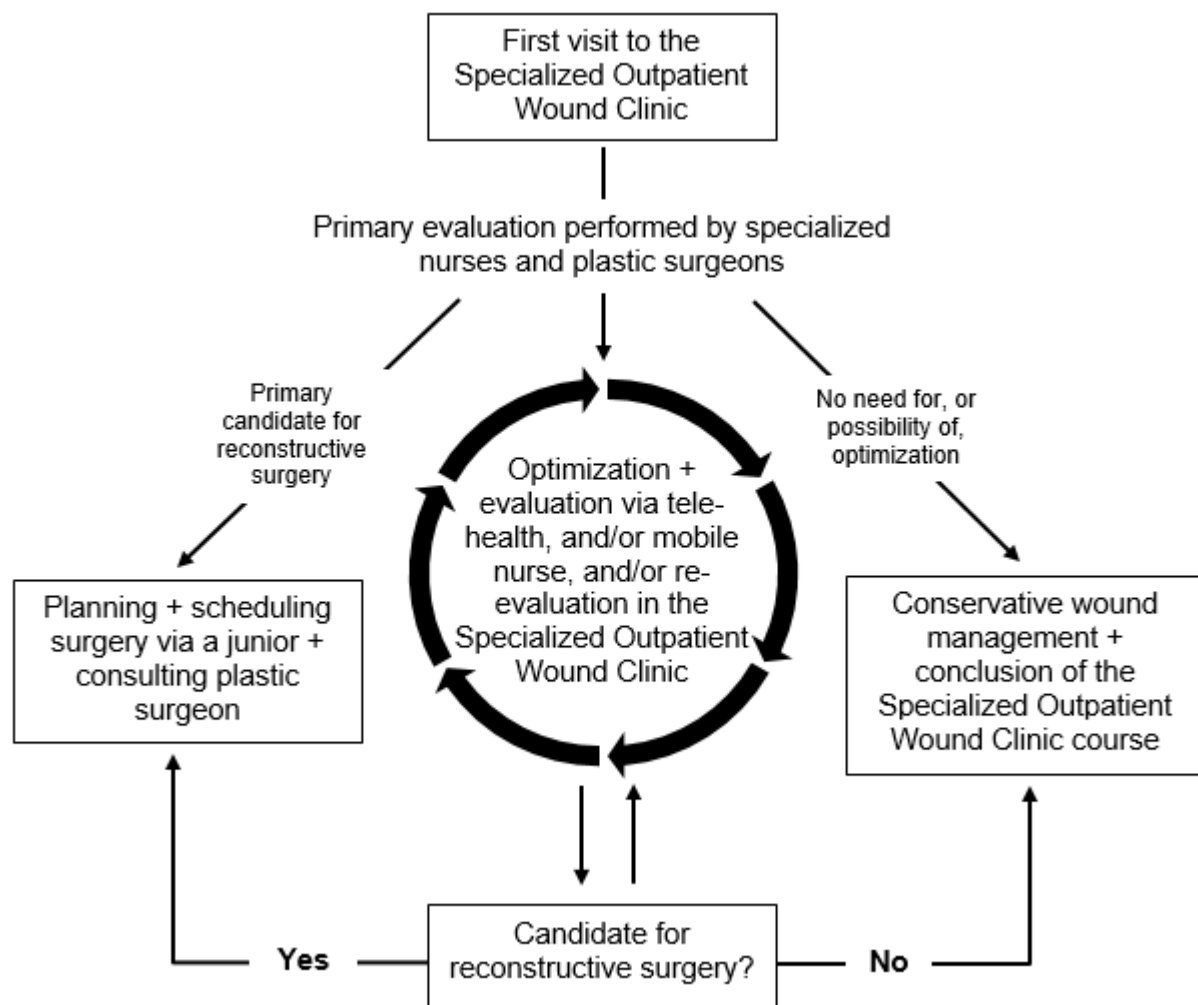
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Figure 1: Specialized Outpatient Wound Clinic flowchart



REAPER ORAL MUCOSA PRESSURE INJURY SCALE (ROMPIS): TURKISH VALIDITY AND RELIABILITY STUDY

Ecem OZDEMIR (1), Fatos KORKMAZ (2), Necla DERELI (3), Mesut AKYOL (4)

1. Research Assistant & PhD student, Ankara University Faculty of Nursing, Department of Fundamentals of Nursing, Türkiye
2. Associate Professor Doctor, Hacettepe University Faculty of Nursing, Department of Fundamentals of Nursing, Türkiye
3. Professor Doctor, Ankara Atatürk Sanatorium Training and Research Hospital Anesthesia Intensive Care Unit, Türkiye
4. Assistant Professor Doctor, Ankara Yıldırım Beyazıt University Department of Biostatistics and Medical Informatics, Türkiye

Introduction

The Reaper Oral Mucosa Pressure Injury Scale (ROMPIS) was developed in collaboration with ICU nurses, clinical educators, intensivists, and pressure injury specialists to provide a reliable method for assessing and grading oral mucosal pressure injuries in patients with endotracheal tubes (1). Given the lack of standardized tools specific to mucosal membrane pressure injuries (MMPI) (2), this study aimed to evaluate the Turkish version of ROMPIS for its reliability and validity.

Methods

A methodological study design was used. Participants included ICU nurses and healthcare professionals working in tertiary care settings in Türkiye, with a minimum of one year of ICU experience and direct patient care responsibilities. Data were collected using a demographic questionnaire and the ROMPIS Visual Differential Diagnostic Questionnaire (3). Ethical approval and institutional permissions were secured before data collection.

Results

The study sample consisted of 103 ICU nurses, of whom 95.1% held a bachelor's degree or higher. Despite their experience, 67% had no ICU certification. The median duration of general nursing experience was 9 years, while ICU-specific experience was 5 years. Although most participants (82.5%) were aware of MMPI, 64.1% had not received relevant training, and 74.8% expressed the need for additional education. The ROMPIS scale was well-received, with no issues reported regarding clarity. Internal consistency was high (Cronbach's $\alpha = 0.876$), and re-test reliability (based on a subsample of 22 participants) was acceptable ($\alpha = 0.618$). The images most frequently identified correctly were #4 (Stage 0 – 56.3%), #10 (Stage 1 – 68%), and #12 (Stage 2 – 61.2%). Images #11, #13, and #17 had the lowest accuracy. The median total correct score was 7.0 (IQR = 7.0).

Conclusions

The Turkish version of the ROMPIS scale demonstrated strong reliability and appears suitable for use in ICU settings. However, the findings indicate that even experienced nurses may lack confidence and training in identifying oral MMPI. Incorporating MMPI-specific content into in-service and continuing education programs could help address this gap and enhance patient safety.

Conflict of Interest: The authors declare no financial support or conflicts of interest related to this study.

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INFLUENCE OF TEMPERATURE ON VASCULAR DENSITY AT THE SACRUM AND HEEL

Ralph J. F. H. Gordon¹, Charlotte E. Stevens¹, Peter R. Worsley¹, Davide Filingeri¹

1. Skin Sensing Research Group, School of Health Sciences, University of Southampton, Southampton, UK

Introduction

Localised damage to the skin through a combination of sustained pressure and repeated shearing forces can lead to the development of pressure ulcers (PUs). In the UK, the cost of treating PUs and other chronic wounds is ~£8 billion annually [1]. Animal studies have identified the use of localised cooling to influence the skin's tolerance to mechanical loading by reducing the tissue's metabolic demands [2]. However, the mechanisms by which cooling may enhance skin tolerance to loading and shearing forces remain poorly understood. Furthermore, the efficacy of cooling may differ across populations and anatomical sites. The aim of this study was to examine how different levels of localised cooling influence microvascular properties in younger and older adults.

Methods

Twenty-two younger (25±4y; 71±9Kg; 17±9cm) and 19 older adults (65±4y; 70±14Kg; 171±10cm) with no health conditions, underwent an in-vivo characterization of vascular density (expressed as a % of tissue comprising blood vessels against the depth of detection) at two skin sites, the sacrum and posterior heel. Three different local temperatures were used 38°C, 24°C, and 16°C. Vascular density was assessed using a dynamic Optical Coherence Tomography (D-OCT) scanner. The sacrum underwent a protocol to cause pressure-induced ischemia and post-occlusive hyperaemia [3]. The heel underwent a standardised repeated shearing protocol [4]. Peak vascular density data were analysed using a two-way ANOVA to assess the interaction between temperature condition and anatomical site.

Results

There was a main effect of temperature ($P<0.001$) on peak vascular density and an interaction effect with skin site where vascular density was greater in the sacrum compared to the heel at all temperatures ($P<0.001$). Post-hoc analysis revealed 24°C ($8.9 \pm 3.5\%$) at the sacrum was lower than both 16°C ($11.7 \pm 4.1\%$; mean difference 2.3%, 95%CI[-3.6, 1.0], $P<0.001$) and 38°C ($11.1 \pm 5.4\%$; mean difference 2.9%, 95%CI[-5.1, 0.6], $P=0.008$). At the heel vascular density at 16°C ($3.2 \pm 2.3\%$) was lower than 24°C ($5.0 \pm 4.1\%$; mean difference 1.8%, 95%CI[-3.1, 0.5], $P=0.005$) and 38°C ($7.9 \pm 8.7\%$; mean difference 4.7%, 95%CI[-7.1, 2.4], $P=0.005$). Depth at peak vascular density was 0.4mm at the sacrum and 0.6mm at the heel.

Conclusions

Findings demonstrated there was an effect of temperature on vascular density, which was dependant on skin site. These data also highlight differences in the depth of the vascular density profiles, with more superficial microvasculature observed at the sacrum. These results indicate there are distinct microvascular responses to sustained pressure and shearing forces at two skin sites at risk of PU development, which could be used to inform the efficacy of skin cooling in maintaining skin tissue viability.

Conflict of Interest

The authors have no conflicts of interest to declare. This project is being supported by a UKRI grant from the Medical Research Council (MR/X019144/1).

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MICROVASCULAR OVER-DILATION AND HYPOXIA: A POTENTIAL MECHANISM FOR PRESSURE ULCER PATHOGENESIS

Petra Korpisalo (1,2), Greta Juusola (1,3), Galina Wirth (1), Ivana Kholova (2), Tarja Tervo-Heikkinen (4), Ulla-Mari Kinnunen (5), Seppo Ylä-Herttuala (3), Heidi Myllykangas (6), Leena Berg (7)

1. Heart Center, Kuopio University Hospital, Healthcare district of Northern-Savo, Finland; 2. Department of Clinical medicine, Faculty of Health Sciences, University of Eastern-Finland, Finland; 3. A.I.Virtanen Institute, Faculty of Health Sciences, University of Eastern-Finland, Finland; 4. Strategy and innovation management, Healthcare district of Northern-Savo, Finland; 5. Nursing Science and Social and Health Management Institute, Healthcare district of Northern-Savo, Finland; 6. Department of Plastic surgery, Kuopio University Hospital, Healthcare district of Northern-Savo, Finland; 7. Unit for translational medicine, Department of Surgery, University of Oulu, Finland

Introduction

Hypoxia is a central factor in the development of pressure ulcers, yet the specific mechanisms impairing tissue oxygenation are not fully understood. Recent findings have identified microvascular over-dilation (MOD) as a novel cause for tissue hypoxia in patients with chronic limb-threatening ischemia (CLTI) and even in otherwise healthy animal muscle [1]. MOD refers to pathological enlargement of the capillary lumen, which may impair oxygen diffusion by increasing the distance between blood cells and the vascular endothelium. While the phenomenon has been documented in skeletal muscle, the principle may extend to other tissues under chronic stress - most notably, the skin in pressure-loaded areas.

Methods

This study aimed to investigate whether MOD-like changes occur in skin microvasculature exposed to chronic pressure, and whether such remodeling contributes to local hypoxia, thereby increasing the risk of pressure ulcer formation. Human skin samples were collected from pressure-prone and pressure-free regions of amputated limbs from CLTI patients. Immunohistochemical staining for endothelial PECAM-1 and hypoxia markers HIF-1 α and HIF-2 α was conducted to assess microvascular morphology and oxygen status. Moreover, thermal imaging was used as an indirect measure of regional skin blood flow.

Results

In line with previously published data, the skin microvasculature of pressure areas in our samples displayed, similar to MOD, luminal enlargement and enhancement of the overall PECAM-1 signal as compared to pressure-free areas. In support of the histological findings also thermal imaging displayed increased blood flow in pressure-loaded skin. Where increased vascularization has previously been suggested to mediate e.g. wound healing, our current HIF-2 α -staining in pressure-loaded skin indicated chronic hypoxia around the enlarged microvasculature.

Conclusions

In conclusion, these findings suggest skin microvascular remodeling in response to chronic pressure loading may compromise skin oxygenation and, therefore, could pathomechanistically increase the risk of forming a pressure ulcer. The improved understanding of the function of the microvasculature in pressure-loaded skin could allow modification of the current treatments to more successfully treat pressure ulcers, and also improve pressure ulcer detection and prevention.

Conflict of Interest

No funding of the research by industry.

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DOES APPLICATION OF SKIN CARE PRODUCTS STRENGTHEN THE DERMOEPIDERMAL ADHESION? RESULTS OF TWO EXPLORATORY RANDOMIZED CONTROLLED TRIALS

Jan Kottner (1), Ruhul Amin (1), Monira El Genedy-Kalyoncu (1), Fiorenza Rancan (1), Kathrin Hillmann (1), Annika Vogt (1), Ulrike Blume-Peytavi (1)

1. Charité-Universitätsmedizin Berlin, Berlin, Germany

Introduction

The application of skin care leave-on products is considered clinically relevant to improve skin integrity in the context of pressure ulcer/injury or skin tear prevention [1,2]. However, the mechanism of action is unclear as to what extent skin care products potentially contribute to strengthening the cutaneous mechanical resistance.

Methods

Two exploratory randomized controlled trials using split body designs were conducted [3,4]. One forearm was randomly selected and treated with lipophilic leave-on products for 8 weeks. Skin function was assessed, including stratum corneum hydration. At the end of both studies, suction blisters were induced on both the control and treatment forearms, and time to blister formation was recorded to measure the dermoepidermal adhesion strength [5]. In one of the two trials, blister roofs and interstitial fluid were analyzed for inflammatory markers [4].

Results

In each trial, 12 healthy volunteers were included. In the treatment groups, stratum corneum hydration and the time to blistering increased. After 8 weeks of treatment with a humectant-containing product, Interleukin (IL)-1 α was reduced.

Conclusions

The application of leave-on products might strengthen the dermoepidermal junction and reduce (subclinical) inflammation in aged skin. The possible improved mechanical adhesion of the dermoepidermal junction may (partly) explain why pressure ulcer/injury or skin tear incidence is reduced when topical skin care products are applied.

Conflict of Interest

This research did not obtain any funding from industry or other funders.

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IMPLEMENTATION OF PRESSURE MONITORING AND A RISK ALGORITHM TO EVALUATE PRE- AND POST- INTERVENTIONS IN THE COMMUNITY

Silvia Caggiari (1, 2), Nicci Aylward-Wotton (1), Peter R Worsley (1)

1. Skin Sensing Research Group, School of Health Sciences, University of Southampton, United Kingdom,

2. School of Biomedical Sciences, University of Leeds, United Kingdom

Introduction

Individual's residing in the community spend a relatively small amount of time with healthcare practitioners and often rely on informal or formal carers. Those with mobility impairments can spend prolonged periods in bed or chair, posing them at risk of pressure ulcers (PUs) [1]. The Quality Improvement project 'Pressure Reduction through cOntinuous Monitoring In the community SETting' (PROMISE) implemented the use of continuous pressure monitoring (CPM) technology in the community to inform support surface selection, posture and pressure relieving movements [2]. The present study aimed to assess the relative risk of pressure ulcers in community residents with PUs using a novel algorithm recently developed by the researchers [3].

Methods

17 patients were selected from 105 recruited community residents, whose pressure data were captured pre- and post- PROMISE intervention. Pressure data were collected with a commercial pressure monitoring. Data was analysed with an intelligent algorithm [4] to determine duration and magnitude of peak pressure gradient and peak pressure index at the buttock area. A risk algorithm [3] based on the sigmoid relationship between pressure and time to stratify exposure to prolonged pressures, determined the low, moderate, high, and very high categories of pressures and time exposure. Sigmoid curves were developed for both pressure gradients and peak pressure index parameters.

Results

Fig.1 depicts the percentage of monitoring time in each exposure category (green, yellow, orange, red), pre- and post- PROMISE intervention, respectively, with respect to duration and magnitude of peak pressure gradient (A and B) and peak pressure index (C and D). Some patients e.g., Pt15, spent most of their time in the 'at risk' categories both pre- and post- intervention. By contrast, patients e.g., Pt1, Pt2 revealed mobility and pressure signatures falling in the green category for >80% of their time. There was a trend in reduced exposure categories from pre- to post-PROMISE intervention, as depicted by a shift in categories.

Conclusions

Patients had a pressure ulcer at the time of monitoring pre- PROMISE intervention and many exhibited trends which exposed their skin to prolonged pressures during static postures. The algorithm depicted high exposure to prolonged pressures, which showed trends of improvement post-PROMISE intervention. Further development is required to establish subject-specific sigmoids. This could be integrated in a novel sensing array for community monitoring use and aid targeted intervention and clinical decision making

Conflict of Interest

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*ForesitePT, Xsensor, Canada

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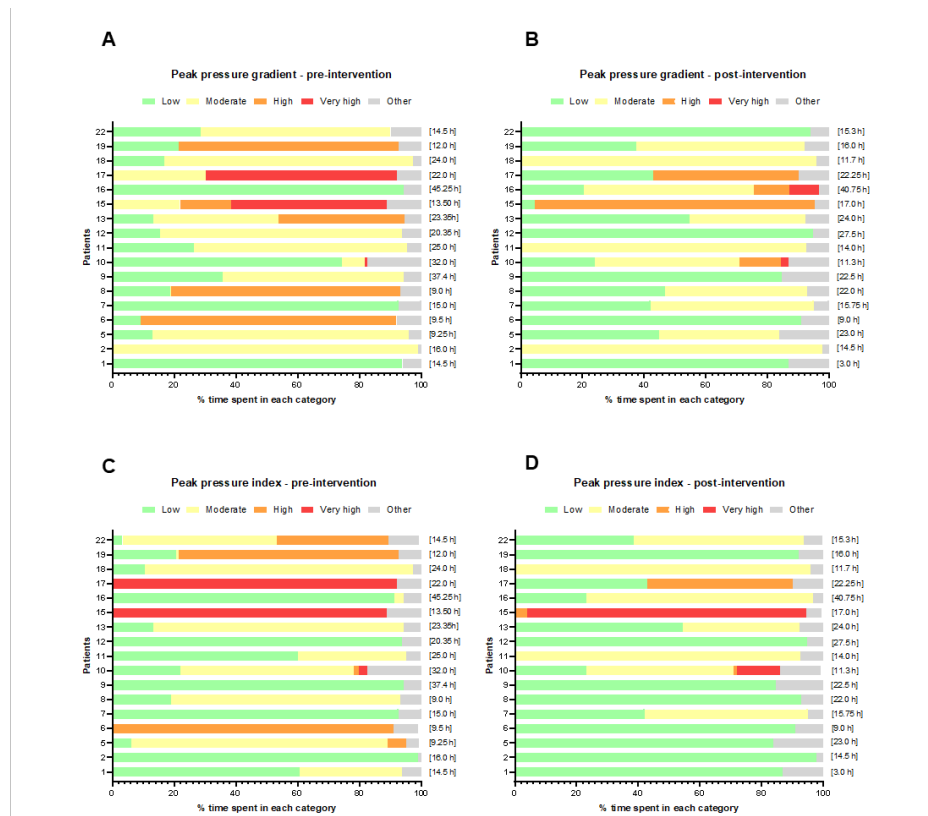


Fig.1: Percentage of monitoring period [in bracket on the right] in each exposure category [green, yellow, orange and red] with respect to duration and magnitude of peak pressure gradient (A and B) and peak pressure index (C and D), pre- and post- PROMISE intervention, respectively

STRAIN-RATE DEPENDENT BEHAVIOR IN SKELETAL MUSCLE: INSIGHTS ON DAMAGE MECHANISMS

Benjamin WHEATLEY (1), Adrina IACHINI (1), Pierre-Yves ROHAN (2)

1. Department of Mechanical Engineering, Bucknell University, Lewisburg, PA, United States;
2. Arts et Métiers Institute of Technology, Université Sorbonne Paris Nord, IBHGC - Institut de Biomécanique Humaine Georges Charpak, HESAM Université, F-75013, Paris, France.

Introduction

Pressure ulcers have been shown to result from mechanisms occurring at different length and time scales. The passive mechanical behavior of skeletal muscle in particular, plays a critical role in injury prevention. Although mechanical testing of soft tissues is common, limited data exist on failure properties of intact muscle tissue. To explore the damage properties of muscle, we performed uniaxial tensile tests on whole muscle-tendon units (MTU) to failure and developed a finite element (FE) model incorporating damage mechanics. Our goal was to investigate how strain rate affects stress-stretch behaviour and damage onset.

Methods

In brief, EDL MTUs from 15 rabbits were isolated post-mortem and tested in uniaxial tension. Following a stress relaxation protocol, samples were pulled to failure at either 10%/s or 0.1%/s. Tangent modulus, ultimate tensile strength (UTS), and toughness (area under the stress-strain curve) were extracted and compared between groups. To replicate and interpret these findings, we built a FE model in FEBio of a 2D slice of a muscle-tendon unit using a hyperelastic ground-matrix (Mooney-Rivlin) with tension-only reinforcing fibers that are subject to strain-dependent damage evolution (first principal Lagrange strain).

Results

Experimentally, MTUs failed consistently in the muscular region, specifically near the distal termination of the aponeurosis. Fast-rate samples exhibited higher UTS (0.68 vs 0.39 MPa, $p=0.0036$) and toughness (0.35 vs 0.174 kPa·mm/mm, $p<0.001$). FE simulations reproduced the increase in both peak stress and toughness under higher strain rates (Fig. 1).

Conclusions

Interestingly, higher MTU strain rates lead to less damage accumulation in muscle tissue in our model (Fig. 1). This observation agrees with our experiments, where increases in toughness were greater than increases in UTS. One explanation for these observations is a difference in viscoelastic properties in aponeuroses/tendon tissue versus muscle tissue [1,2]. Since muscle tissue has shown greater stress relaxation than tendon/aponeurosis tissue, faster MTU strain rates would decrease the difference in stiffness between muscle and aponeurosis/tendon, thus distributing strain more evenly throughout the whole structure, which would decrease muscle damage. This behaviour could be a protective mechanism in vivo. This work contributes to the development of predictive tools for muscle injury risk and may inform rehabilitation strategies and material design in tissue engineering

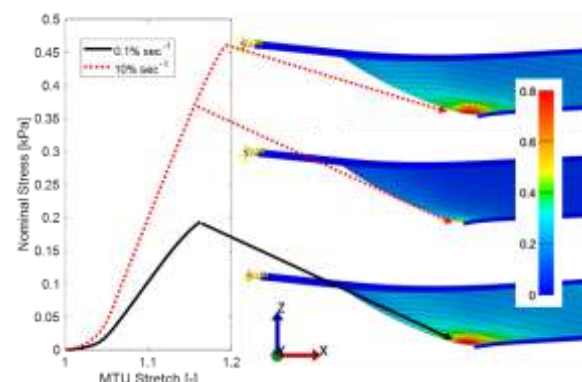


Figure 1: Left: Model stress-stretch results. Right: Colour contour plot of muscle damage for final 0.1%/s increment (bottom), 10%/s at the same increment (middle), and final 10%/s increment (top).

Conflict of Interest

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UNLOCKING EXCELLENCE: IMPROVING NURSING STUDENTS' KNOWLEDGE OF PRESSURE INJURY PREVENTION THROUGH AN ESCAPE ROOM EXPERIENCE

TUBA SENGUL (1), NURTEN KAYA (2)

1. KOÇ UNIVERSITY SCHOOL OF NURSING, TÜRKİYE; 2. FACULTY OF HEALTH SCIENCES, ISTANBUL UNIVERSITY-CERRAHPAŞA, TÜRKİYE

Introduction:

Nursing students must gain competence in communication, teamwork, and clinical skills before entering the profession. To support this development, nurse educators should incorporate innovative strategies like active learning, gamification, and escape rooms into the curriculum. Escape rooms offer an interactive teaching approach that enhances knowledge and attitudes by promoting collaboration, problem-solving, and communication. This study aims to evaluate the effectiveness of an escape room-based educational intervention in improving undergraduate nursing students' learning and attitudes toward pressure injury (PI) risk factors and prevention.

Methods:

This quasi-experimental pretest-posttest study was conducted with third- and fourth-year nursing students ($n = 33$) enrolled in the elective Chronic Wound Management course. Data were collected using five instruments: a student information form, the Pressure Ulcer Knowledge Assessment Tool 2.0 (PUKAT 2.0), (PIPKQ), the Attitude Towards Pressure Ulcer Prevention Instrument (ATPUPI), and the State-Trait Anxiety Inventory (STAI). Pretest data were gathered before the educational intervention. The intervention included a two-stage escape room game focused on PI staging, prevention, and management. Students participated in groups, solved puzzles and completed hands-on tasks related to PI care. Posttest data were collected immediately after the intervention and again one month later.

Results:

In the study; 90.9% were female, and the mean age was 22.09 ± 1.07 years. The mean self-reported knowledge of PI prevention significantly increased from 3.18 ± 1.65 to 7.21 ± 1.36 after the escape room intervention ($P = .000$). Although more students reported following PI-related developments post-intervention (69.7% vs. 33.3%), the change was not statistically significant ($P = .871$). Students' anxiety levels significantly decreased post-intervention: mean state anxiety scores dropped from 45.67 ± 9.77 to 39.67 ± 10.39 ($P = .005$), and trait anxiety from 59.03 ± 5.12 to 42.97 ± 8.56 ($P = .000$). The mean PUKAT 2.0 scores improved significantly from 10.27 ± 3.45 (pretest) to 19.64 ± 2.18 (posttest 1). They remained elevated at 18.24 ± 3.37 after one month. Similar improvements were observed in PIPKQ and ATPUPI scores. ATPUPI scores increased from 43.09 ± 3.57 to 50.00 ± 1.54 post-intervention.

Conclusions:

Integrating a themed escape room into nursing education significantly improved students' knowledge of PI prevention. This engaging, learner-centered approach may complement traditional lectures by reinforcing clinical decision-making in a realistic, time-pressured context. The positive feedback indicates that gamified learning can increase motivation and retention of essential patient safety knowledge. Adopting escape room strategies could help prepare nursing students to prevent PIs in clinical practice.

Conflict of Interest

None declared.

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THE IMPACT OF FORMAL AND LIFELONG EDUCATIONAL PROGRAMS ON THE KNOWLEDGE OF CROATIAN NURSES ABOUT PRESSURE ULCERS

Ana Žepina Puzić (1), Mirna Žulec (2), Vesna Bušac (3)

1. Šibenik University of Applied Sciences, Croatia; 2. Universitas Studiorum Catholica Croatica Zagreb;, Croatia; 3. Šibenik University of Applied Sciences, Croatia

Introduction

Knowledge about the prevention and treatment of pressure injury (PI) is the basis for practice that leads to the quality and safety of the care provided [1]. Therefore, it is imperative that they achieve an adequate level of knowledge through formal or lifelong education and appropriate support to successfully prevent and treat of PI [2,3]. An obstacle to implementing evidence-based PI prevention practices is the lack of adequate theoretical and practical knowledge [4]. Education and training of healthcare professionals in the prevention and treatment of PI are associated with more effective prevention and management [5].

Methods

The research followed a cross-sectional design and took place in a state hospital in Croatia. The purpose of this study was to examine the levels of knowledge of nurses in Croatia regarding PI with a particular focus on determining the impact of formal education and lifelong learning on their awareness. The aim is to analyze to what extent different forms of education including university education, professional courses, and continuous training programs influence theoretical and practical knowledge about the prevention, wound description and staging of PI.

Results

The sample consisted of 268 participants, across all education levels. The correlation analysis examined the relationship between nurses' experience and test performance Prevention, Staging, Wound description, and Overall scores. Work experience did not show a significant correlation with test scores ($r=-0.034$, $p=0.578$), however, the level of education - master's degree in nursing had the highest mean percentages in Prevention (67%) and overall score (61%). Differences in test performance across ward type showed significant difference for Prevention subscale for neurological ward staff ($F(4,263)=0.90$, $p=0.462$). Activities such as reading professional literature and attending lectures showed a positive correlation with higher scores in different areas of Prevention ($\rho=0.219$ and 0.451 ; $p<0.001$), Staging ($\rho=0.256$ and 0.328 ; $p<0.001$) and the overall test ($\rho=0.243$ and 0.434 ; $p<0.001$). Internet use was positively associated with all subscales and overall (Mean=63.1, SD=9.96, $t(266)=4.99$, $p<0.001$).

Conclusions

Despite the fact that the level of knowledge of the respondents is not satisfactory, the positive impact of formal and lifelong education on the existing level of information about PI is evident. These findings highlight the need for improvement and better organization of educational programs, with an emphasis on their accessibility, continuity and focus on clearly defined learning outcomes.

Conflict of Interest

This research received no external funding.

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TIME(RS) TO PLAY IN PAEDIATRICS: EDUCATIONAL COURSE

Jenifer Guedes (1,11), Liliana Abreu (2,11), Rita Cabral (3,11), Ana Paula Pinho (4,11), Clara Abadesso (5,11), Madalena Mota (3,11), Maria Isabel Malheiro (6,11), Paulo Ramos (7,11), Raquel Melo (8,11), Sónia Colaço (6,11), Ester Malcato (2,11), Pedro Sardo (9,11), Diana Oliveira (10,11)

1. Unidade Local de Saúde da Região de Aveiro, Portugal; 2. Unidade Local de Saúde Santa Maria, Portugal; 3. Unidade Local de Saúde de Trás-os-Montes e Alto Douro, Portugal; 4. Unidade Local de Saúde de Coimbra, Portugal; 5. Unidade Local de Saúde de Amadora/Sintra, Portugal; 6. Escola Superior de Enfermagem de Lisboa, Portugal; 7. Unidade Local de Saúde da Póvoa de Varzim/Vila do Conde, Portugal; 8. Hospital CUF Porto, Portugal; 9. Escola Superior de Saúde da Universidade de Aveiro, Portugal; 10. Unidade Local de Saúde de Gaia/Espinho, Portugal; 11. Associação Portuguesa de Tratamento de Feridas (APTferidas), Portugal

Introduction

Pressure ulcers are serious and preventable complications that affect acutely ill neonates, children, and adolescents. [1-3] The pressure ulcer aetiology and the most common anatomical locations are different from adults due to children's anatomical and physiological differences. [4-5] There is a growing body of evidence stating that hospital-acquired pressure ulcers occur frequently in paediatric populations, affecting quality of life and increasing healthcare costs. [4-5] These findings support the need to design and implement prevention programs for pressure ulcers in paediatric populations. [5] Based on this, the Paediatric Group of the Portuguese Wound Treatment Association (APTferidas) has created a wound care course with specific modules related to prevention and treatment of pressure ulcers in paediatric population. This work aimed to describe the process of conceptualizing, creating, and implementing the course; and to show its relevance in education in this field.

Methods

Conceptualization and creation of a presential course with 8 hours called "TIME(RS) to Play in Paediatrics" for health professionals that work with neonates, children and/or adolescents. The course has at least 8 instructors (experts in wound care and/or paediatrics) and it was designed for a minimal of 40 and a maximal of 60 trainees. The course program has 5 theoretical and 3 practical sessions that promote dynamic teaching and learning adapted to the specific needs of the neonatal and paediatric population. The theoretical sessions include: "the basic principles of skin anatomy and physiology", "wound assessment and monitoring", "wound bed preparation", "pain management" and "parental education." The practical sessions include: "wound debridement", "burn injuries prevention and treatment", and "pressure ulcers prevention and treatment" with focus on support surfaces, positionings, pressure ulcer prevention related to medical devices, prophylactic and treatment dressings. All the sessions have names related to "children's games" to make the programme more attractive and make the connection with paediatric context (Example: "Where is Wally?" for "wound assessment and monitoring").

Results

The first edition of "TIME(RS) to Play in Paediatrics" took place on June 2024 (in Aveiro – Portugal) and the second edition on March 2025 (in Lisbon – Portugal). Both editions sold out in just a few days (with several trainees on a waiting list for a new course), demonstrating the high demand for training in this specific area. Currently APTferidas has a third edition scheduled for June 2025 (in Aveiro – Portugal) and is evaluating the possibility to open new courses in other cities. The course was submitted to the Nacional Council of Nurses and is currently being evaluated for accreditation. The trainees highlighted the teaching-learning



methodologies used (especially in the practical sessions), the scientific quality of the program and the relevance of this course for their clinical practice.

Conclusions

“TIME(RS) to Play in Paediatrics” represents an innovating and excellent education programme to empower health professional and improve paediatrics wound care. The combination of theoretical and practical sessions promotes the development of different knowledges, skills and attitudes related to wound care (namely pressure ulcer prevention and treatment), ensuring a solid scientific update that could be applied to clinical practice.

Conflict of Interest

The authors declare no conflict of interest.

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IMPLEMENTING SUBEPIDERMAL MOISTURE SCANNING TECHNOLOGY IN NURSING HOMES: A QUALITATIVE ANALYSIS OF ADOPTION FACTORS AND HEALTH EQUITY IMPLICATIONS FOR PRESSURE INJURY PREVENTION

Yap, Tracey L. (1); Alderden, Jenny (2); Brooks, Katie (1); Kennerly, Susan (3); McCreath, Heather (4); Bates-Jensen, Barbara (4)

Organization(s): 1: Duke University, United States of America; 2: Boise State University; 3: East Carolina University; 4: University of California Los Angeles

Pressure Ulcers: Implementation of Science and Education

Introduction

Pressure ulcers represent a significant healthcare challenge, particularly in long-term care settings. Recent technological innovations offer promising approaches to early detection and prevention. This study examines the implementation of subepidermal moisture (SEM) scanning technology in nursing homes, a novel approach designed to detect pressure injury development before visible skin changes occur, regardless of patient skin tone. Using Rogers' Diffusion of Innovation framework, we explored the factors influencing adoption and implementation of this technology among nursing staff responsible for direct pressure injury prevention care.

Methods

The research employed a qualitative approach through multiple focus groups conducted across five nursing homes. Nursing staff involved in direct pressure injury prevention participated in discussions that were audio-recorded, transcribed, and analyzed using thematic analysis. The analysis was guided by key Diffusion of Innovation constructs: relative advantage, compatibility, complexity, trialability, observability, expectations, and sustainability, providing a comprehensive framework to understand the technology adoption process.

Results

Analysis revealed several key facilitators and barriers to successful implementation of SEM scanning technology. Primary facilitators included the technology's ability to detect early pressure damage across diverse skin tones, effectively addressing a critical health equity concern. Additionally, hands-on training opportunities and documented improvement in early intervention supported adoption. However, implementation faced challenges including workflow integration difficulties, interpretation complexities, high staff turnover rates, and concerns regarding long-term costs. Notably, initial skepticism among nursing staff evolved into cautious acceptance as the implementation progressed and benefits became observable in patient care outcomes.

Conclusions

The implementation of SEM scanning technology demonstrated significant potential for equitable pressure injury prevention across diverse patient populations. However, successful widespread adoption requires attention to workflow integration, ongoing training needs, and sustained organizational support. The findings suggest that while innovative technologies can improve pressure ulcer prevention, their effectiveness depends on thorough consideration of implementation factors within specific healthcare contexts. Further work is needed to foster complete assimilation and adoption of this innovation in standard pressure injury prevention protocols.

Conflict of Interest

TABLETOP EXERCISES FOR TEACHING PRESSURE INJURY PREVENTION AND MANAGEMENT

Emine Tetik (1, 2) Scott Brunero (1, 3)

1. South Eastern Sydney Local Health District, Australia;
2. University of New South Wales, Australia;
3. University of Technology Sydney, Australia

Introduction: Pressure injuries are a preventable hospital-acquired complication in healthcare care settings (1). Therefore, pressure injury prevention is important for nurses who play key roles in patient safety and care. Previous quality improvement projects have identified gaps in clinical practice in pressure injury prevention and management at the hospital study site. As a result, a novel approach in ward-based educational sessions using tabletop exercises drawn from the disaster management literature was proposed. Tabletop education sessions aim to review clinical practice and enhance knowledge on pressure injuries to prevent hospital-acquired complications. This research aims to evaluate the effectiveness of tabletop exercises in educating nurses in a metropolitan acute care setting.

Methods: A prospective research approach, including pre- and post-evaluations, was adopted for the study. The objectives of the study were:

- 1) to explore the effectiveness of tabletop exercise teaching in pressure injury prevention and management,
- 2) to investigate nurses' self-assessment with their knowledge, skills, and confidence in preventing and managing pressure injuries, and
- 3) to identify nurses' satisfaction with the novel tabletop exercises training methods.

After ethics approval, a convenience sampling of nurses was invited to the study. Given its novelty, no validated instruments exist which measure the effect of pressure injury related tabletop exercises. Therefore, a survey based on pressure injury competencies outlined in state and district policies (2,3) was created and distributed before and two weeks after the training sessions. An hour simulated case study was discussed with the nurses during the training. The de-identified data was entered into Excel spreadsheet and transferred to SPSS version 28 for analysis. The Mann-Whitney U test and the Chi-square test were used for data analysis.

Results: Demographics of the participants included were registered (n=29, 87.9%) and enrolled (n=4, 12.1%) nurses, working in aged care (n=19, 57.6%) or medical and surgical inpatient settings (n=14, 42.4%). Participants' clinical experiences were less than one-year in health care (n=14, 42.4%) and n=18 (54.4%) had received some education on pressure injuries prior to the tabletop exercises. Comparing the pre and post education knowledge results statistically significant scores ($P < .05$) were found on; completing pressure injury risk assessments on admission, repeating comprehensive skin assessment, assessing and managing pain, communicating with relevant team members, documenting pressure injury assessment and management, and notification of pressure injuries through self-reporting hospital system. No statistical differences found on self-assessment on satisfaction of knowledge and skills. Overall, nurses (n=29, 87.9%) were satisfied with the ward base tabletop exercise training for pressure injury prevention and management.

Conclusions: Findings support the effectiveness of this novel approach tabletop exercise training in pressure injuries. However, further trials of the training in larger samples and different healthcare settings are recommended.

Conflict of Interest: The authors declare that this research received no funding from industry.

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THE EFFECT OF USING CLINICAL DECISION SUPPORT SYSTEM IN PRESSURE INJURY RISK MANAGEMENT TEACHING TO NURSING STUDENTS: A RANDOMIZED CONTROLLED STUDY

Ozlem Ariburnu (1), Fatos Korkmaz (1)

1. Hacettepe University, Turkiye

Introduction

One of the strategies to prevent pressure injuries, which remains a problem, is risk assessment. Risk assessment in pressure injury is included in nursing education; this education includes the use of a valid and reliable risk assessment tool and the risk factors of the tool [1]. However, when we look at the literature, it is known that the prevalence of pressure injury is between 5.76% - 18.5% [2-4] in whole world and at the same time, in studies conducted with nursing students, students' knowledge about risk assessment is insufficient [5-8]. Therefore, it is important to strengthen pressure injury risk assessment in nursing education. Clinical decision support systems, which have started to be used in health services with the widespread use of technology, are systems that help the user to make decisions in critical situations. Although these systems are used in health institutions, their use in education has not been reported.

Methods

This study was conducted as a randomized control group study to examine the effect of clinical decision support system in teaching pressure injury risk management. Within the scope of the study, a teaching software was developed, educational content was prepared, and pressure injury risk management was taught to second year nursing students for four weeks through the software and at the same time, students were enabled to actively use the software. In the study, post-tests were conducted and evaluated at the end of a four- week teaching period and a one-month follow-up period. The sample of the study consisted of 81 students ($n_{\text{control1}}=20$, $n_{\text{control2}}=21$, $n_{\text{intervention1}}=20$, $n_{\text{intervention2}}=20$) studying at XXX University Faculty of Nursing in the 2023-2024 academic year. Descriptive characteristics form, knowledge assessment scale for pressure ulcer prevention, attitude scale for pressure ulcer prevention and pre-post test case care plan were used for data collection.

Results

As a result of the study, it was determined that the students in the control and intervention groups had similar age and academic averages, the majority of them used the Braden pressure injury risk assessment scale in clinical practice and thought that this scale assessed the risk. The students in the intervention group had higher knowledge scores (KW=60,130; $p<0,05$) and more positive attitudes towards pressure injury ($t=-2,880$; $p<0,05$) than the students in the control group, and their ability to determine the nursing risk diagnosis and interventions for the risk factor in the case care plan was higher (KW: 62,862; $p<0,05$).

Conclusions

As a result, it can be said that the teaching method by integrating the decision support system increased the knowledge scores of nursing students in pressure injury risk management teaching and positively affected their attitudes, and also had a facilitating role in identifying the problematic risk factor in the patient. In line with these results, it is recommended to integrate the decision support system integrated teaching method into nursing education and to increase its use in teaching situations that affect patient outcomes in the clinical environment.

Conflict of Interest

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INCIDENCE OF PRESSURE ULCERS IN SURGICAL PATIENTS: A SYSTEMATIC REVIEW

Shijimol Kurian (1), Zena Moore (1), Declan Patton (1), Sherly George (1)

1. Skin Wounds and Trauma (SWaT) Research Centre, School of Nursing & Midwifery, Royal College of Surgeons in Ireland, University of Medicine and Health Science, Dublin, Ireland.

Introduction

The perioperative period presents a significant risk for pressure ulcer (PU) development due to the duration of surgery and anaesthesia.¹ Despite advancements in prevention modalities, PUs remain a global health concern, leading to pain, discomfort, delayed healing, severe infections and prolonged treatments.²⁻⁴ The incidence rate of PUs among hospitalised patients ranges from 0.4% to 38%, with an average incidence rate of approximately 17%.⁵⁻⁶ Among surgical patients, the incidence rate has been reported to be as high as 58%.⁷

Objective

This study aimed to systematically review the existing literature and evaluate the most up-to-date evidence on the incidence rate of PUs in adult patients undergoing surgery.

Methods

A systematic review methodology was employed. The Systematic Review Protocol was registered in PROSPERO (CRD42023449194). Databases including Cochrane, Ovid Medline, Embase, EBSCO, CINAHL Plus and Scopus were searched in August 2024. Two reviewers performed a separate screening of accumulated resources to ensure accuracy. Both reviewers independently read and inspected them for inclusion in the study and discussed up to consensus attained. The PRISMA flow chart is used to display the exact number of articles retrieved and excluded in this process. Data were extracted and compiled using an Excel spreadsheet. Simple descriptive statistics were used with results presented as means, standard deviations and percentages. The evidence-based Librarian checklist was used for the quality appraisal.

Results

A total of 34 studies were included.⁸⁻⁴¹ The mean pressure ulcer incidence was 15.6%, ranging from 0.05% to 64.6%, most cases (57.5%) were classified as Stage 1 PUs, with the sacroiliac area identified as the most frequently affected region (47%). Additionally, PU incidence was highest (74%) among patients undergoing orthopaedic surgery. The mean quality appraisal score was 75.1% (SD: 5.8%) and the scores ranged from a minimum of 61.5% to a maximum of 88.5%.

Conclusions

PUs remain a significant concern for surgical patients, particularly those undergoing orthopaedic surgeries. Most PUs manifest in the early stages and commonly affect the sacroiliac region. However, some studies did not specify the incidence across different types of orthopaedic surgeries. Most PUs developed were in the early stages and commonly affected the sacroiliac region. Studies just reporting PU incidences under general surgical categories and not under specific surgeries limit a comprehensive understanding of the issue. Standardised reporting and targeted prevention strategies are essential for reducing PU incidence and improving patient care.

Conflict of Interest

None

Reference



PREOPERATIVE HEMATOCRIT LEVELS AND THE RISK OF PRESSURE INJURIES IN CARDIOVASCULAR SURGERY: A RETROSPECTIVE COHORT STUDY

Xiaoxiao Gou (1), Lina Yang (1)*, Rong Tang (1), Jie Yang (1)

1 Sichuan Academy of Medical Sciences & Sichuan Provincial People's Hospital, University of Electronic Science and Technology of China, Chengdu, China; * Corresponding author

Introduction

Cardiovascular diseases are a leading global mortality cause, with rising prevalence in China(1). Intraoperative Acquired Pressure Injury (IAP) is a common postoperative complication, with an incidence rate as high as 24.8% in prolonged cardiovascular surgeries (2). Low hematocrit (Hct) levels are associated with adverse outcomes in cardiovascular surgery patients (3). Currently, there is limited research exploring the relationship between preoperative hematocrit levels and the incidence of IAP. This study aims to investigate the dose-response relationship between preoperative Hct levels and postoperative IAP and assess whether blood transfusion could modify this risk.

Methods

A retrospective cohort study was performed on adult patients undergoing cardiovascular surgery at a Chinese tertiary hospital from January 1, 2022, to December 31, 2022. Patients were categorized into four groups based on preoperative Hct values: Q1: <35.8%; Q2: 35.8%-39.7%; Q3: 39.8%-43.6%; and Q4: ≥ 43.7%. Conditional logistic regression was employed to assess the relationship between preoperative Hct levels and IAP, with adjustment for potential confounders. A subgroup analysis was conducted to evaluate the impact of blood transfusion on IAP incidence across Hct groups.

Results

Of the 315 patients analyzed, 42 (13.33%) developed IAP. The study included 162 male (51.4%) and 153 female (48.6%) patients, with a mean age of 52.00 ± 12.51 years. Patients with lower preoperative hematocrit (Hct) levels were frequently associated with decreased serum calcium, hemoglobin, and albumin levels, as well as an increased incidence of perioperative blood transfusions. A dose-dependent relationship was observed between preoperative Hct levels and IAP risk. After adjusting for confounders, the very-low Hct group demonstrated 91.9% lower IAP risk compared with the high Hct group (Hct ≥ 35.8%) (odds ratio [OR]: 0.081; 95% Confidence interval [CI]: 0.009-0.762). Similarly, the low Hct group showed 65.3% risk reduction relative to the very-low Hct group (OR: 0.347; 95%CI: 0.093-1.294). In the transfusion subgroup (n=215), preoperative Hct exhibited an inverse correlation with IAP incidence. Transfused patients presented higher IAP risk relative to the overall cohort at equivalent Hct levels. Compared to the very-low Hct threshold (Hct < 35.8%), the high Hct group showed 91.9% risk reduction, which attenuated to 87.6% in transfused patients (OR: 0.124; 95%CI: 0.018-0.872).

Conclusions

Preoperative hematocrit (Hct) is a significant independent risk factor for IAP in patients undergoing cardiovascular surgery. It may potentially affect blood viscosity and oxygen supply. The incidence of IAP decreases with higher preoperative Hct levels. However, postoperative transfusion does not reduce the risk of IAP and may even increase it. Therefore, monitoring and adjusting preoperative Hct levels could improve clinical outcomes and offer new strategies for preventing IAP in clinical practice.

Conflict of Interest

All authors declared no conflict of interest.

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THE HAMSTRING MUSCULOCUTANEOUS FLAP TO RECONSTRUCT A PRESSURE ULCER – A CASE REPORT

Mette Lund Madsen (1), Josephine NES Benckendorff (2), Britt Hansen(3), Knærke Søgaard(4) Rikke Falsig Vestergaard (5)

1.-5. Department of Plastic Surgery, Odense University Hospital, Denmark

Introduction

Pressure ulcers is a localized soft tissue and skin injury that form as a result of prolonged pressure and shear, often over bony prominences. These ulcers significantly affect patients' quality of life, making prevention and effective management critical.

Methods

This case report describes the surgical management of a paraplegic patient with a pressure ulcer over the tuber ischiadicum using a hamstring musculocutaneous flap for reconstruction.

Results

A 54 year old male, with paraplegia, present with a chronic pressure ulcer over the tuber ischiadicum.

Despite extensive pressure relief measures and repeated debridement, the ulcer only achieved partial healing, with a persisting cavity in direct contact with the bone. Due to the chronicity of the wound and risk of further complications, surgical reconstruction was indicated. A hamstring musculocutaneous flap was chosen due to its robust vascular supply and ability to provide durable coverage.

Under general anesthesia, the patient was positioned prone. We started the surgery with marking donor site over the hamstring muscles area, followed by thorough debridement of the wound to ensure a viable, well-vascularized wound bed, with no avital tissue. The flap design was adjusted to ensure the appropriate size and advancement for optimal coverage of the defect. A triangular skin island, was elevated, incorporating, the perforating vessels of the underlying hamstring muscles – m. biceps femoris, m. semitendinosus and m. semimembranosus, to ensure vascularization. The distal insertion of the hamstring muscles was identified distally. Dissection along the muscles on each side. The insertion of the hamstring muscles was divided to achieve adequate advancement. We mobilized the flap to the recipient site, taking the perforating vessels in consideration. A suction catheter was placed to drainage underneath the flap and the flap was sutured in its new position. The most distal part of the wound was closed primarily.

Postoperative management included two weeks of strict bed rest on a pressure-relieving mattress, followed by gradual mobilization. Given the extensive preoperative education, the patient was already familiar with the lifelong offloading regimen required to prevent recurrence. Upon discharge, the patient adhered to a structured offloading protocol, altering two hours of weight-bearing and 30 minutes of pressure relief. This regime needs to be continued for the rest of his life.

Conclusions

The hamstring musculocutaneous flap is a reliable method of choice for reconstructing pressure ulcer defects. However, careful patient selection, thorough preoperative preparation, and commitment to lifelong offloading and critical for surgical success and long-term prevention. Patients undergoing this procedure must continue lifelong pressure relief to prevent recurrence and complications, as the flap site remains more vulnerable and less resistant to pressure.

Conflict of Interest

No conflict of interest.

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NEW METHOD OF LABELING PATIENTS FOR POSTOPERATIVE PRESSURE INJURIES PREVENTION

Cernica Chausha Weitman(1), Matvey Barsukov (2), Yulia Lerman (3), Irina Greenberg (4)

1. Hadassah University Medical Center Ein Kerem, Israel; 2. Hadassah University Medical Center Ein Kerem, Israel; 3. Hadassah University Medical Center Ein Kerem, Israel; 4. Hadassah University Medical Center Ein Kerem, Israel

Introduction

Hospital-acquired pressure injuries (PI) represent a significant healthcare challenge worldwide, with operating room-acquired PI defined as those developing within 48-72 hours after surgery. These injuries negatively impact patients quality of life, prolong hospital stays, increase infection risks, and impose substantial financial burdens on healthcare systems. The incidence of operating room-acquired PI varies globally, from 4% to 45%. Surgical patients face multiple risk factors across the perioperative period.

Prevention requires a comprehensive approach throughout the perioperative period. Operating room nurses should evaluate PI risks before surgery and implement preventive measures during procedures. Recommended strategies include pressure-relieving devices, applying prophylactic dressings, repositioning patients when possible, and maintaining proper documentation of assessments and interventions. Collaboration between operating room and clinical nurses is essential in preventing PI. The primary goal remains preserving tissue integrity through evidence-based preventive approaches tailored to each patient's specific risk factors.

Effective communication during the handover process includes verbal and record information transfer to operating unit. Skin assessment and PI development risk are the integrative elements of the report.

The aim: Reducing incidence of PI development in OR during surgery.

Methods

1. Labeling patient wristband with purple sticker for patients at risk of development PI
 2. Standard handover process (verbal and record)
 3. Pressure reducing 5-layer dressings for patients at high risk according to Norton assessment score (14 or less is representing high risk for PI).
- PI incidence was received from adverse events reporting system.

Results

Before the intervention all standard procedures according to hospital policy were done: handover process and positioning to the type of surgery. In 2022 - 23 PI related to operation were recorded.

Intervention program for PI prevention in OR started in 2023 and included patient at risk labeling and protective prophylactic dressings on pressure sites. The patient was labeled in hospitalization unit before transfer to OR. During patient identification by wristband the nurse in OR identified PI risk by the purple label in addition to handover report and used protective dressings before patient positioning.

In 2023 only 4 PI related to operation were recorded, while in 2024 the number has increased to 8.

Conclusions

Labeling patients at risk for PI is not a globally accepted method. As far as we know, we are the first to try it. Together with proved effectiveness of protective dressings it is beneficial in PI preventing.

According to our findings, labeling makes it easier to identify a patient at risk in addition to accepted means, such as verbal and written reporting.

In the middle of 2023, we decided to expand labeling patients at risk to all hospitalized patients and not just those undergoing surgery. The hospital policy was updated as well. We are currently in the data collection phase.

Labeling patients at risk for PI makes it easier for the nurse to identify the risk of PI and to provide prevention. Both interventions significantly reduced postoperative PI incidence. Further research is needed to understand the long-term implications of labeling on PI prevention during hospitalization in all units.

Conflict of Interest: none

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COMPLEX MANAGEMENT OF PRESSURE ULCERS IN A PATIENT WITH SPINAL CORD INJURY AFTER POLYTRAUMA: A CASE STUDY

Vladimír Váňa^{1,2}, Alica Hokynková^{1,2}, Petr Šín^{1,2}, Tomáš Nevrtal^{1,2}

¹Department of Burns and Plastic Surgery, University Hospital Brno, Czech Republic

²Faculty of Medicine, Masaryk University, Brno, Czech Republic

Introduction

Pressure ulcers (PUs) remain a significant challenge in the management of patients after spinal cord injury, particularly following polytrauma. The complexity of managing PUs is amplified by the presence of systemic factors, including severe infections, nutritional depletion, and multi-drug resistant pathogens. This case study discusses the complex management of a paraplegic patient with severe PUs following polytrauma, incorporating an optimized preoperative approach based on established internal guidelines to reduce postoperative complications.

Methods

A 45-year-old male patient sustained polytrauma from a 10-meter fall resulting in a spinal cord injury at the level of Th6-11 and a persistent paraplegia. Following the injury, the patient underwent surgical decompression and spinal stabilization. In a short period he developed deep PUs (sacral and both trochanteric ulcers, categorized III-IV). In addition, the patient faced several complications, including infections caused by multi-resistant pathogens, notably *Acinetobacter baumannii* (carbapenemase OXA), which necessitated treatment under the highest hygiene standard and isolation protocols. Another major concern was significant nutritional deficiencies. The patient was managed in a university-based hospital following an internal preoperative optimization pathway aimed at improving surgical outcomes. Microbiological surveillance and infection control were crucial for managing the patient's severe bacterial colonization.

Results

The patient was treated with tailored antibiotic therapy based on resistant microbial strains. He underwent radical necrectomies and flap reconstructions including a rotational musculo-fascial gluteal flap for the sacral defect and a fascio-cutaneous tensor fasciae latae flaps for the left and right trochanteric ulcers. The surgical management was complemented by antimicrobial stewardship, and intensive nutritional support. Functional outcomes were highly satisfactory, and the patient began a full rehabilitation protocol. Despite challenges such as persistent infection, no partial flap necrosis or wound healing deficiencies were noted during the treatment at our department. Aesthetic results were also favorable, with the reconstructed areas blending naturally with surrounding tissue. The patient showed significant improvement in wound healing, highlighting the efficacy of the preoperative optimization pathway in improving surgical outcomes.

Conclusions

This case underscores the effectiveness of preoperative optimization in improving surgical outcomes for complex pressure ulcer reconstructions. By adhering to structured guidelines that focus on key laboratory parameters, infection control, and individualized care, complications were minimized, and both functional and aesthetic outcomes were significantly enhanced. Further studies with larger patient cohorts are needed to validate these findings and refine guidelines for broader clinical application.

Conflict of Interest

None to declare.



TIMING MATTERS: INTERNAL GUIDELINES FOR PREOPERATIVE OPTIMISATION BEFORE PRESSURE ULCER RECONSTRUCTION

Petr Šín^{1,4}, Alica Hokynková^{1,4}, Vladimír Váňa^{1,4}, Hana Paulová², Andrea Pokorná³

¹ Department of Burns and Plastic Surgery, University Hospital Brno,

² Department of Biochemistry, Faculty of Medicine, Masaryk University, Brno, Czech Republic

³ Department of Health Sciences, Faculty of Medicine, Masaryk University, Brno, Czech Republic

⁴ Faculty of Medicine, Masaryk University, Brno, Czech Republic

Introduction

Despite progress in surgical techniques, reconstructive procedures for pressure ulcers (PUs) still carry high complication and recurrence rates. While technical aspects are important, surgical timing often lacks objective indicators. This gap is especially relevant not only in chronically ill patients, but broadly in pressure ulcer populations where metabolic condition and systemic inflammation complicate healing. The aim is to present local pathways for the management of patients with pressure ulcers prior to reconstructive surgery to minimize complications while determining the optimal timing

Methods

At a university-based plastic surgery centre, we developed internal preoperative pathway based on clinical experience and long-term evaluation and data collection, aimed at minimizing postoperative complications. The pathway provides structured decision support for surgical timing, while respecting the need for individualised patient assessment. The recommended threshold values for laboratory parameters include:

- Haemoglobin >100 g/L
- Albumin >30 g/L
- Prealbumin >0.15 g/L
- Total Protein >60 g/L
- CRP <50 mg/L
- Presence of resistant microbial strains in wound requires barrier precautions and coordinated antimicrobial management

Results

Clinical experience based on long term data collection and evaluation suggests that applying objective readiness thresholds may significantly reduce the incidence of postoperative complications and improve long-term outcomes (PUs recurrence). Although these improvements are observed in practice, there remains a lack of standardized outcome metrics and validated recurrence risk indicators to objectively confirm these associations. Long-term follow-up and recurrence tracking highlight the need for robust data and comparative frameworks.

Conclusions

The absence of standardized guidance for surgical timing in pressure ulcer reconstruction represents a significant gap in care. Our internal protocol based on metabolic and inflammatory laboratory parameters thresholds offers a practical and replicable model for preoperative decision-making. Broader implementation may improve outcomes and reduce healthcare costs in pressure ulcer surgery.

Conflict of Interest

No funding sources



PARAMETERS CONTRIBUTING TO TRANSCUTANEOUS GAS TENSIONS AS A SURROGATE MEASURE OF PRESSURE-ULCER RISK

Maegan Spiteri (1), Colin Boyle (2), Peter R Worsley (3), Spyros Masouros (1)

1. Department of Bioengineering, Imperial College London, UK
2. Royal College of Surgeons, Dublin, Ireland
3. Skin Sensing Research Group, School of Health Sciences, University of Southampton, UK

Introduction

Pressure ulcers (PUs) remain a serious complication for individuals with limited mobility. Oximetry enables non-invasive measurement of transcutaneous oxygen and carbon dioxide tensions, which serve as surrogate markers for tissue ischemia and PU risk (1,2). Chai and Bader identified three tissue response categories to sustained loading, with category 3 reflecting the greatest distress (3). The factors driving this variability remain unclear. This study uses multiple linear regression to explore which physiological and lifestyle variables influence baseline gas tensions and their percentage change during sitting, aiming to improve PU risk assessment and prevention strategies.

Methods

Transcutaneous gas tensions (TcPCO₂ and TcPO₂) were measured at the ischial tuberosity in 19 healthy volunteers using an oximeter (TCM5 Flex, Radiometer, Denmark). After a 20-minute calibration, participants sat for 20 minutes on a static-foam armchair, followed by standing to restore baseline gas tensions. Percentage changes were categorised using Chai and Bader's framework (3). Participants also completed a lifestyle questionnaire. Stepwise backward elimination regression was performed in SPSS (v29.0.2.0), with all statistical assumptions verified to ensure model validity.

Results

Height significantly predicted baseline CO₂ ($R^2 = 0.53$, $F(2,16) = 8.84$, $p = 0.003$; standardised $\beta = 0.738$, $p < 0.001$). Age was not a significant predictor ($p = 0.083$). Baseline O₂ was significantly predicted by sitting time, height, and weight ($R^2 = 0.48$, $F(3,15) = 4.65$, $p = 0.017$), with sitting time having the strongest effect (standardised $\beta = -0.803$, $p = 0.006$), followed by height (standardised $\beta = 0.749$, $p = 0.014$) and weight (standardised $\beta = -0.469$, $p = 0.036$). For percentage change in O₂ during sitting, baseline CO₂ ($p = 0.008$), baseline O₂ ($p = 0.022$), and weight (standardised $\beta = -0.967$, $p = 0.003$) were significant predictors ($R^2 = 0.64$, $F(5,13) = 4.53$, $p = 0.013$), with weight emerging as the strongest predictor. Hip width had a high standardised beta (1.173) but was not significant ($p = 0.079$), potentially due to sample size. No significant predictors were identified for percentage change in CO₂, suggesting this may be influenced by variables that were not considered or measured. This is notable, as a >25% CO₂ rise marks the transition to high-risk category 3.

Conclusions

Several physiological and behavioural factors were shown to influence both baseline and sitting-induced changes in gas tensions. Height, sitting time, weight, and baseline values of O₂ and CO₂ were key predictors, especially for oxygen. These findings offer insight into individual vulnerability to pressure-induced ischemia. These observations should be interpreted with the limitation that the study consisted of a relatively small number of healthy participants. Further research in larger, at-PU-risk groups is needed to confirm these associations and guide PU prevention strategies.

Conflict of Interest

There are no conflicts of interest to declare.

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SMART PREVENTION: TOWARD A PERSONALIZED PRESSURE INJURY RISK DETECTION SYSTEM USING SOFT SENSORS AND NIRS

Justin K. M. Wyss^{1,2,3}, Babak Shadgan^{1,2}, John D. W. Madden^{1,2,3}

1. The University of British Columbia, Canada; 2. International Collaboration On Repair Discoveries (ICORD), Canada; 3. Advanced Materials Process Engineering Laboratory (AMPEL), Canada

Introduction

Pressure injuries (PIs) remain a complex and costly healthcare challenge, particularly among the ageing and spinal cord injury populations. While current standards of care provide essential guidance, the multitude of intrinsic and extrinsic risk factors, and the limited availability of personalised assessment tools, continue to present challenges for effective prevention. These gaps highlight an opportunity to enhance current strategies through personalised, data-informed prevention systems. Our aim is to develop a system capable of continuously monitoring a user's pressure and shear distribution, identifying behavioural patterns, and providing early, individualised predictive alerts. We present ongoing work toward this system, which integrates soft sensors, smart materials, and data-driven algorithms, with the goal of eventual deployment in at-risk populations.

Methods

This project introduces a dual-component system for proactive pressure injury (PI) prevention, comprising: (1) the Smart Sheet—a soft, flexible, and stretchable sensor array for pressure and shear monitoring [1,2]; and (2) a personalised prevention algorithm informed by near-infrared spectroscopy (NIRS), ultrasound imaging, and individual risk factors [3]. The Smart Sheet is being evaluated through a multi-phase validation process involving both laboratory testing and user trials. In-lab testing using a mechanical analyser and conventional weights has characterised the sensor's accuracy, sensitivity, and signal stability under repeated loading conditions. Ongoing user trials with healthy, able-bodied participants assess usability, comfort, and device performance across various seating and support surfaces, with direct comparison to commercially available systems. In parallel, the foundational data for the prevention algorithm are being developed by examining pressure-induced changes in tissue oxygenation using NIRS, with measurements collected from the heel (bony prominence) and rectus femoris muscle (soft tissue). The first phase of the study aims to enrol n=60 per site (healthy, able-bodied adults aged 18-59 years, with 50:50 male-to-female ratio), capturing intrinsic factors including age, sex, tissue thickness, and tissue composition. Future phases will expand to include at-risk populations, such as older adults and individuals living with spinal cord injuries to support algorithm personalisation and clinical translation.

Results

The Smart Sheet demonstrates strong potential for reliable, continuous monitoring in pressure injury prevention. It achieves pressure sensing accuracy within $\pm 4\%$ across the clinically relevant range (0–200 mmHg), with low mechanical creep ($<3\%$) and repeatability error ($<0.5\%$), and can detect two-dimensional shear forces up to 1 N. Initial user trials have confirmed its ability to identify high-pressure regions and body contours across different support surfaces (Figure 1). Parallel NIRS studies involving 35 participants at the heel and 32 at the rectus femoris have revealed a consistent inverse relationship between applied pressure and tissue oxygenation index (TOI). Notable inter-individual variability was observed in the degree of TOI reduction, recovery duration, and rate of change. These variations appear to correlate with intrinsic factors, including tissue composition, subcutaneous fat percentage, and tissue layer thickness. The preliminary data (Figure 2) highlight the viscoelastic behaviour of soft tissues and provide foundational insight for the development of a personalised prevention algorithm.

Conclusions

This work supports the development of a personalised pressure injury prevention system combining soft sensing and physiological monitoring. The Smart Sheet and NIRS-based insights form the basis of a real-time algorithm to prompt early offloading. Ongoing efforts focus on algorithm refinement and clinical validation in ageing and spinal cord injury populations.



Conflict of Interest

This research is not supported by industry funding.

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Figures

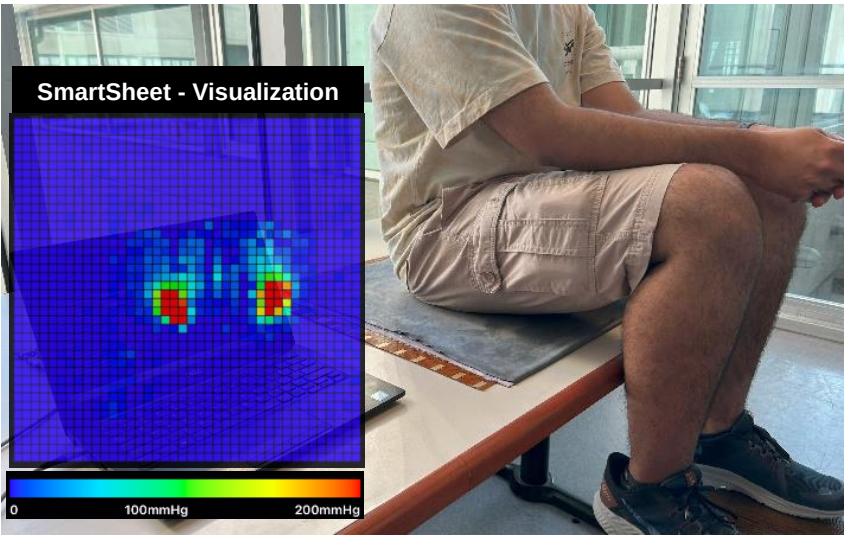


Fig. 1. Male participant sitting upright on the Smart Sheet placed on a hard surface, with feet resting on a stool. Pressure heatmap displaying pressure distribution and magnitude. High-pressure regions are shown as red (≥ 200 mmHg).

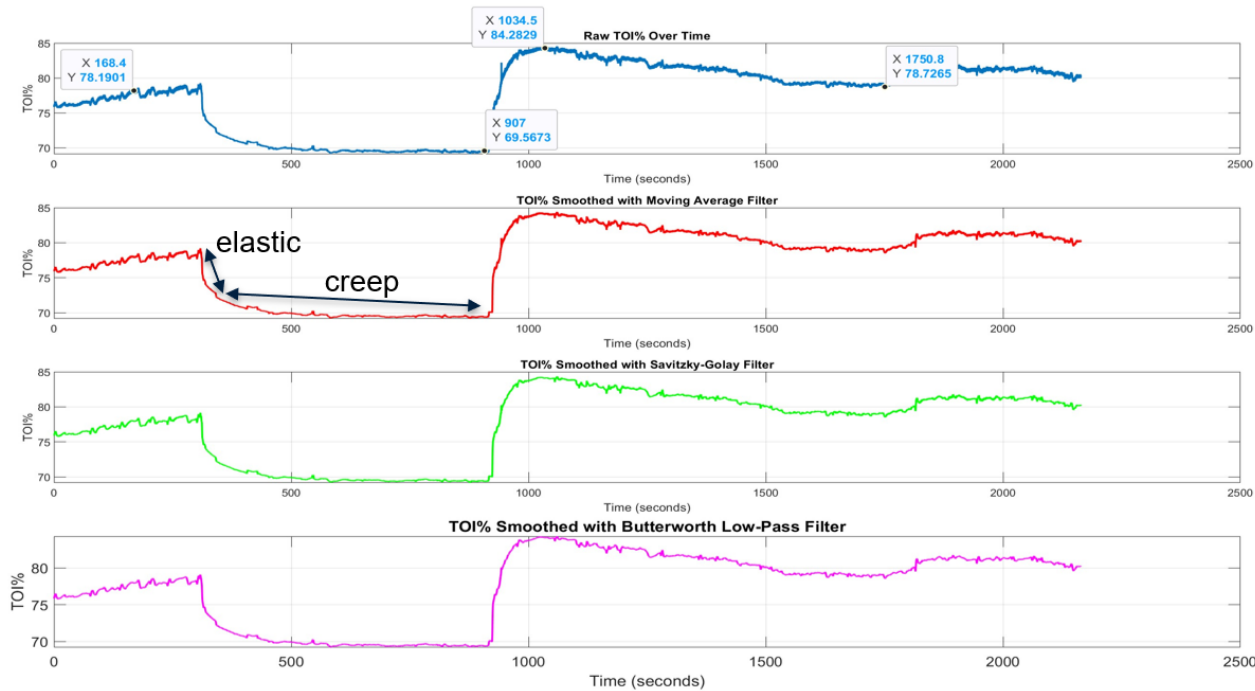


Fig. 2. Representative graph showing the change in TOI% during active compression and relaxation.

VQ>RELATIONSHIP BETWEEN SEATING PRESSURE AND ISCHEMIA AT ISCHIUM: PRELIMINARY STUDY USING LASER DOPPLER FLOWMETRY

Louisa Sadat (1), Bérengère Fromy (2), Maher Abou Karam (1), Yohan Payan (3), Nathanael Connesson (3), Laura Dubuis (4), Sonia Duprey (4), Anthony Gélis (5), Pierre-Yves Rohan (1)

1. Arts et Métiers Institute of Technology, Université Sorbonne Paris Nord, IBHGC - Institut de Biomécanique Humaine Georges Charpak, HESAM Université, F-75013, Paris, France.
2. CNRS, University of Claude Bernard Lyon 1, UMR 5305, LBTI, Lyon 69367, France
3. Univ. Grenoble Alpes, CNRS, Grenoble INP, TIMC-IMAG, 38000, Grenoble, France
4. Univ Lyon, Univ Gustave Eiffel, Université Claude Bernard Lyon 1, LBMC UMR_T9406, Lyon, France
5. Centre Mutualiste Neurologique Propara, 263 rue du Caducée, F-34090, Montpellier, Occitanie, France

Introduction

Seated-acquired pressure ulcers frequently occur in individuals with impaired mobility exposed to prolonged static postures [1]. Although previous studies have separately examined mechanical loading and impact of local ischemia on tissues, there is a lack of experimental evidence capturing their temporal dynamics and interactions during sitting. This preliminary study seeks to integrate clinically accessible biomechanical measurements with the assessment of ischemia during prolonged sitting in healthy volunteers. The objective is to investigate the temporal dynamics and potential interactions between mechanical and ischemic effects, in order to improve understanding of the vulnerability of loaded healthy tissues.

Methods

Two healthy participants (out of a planned sample of ten, age = 22 years, BMI = 21.6 ± 2.0) were included in this first phase. A custom-designed chair with a rigid seat was developed to integrate a pressure mapping system* a laser Doppler flowmetry probe**

, and a temperature sensor positioned at the ischial region. Participants were instructed to remain seated, with minimal movement or verbal interaction, for a continuous 30 minutes session. Pressure data were analyzed to extract mean and maximum values, as well as the center of pressure (CoP) trajectory. The Laser Doppler Flowmetry (LDF) signal was subjected to Fourier transform analysis to quantify signal energy within specific physiological frequency bands—myogenic, neurogenic, and endothelial [2] which were then compared across different time intervals.

Results

Over time, both mean and peak interface pressures increased. Simultaneously, LDF spectral energy within the neurogenic and endothelial frequency bands decreased, suggesting a deterioration in microvascular perfusion. Short-term fluctuations in the LDF signal appeared to correlate with abrupt changes in pressure, potentially indicating involuntary postural adjustments.

Conclusions

These initial findings support the feasibility of the experimental protocol and provide a first proof of concept addressing a current research gap. Although data from only two participants are presented here, the study is part of a broader protocol involving ten healthy volunteers. The observed trends are encouraging and justify the continuation of the study with the full sample to better understand the interplay between mechanical pressure and tissue perfusion during prolonged sitting.

Conflict of Interest

The internship of Louisa Sadat was funded through the STAGE MASTER 2 grant from the Société de Biomécanique.

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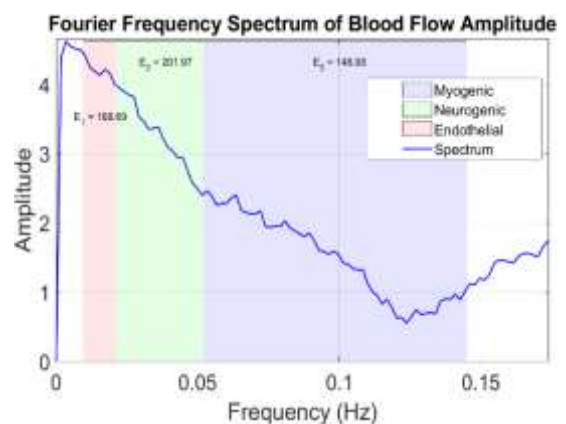


Figure 1 : Example of Fourier frequency spectrum of blood flow amplitude recorded by Laser Doppler Flowmetry (LDF) at the ischial region during prolonged sitting. The signal is decomposed into physiological frequency bands: endothelial (0.0095–0.02 Hz), neurogenic (0.02–0.05 Hz), and myogenic (0.05–0.15 Hz).

*TexiMat, TexiSense®, France,

** (Probe 408, Perimed®, PeriFlux 5010, Sweden

THE EFFECT OF LATERAL PRESSURE ON THE TRANSCUTANEOUS GAS TENSIONS AT THE ISCHIAL TUBEROSITY

Maegan Spiteri (1), Colin Boyle (2), Peter R Worsley (3), Spyros Masouros (1)

1. Department of Bioengineering, Imperial College London, UK

2. Royal College of Surgeons, Dublin, Ireland

3. Skin Sensing Research Group, School of Health Sciences, University of Southampton, UK

Introduction

Pressure ulcers (PUs) from prolonged sitting is a significant issue for immobile patients. Current PU-prevention strategies aim primarily to increase patient-chair contact area and so reduce contact pressure, but they are ineffective, mostly due to peak stresses occurring at the bone-muscle interface in the buttock (1). Application of lateral pressure (LP) reduces stress at this interface (2). This study evaluates a novel LP device against a static foam intervention for maintaining baseline gas tensions during sitting.

Methods

Transcutaneous gas tensions (TcPCO₂ and TcPO₂) at the ischial tuberosity were measured in 19 healthy volunteers using an oximeter and electrode*. Participants sat for 20 minutes on a static foam chair (control), followed by 10 minutes of standing, and then 20 minutes on the LP device (3). Percentage changes in gas tensions from baseline were classified using Chai and Bader's framework (4). Underbody pressures were recorded with a pressure mat**. Statistical analysis included a paired, one-tailed t-test (GraphPad Prism v10.3.1) and stepwise backward elimination linear regression (SPSS v29.0.2.0). Regression assumptions were tested. The dependent variable was the square root of the absolute percentage change in gas tensions, ensuring homoscedasticity.

Results

Nineteen participants (mean age 28.3 years, BMI 25.0 kg/m²) completed the study. The LP device significantly reduced CO₂ increase from +56.1% to +15.0% and improved O₂ levels from -52.1% to -30.7% ($p < 0.02$ and $p < 0.003$, respectively). It also significantly reduced mean and peak underbody pressures ($p < 0.0001$). Regression modelling identified significant predictors of gas-tension response on the LP device. The model was highly significant for CO₂ ($R^2 = 0.93$, $F(8,10) = 15.84$, $p < 0.001$), with height and skeletal muscle:fat ratio the strongest predictors. The O₂ model was also significant ($R^2 = 0.73$, $F(3,15) = 13.41$, $p < 0.001$), with O₂ ($\beta = -0.48$, $p = 0.046$) and CO₂ ($\beta = 0.46$, $p = 0.047$) changes during sitting as predictors, implying that individuals with greater gas-tension deviations when seated benefit most from LP intervention.

Conclusions

This study evaluated a novel LP device in a healthy population. Results showed that LP can help maintain nominal transcutaneous gas levels, in line with prior findings (3). Regression modelling indicates it may be possible to identify individuals most likely to benefit from LP application. Future work should target larger, at-PU-risk groups to confirm the observation from this study and guide PU prevention strategies.

Conflict of Interest

There are no conflicts of interest to declare.

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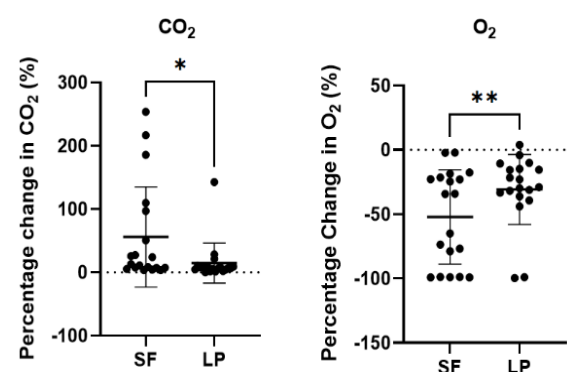


Figure 1: Percentage change in gas tensions due to sitting on static foam (SF) and lateral pressure (LP).

*TCM5 Flex, Radiometer

**SVZE4545L, SR SoftVision

TISSUE VULNERABILITY TO MECHANICAL STRESS: COMPUTATIONAL MODELING DEMONSTRATES GENDER EFFECTS

Anastasiia Simonova (1), Aleksei Orlov (1), Daphne Weihs (1,2,3)

1. Technion – Israel Institute of Technology, Israel; 2. Gent University, Belgium; 3. Hasselt University, Belgium

Introduction

Human skin is a complex organ composed of multiple layers, including the epidermis, dermis, adipose tissue, and underlying muscle, which are situated near stiff bones. The mechanical stability of these layers under loading is crucial for evaluating the damage threshold that can lead to development of the pressure ulcers/injuries. Understanding how these tissues respond to mechanical forces such as pressure is essential for various biomedical applications, including wound healing, tissue engineering, and dermatological treatments. Gender-related variations in skin and tissue mechanics play an important role in how tissues respond to external, mechanical forces, with potential implications for the risk of injury and wound development. This study employs computational modeling to evaluate vulnerability of tissue layers with distinct mechanics and thickness to mechanical pressures, demonstrating differences between male and female tissues, which may indicate variations in vulnerability of epidermal, dermal, and deeper tissue layers.

Methods

Tissue models for average male and female were developed using finite element modeling (Abaqus/CAE 2024), varying tissue thickness and mechanics based on published experimental data from the quadriceps and back regions. The models include epidermis, dermis, adipose, muscle, and bone layers, simulating responses to mechanical pressures of 2, 6, 8, and 10 kPa applied by a 10 mm diameter electrode on the skin. In the back region, males have a thicker dermis and thinner adipose layer, as they store more fat there. Effective mechanical stresses and strains were analyzed in a 30 mm diameter region of interest (ROI) to evaluate tissue response beyond the contact area. The stress and strain thresholds were set based on previous studies showing cell damage at strains >9% [1], yet promotion promote gap closure and with minimal cell damage at 3-6% strain [2], [3]. Accordingly, stress and strain thresholds were set at the 4th quartile of each tissue layer using the male-model data, and were, e.g. in dermis, 8.4-11.2 kPa and 7.5-10%, respectively, under all loading conditions.

Results

Under the maximum loading condition 10 kPa, the female tissue consistently show greater tissue exposures to high stresses and strains across most of the layers. Percent of tissue exposed to high stresses or strain in the ROI is higher in female model in the epidermis, adipose, and muscle tissues, respectively, being 3%, 6.1% and 3.9% more for stress, and 3.7%, 1.8% and 6.7% for strain. In contrast, in the dermis the male model exhibited 2.6% more tissue affected by high strain, yet the female model still had 0.4% more tissue affected by high stresses.

Conclusions

Percent of tissue exposed to high stress and strain increases with mechanical load, and the average female model demonstrated higher exposures than the male, in most modelled tissues. Such differences can indicate variability in tissue vulnerability between individuals relating to, for example, gender-, age-, or body-site variations in tissue mechanics and structure.

Conflict of Interest

No conflict of interest.

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ROLE OF SUBCUTANEOUS ADIPOSE TISSUE IN PRESSURE ULCER RISK : VISCOELASTIC PROPERTIES UNDER UNIAXIAL COMPRESSION

Maeva Lamant (1), Sharon Sonenblum (2), Dominique Sigaucho-Roussel (3), Berengère Fromy (3), Claudio Vergari (1), Nathalie Maurel (1), Amadou Diop (1), Maud Creze (1), Christian Herlin (4), Pierre-Yves Rohan (1)

1. Arts et Métiers Institute of Technology, Université Sorbonne Paris Nord, IBHGC - Institut de Biomécanique Humaine Georges Charpak, HESAM Université, F-75013, Paris, France.
2. Nell Hodgson Woodruff School of Nursing, Emory University, Atlanta, GA, USA
3. CNRS, University of Claude Bernard Lyon 1, UMR 5305, LBTI, Lyon 69367, France
4. Chirurgie plastique, CHU de Montpellier, Montpellier, France

Introduction

Pressure ulcers (PUs) are localized injuries to the skin and underlying tissue, primarily affecting individuals with reduced mobility. Most biomechanical research to date has focused on muscle deformation and internal tissue strain, yet increasing evidence suggests that subcutaneous adipose tissue (SAT) also plays a critical role in PU development—especially in vulnerable regions like the ischial area in individuals with spinal cord injuries. Alterations in SAT structure, thickness, or hydration may reduce its mechanical buffering capacity, increasing the risk of internal damage under prolonged loading. This study aims to better understand the mechanical behavior of SAT through unconfined compression tests on porcine skin samples. Although preliminary, this work lays the foundation for future patient-specific approaches combining mechanical, histological, and clinical data to improve PU risk assessment and prevention strategies.

Methods

Cylindrical samples ($\varnothing$ 20 mm) of porcine subcutaneous adipose tissue, with and without overlying skin, were prepared from fresh and previously frozen specimens. All samples were stored in phosphate-buffered saline and tested at room temperature (22 °C). Unconfined uniaxial compression tests were conducted using a universal testing machine at a constant rate of 100 μ m/s, up to 20 N of applied force, followed by a 180-second stress-relaxation phase. A pre-load of 0.2 N was applied to ensure contact between the sample and the compression plate. A total of six tests were performed..

Results

All samples demonstrated marked viscoelastic behavior, with observable stress-relaxation. The average Young's modulus (before 30% strain) in fresh samples was 25.86 ± 2.36 kPa, aligning with literature values. Freezing altered mechanical responses, introducing higher variability and inconsistent profiles—likely due to microstructural disruption of the adipose matrix. Interestingly, the presence of skin did not have a major impact on the stiffness in these preliminary tests, though further analysis is needed.

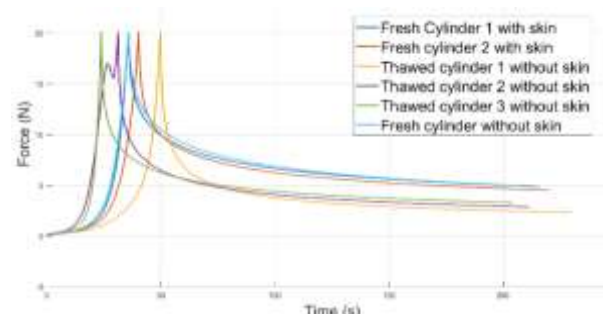


Figure 1 Force-time curves for a relaxation test on 6 cylinders of porcine subcutaneous adipose tissue

Conclusions

These results support prior findings that SAT exhibits time-dependent mechanical behavior and highlight the importance of testing fresh, anatomically relevant samples. The observed sensitivity to preservation methods reinforces the need for standardized protocols in future ex vivo studies. While porcine tissue is not a perfect surrogate for human tissue, this approach allows us to refine testing protocols before applying them to surgical waste samples from human gluteal regions, where PU risk is highest. Future work will include confined compression and histological analysis, enabling more accurate poroelastic modeling and the integration of biomechanical findings into clinical decision-making tools.

Conflict of Interest

No conflicts of interest, financial or otherwise, are declared by the authors.

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REDUCING PRESSURE INJURY INCIDENCE RATES THROUGH STRATEGIC FOCUS ON DEVICE-RELATED INJURIES

Mijin Kim (1), Youngsun Na (2), Juyoung Oh (3)

1. Inha University Hospital, Republic of Korea; 2. Inha University Hospital, Republic of Korea; 3. Inha University Hospital, Republic of Korea

Introduction

Pressure injuries are a critical patient safety concern, associated with extended hospital stays, increased healthcare costs, complications, and reduced patient satisfaction[1]. While not all pressure injuries are avoidable, those caused by insufficient preventive action or clinical inattention can be effectively prevented. Importantly, these injuries can be significantly reduced through focused, proactive management strategies.

At our institution, pressure injury incidence is monitored as a key safety indicator. Although the average incidence rate was 1.52‰ in 2021, it rose sharply to 2.82‰ in the first quarter of 2022. A primary contributor to this increase was the rise in device-related pressure injuries (DRPIs), which are considered largely preventable.[2]. This prompted the implementation of targeted prevention efforts to reduce DRPI incidence.

Methods

A review of incident reports identified 37 DRPI cases (23% of all pressure injuries) in Q1 2022. In response, the Nursing Safety Committee took the lead in strengthening DRPI prevention and initiated a series of focused strategies. These included the development of targeted prevention strategies, provision of both group-based and hands-on training sessions for clinical staff, and enhanced monitoring and management of high-risk patients. A structured checklist was used for regular monitoring and feedback, and pressure injury data were shared with all nursing staff to promote awareness and accountability. These efforts aimed to embed prevention practices into daily nursing workflows and establish a sustainable culture of safety.

Results

Following implementation, the number of DRPI cases declined markedly—from 80 (0.34‰) in 2022 to 41 (0.16‰) in 2023, and 23 (0.11‰) in 2024. The overall pressure injury reporting rate also decreased progressively: from 1.72‰ in 2022 to 1.07‰ in 2023, and 0.62‰ in 2024. These results demonstrate the effectiveness of focused interventions in reducing DRPI incidence, and their contribution to the broader reduction in pressure injuries across the institution.

Conclusions

Device-related pressure injuries are largely preventable, and their incidence can be significantly reduced through targeted and sustained preventive management. In this initiative, focused efforts to prevent avoidable pressure injuries led to a meaningful and continuous decline in both DRPI and overall pressure injury rates. Integrating these measures into routine nursing practice, along with ongoing monitoring and a culture of prevention, was essential to achieving long-term improvements in patient safety.

Conflict of Interest

The authors declare no conflicts of interest related to this study.

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NAVIGATING SKIN DIVERSITY AND REAL-WORLD FACTORS IN THERMAL IMAGING FOR EARLY PRESSURE INJURY DETECTION

Sharon E. Sonenblum, PhD (1), Kathleen Jordan, BS (1), Glory T. John, BS (1), Miriam Asare-Baiden, MEng (2), Vicki Hertzberg, PhD, FASA (1), Judy Wawira Gichoya, MD, MS (3); Joyce Ho, PhD (2)

1. Emory University Center for Data Science Nell Hodgson Woodruff School of Nursing, United States of America; 2. Emory University Department of Computer Science, United States of America; 3. Emory University School of Medicine, Department of Radiology and Imaging Sciences, United States of America

Introduction

Early pressure injury (Prl) signs are harder to detect on darker skin tones, leading to delayed diagnosis and worse outcomes. [1] Thermal imaging offers a potential solution by identifying temperature changes before visible signs appear, but its efficacy across skin tones remains underexplored. [2] Additionally, most validation and modelling studies control many factors, limiting real-world applicability. This study evaluates thermal imaging's ability to detect temperature changes across diverse skin tones and assesses the impact of real-world factors like lighting, camera-to-body distance, and posture. It also presents a case series of thermal imaging applied to high-risk inpatients with dark skin tones in our local hospital, directly addressing the call for further research on thermography for early Prl detection in the 2019 guidelines. [3]

Methods

A controlled experimental design included 35 healthy adults, 30 with skin tones measuring ≥ 6 on the Monk Skin Tone Scale. A stone cooled to 15.5°C was placed on the right posterior superior iliac spine (PSIS) for 5 minutes, with thermal images taken before and after using an industrial grade thermal camera and a phone add-on. Conditions varied by lighting (overhead vs. LED ring light), posture (side-lying, forward knee placement, rearward knee placement), and camera distance (35 cm vs. 50 cm). A mixed-methods model analyzed camera, environmental influences, and skin tone effects. Hospitalized patients with a Braden score ≤ 18 and Monk Skin Tone ≥ 6 were imaged daily from enrolment until discharge.

Results

Temperature changes were detected across all skin tones, with minimal impact from real-world factors. ROI cooling showed a significant reduction of $3.2^{\circ}\text{C} \pm 1.7^{\circ}\text{C}$, while the control region cooled minimally by $0.2^{\circ}\text{C} \pm 1.3^{\circ}\text{C}$. Notably, temperature change varied with skin tone, with participants with higher melanin levels exhibiting slightly larger cooling effects. A 0.98°C temperature difference was observed between the lightest and darkest skin tone groups. Camera sensitivity varied, with the industrial grade camera detecting greater reductions (3.95°C) than the phone add-on (2.91°C). Lighting, posture, and distance had no meaningful impact, confirming thermal imaging's robustness. Signs of early tissue damage were observed in 3/10 participants, 1 of whom went on to develop a Prl, and one of whom was likely avoided due to early intervention.

Conclusions

Thermal imaging detects temperature changes across all skin tones, but differences in cooling response suggest tailored thresholds may be needed for darker skin tones. Findings highlight thermal imaging's potential for equitable Prl detection. Future research should validate its clinical use across diverse populations and refine detection thresholds to improve accuracy for individuals with darker skin tones and specific cameras.

Conflict of Interest

Nothing to declare.

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THE RELATIONSHIP BETWEEN SUB EPIDERMAL MOISTURE AND PAIN MEASUREMENTS IN PREDICTING PRESSURE ULCER DEVELOPMENT IN AT-RISK ADULTS

Sergio Rocha, Prof Declan Patton, Prof Zena Moore, Dr Hannah Wilson, Dr Pinar Avsar,
Skin Wounds and Trauma (SWaT) Research Centre, School of Nursing & Midwifery, Royal College of Surgeons in Ireland, University of Medicine and Health Sciences, Ireland

Introduction

Despite ongoing efforts, pressure ulcers (PUs) continue to impact patients' quality of life, with early detection tools like skin assessment and pain evaluation commonly used to assess risk⁽¹⁾. This study aimed to examine the correlation between sub-epidermal moisture (SEM) measurements and pain as early indicators of PU development in at-risk patients.

Methods

A prospective cohort design was employed in a medical-surgical ward of an acute hospital. Patients identified as being at risk or scheduled for surgery requiring a minimum two-night stay were invited to participate. Upon obtaining informed consent, participants were assessed and followed over three consecutive days. The instruments selected for this study included the Fitzpatrick Skin Type Classification, Visual Skin Assessment, Sub-Epidermal Moisture (SEM) Scanner, and the PQRST Pain Assessment Method.

Results

There were 37 participants included in this study being described a mean age of 63 (SD 17.88), 59.46% male, a majority of surgical admissions (78.38%), and a lighter skin tone. There was a VSA incidence of 5.4%, although SEM recorded a higher PU incidence of 89.66%. there as a low incidence of patients reporting pain, 27% (n=10) at the sacrum, 5% (n=2) at the right heel and 8% (n=3) at the left heel. A Spearman correlation was used to determine the relationship. There was negligible correlation between pain and SEM or VSA. SEM delta values varied across Fitzpatrick skin types. At the sacrum, Type III had the highest value on Day 0 (1.0, SD 0.44); at the right heel, Type IV peaked on Day 2 (1.1, SD 0); and at the left heel, Type IV again had the highest on Day 3 (0.93, SD 0.32).

Conclusions

There was a small number of patients reporting pain associated with PU. The use of analgesia during the hospital admission, combined with confounding factor, may have influenced the perception of pain associated with PU. Although pain is still a symptom of PU and the report of pain in a pressure point area needs to be taken in consideration when predicting PU. Additionally, observed differences in SEM values across skin tones highlight the need for further research into skin tone-related variability in PU development and detection.

Conflict of Interest

The SWAT Research Centre has a research collaboration with Bruin Biometrics, who supplied the SEM scanner used in this study.

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A NEW ABSORBENCY CONCEPT TO MANAGE EXUDATE AND CELLULAR AND BACTERIAL DEBRIS: PRELIMINARY DATA

Roberto Cassino, Simone Toscano, Francesca Mistò, Stefania Chiarenza

"Zucchi" Clinical Institutes (GSD) Vulnology Center, Monza - Italy

Introduction

Exudate management is essential to avoid perilesional maceration, blocking of neoangiogenesis and bacterial proliferation. The aim of this work is to demonstrate that there is a material with a new absorbency concept that allows exudate management in such a way as to avoid the three complications described above.

Methods

We recruited patients with stage III and IV pressure injuries, hyperexudative, cleansed and/or not completely cleansed (Wound Bed Preparation score B3-C3) and non-cavitary; critically colonized wounds were included and infected ones were excluded. All lesions were treated with a superabsorbent dressing with a non-adherent polyester contact layer, 4 absorbent and draining layers based on polyurethane foam and polyacrylate retentive fibers, and a water-repellent external layer in non-woven fabric*. Dressing change until saturation or no more than every 5 days. Observation period: 4 weeks. Wound Area Reduction (WAR), Wound Bed Preparation score (WBP score), exudate control, possible bacterial colonization and weartime were evaluated.

Results

The study is still ongoing; 12 out of 25 patients have completed it. The mean area reduction (WAR) was greater than 35%; all the lesions not completely cleansed have achieved cleansing and WBP score A2 was achieved in 92% of cases and A3 in the remaining 8%; neither perilesional maceration nor bacterial colonization were recorded, while in all the critically colonized lesions the signs of infection (Cutting & Harding Criteria) disappeared within the third week of treatment; the mean weartime was 4.2 days.

Conclusions

These preliminary data have demonstrated the real efficacy of the tested dressing and, above all, have highlighted its safety: excellent management of exudate, antibacterial efficacy and reduction in the frequency of dressing changes with consequent lightening of workloads and reduction of costs.

*TouchMed® Ultra (DEALFA-Italy).

Conflict of Interest

None.



EVALUATING THE IMPLEMENTATION OF SMART TECHNOLOGIES INTO CLINICAL PRACTICE

Sara Noman (1), Silvia Caggiari (2), Kai Yang (3), and Peter Worsley (1).

1. Clinical Academic Facility, School of Health Sciences, University of Southampton, United Kingdom; 2. Faculty of biological sciences, university of Leeds, United Kingdom; 3. WSA E-Textile Innovation Lab Winchester School of Art, University of Southampton Winchester.

Introduction

Reduced mobility represents one of the main risk factors for the development of pressure ulcers (PUs). These are debilitating chronic conditions which have been identified as Patient Safety and Quality of Care indicators for the individuals affected. With advances in computing and sensing technologies, new opportunities to support people with limited mobility are emerging [1]. For example, intelligent systems integrated within the support surfaces e.g. mattress represents solutions to support self-management of posture and PU risk. This study aimed to evaluate issues associated with implementation of technologies into clinical practice.

Methods

A secondary analysis of an industry sponsored survey (with permission) conducted exploring the use of integrated technologies in support surfaces. Twelve healthcare professionals were asked questions on common issues and facilitators linked to technological and clinical factors. A focused literature review was also conducted to explore the validation of the identified issues from the analysis. By using a conceptual analysis technique, the distribution and the frequency of key issues were quantified, providing insights into their prevalence and relative impact.

Results

Four different categories were identified As illustrated in Fig 1. These categories are: (1) technical issues (engineering and technology issues) such as Automated monitoring systems lack patient-specific tracking; (2) clinical issues (direct patient care and health outcomes) such as Misuse of repositioning techniques; (3) logistical issues (resource management, and systemic inefficiencies) such as patient-device linking; (4) human factors (psychological, behavioral, and organizational aspects) such as staff resistance to new technologies, and fear of blame leading to rigid schedules. The results show that clinical issues have the highest frequency of responses, which is 35%, while logistical issues have 17.5%, which is identified as the lowest frequency in comparison with the other categories.

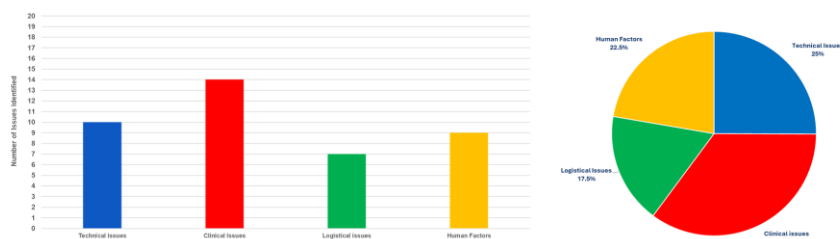


Fig 1: Distribution of identified issues across categories, showing the number of issues in each category and their percentage of the total issues identified in the survey.

Conclusions

Our findings show that key issues surround the translation of technologies into practical applications, ensuring they achieve patients and clinical needs, and the need for a more user-centered approach to pressure ulcer prevention [2,3]. Future innovation should include co-design principles with clinicians, patients and carers to support user-centered care.

Conflict of Interest

This study is part of a PhD project funded by a UK Engineering and Physical Sciences Research Council and Medstrom Ltd.

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MACHINE LEARNING-BASED PREDICTION OF INTRAOPERATIVE ACQUIRED PRESSURE INJURY IN CARDIOVASCULAR SURGERY

Li-na Yang (1), Xiao-xiao Gou (2), Xing-wei Wu (3)

1. Department of Anesthesia and Surgery Center, Sichuan Provincial People's Hospital, University of Electronic Science and Technology of China, Chengdu, Sichuan, China; 2. Department of Heart Center, Sichuan Provincial People's Hospital, University of Electronic Science and Technology of China, Chengdu, Sichuan, China; 3. Department of Pharmaceutical Big Data Center, Sichuan Provincial People's Hospital, University of Electronic Science and Technology of China, Chengdu, Sichuan, China

Introduction

Intraoperatively acquired pressure injury (IAP) is a significant concern in cardiovascular surgery. Current risk assessment scales like the Braden scale have limitations in predicting IAP. This study leverages machine learning to develop a prediction model for IAP in patients undergoing extracorporeal circulation.

Methods

Data from 315 patients undergoing cardiovascular surgery were collected. Variables included demographics, preoperative diagnoses, cardiac function, biochemical parameters, and surgical details, selected based on clinical plausibility, literature review, and expert consultation to ensure evidence-based and comprehensive variable selection. Data preprocessing involved handling missing data, class imbalance, and feature selection through multiple methods. We constructed 3150 predictive models using 21 machine learning algorithms across 150 datasets generated from different data imputation, sampling, and feature selection techniques.

Results

The best-performing model, an integrated learning model (rfADAENET), achieved an AUC of 0.9692. This model combines random forest filling, adaptive synthetic sampling, ElasticNet regression feature screening, and extreme random tree algorithm. Key factors influencing IAP risk included gender, albumin, hemoglobin, calcium, total protein, and glucose levels. The model's performance was validated through statistical analysis and sample size assessment. Furthermore, we developed an online web application to provide clinical access to the model's predictive capabilities, enabling caregivers to predict IAP risk for patients preoperatively.

Conclusions

This study demonstrates the potential of machine learning in predicting IAP risk, offering a more accurate and efficient approach than traditional methods. The identified key factors provide insights for targeted interventions. Future work will integrate this model into a mobile risk warning platform with automated data collection to assist caregivers in early identification and prevention of IAP in high-risk patients, enhancing patient safety and reducing complications in cardiovascular surgery.

Conflict of Interest

All authors declared no conflict of interest.

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PATIENT PRESSURE INJURY PREVENTION EDUCATION ON HOSPITALISATION: A CROSS-SECTIONAL STUDY AGED OVER 65YRS

Jodie Deakin (1 & 3), Sharon Latimer (1), Rachel Walker (1 & 4) Brigid Gillespie (1 & 2)

1. NHMRC Centre of Research Excellence in Wiser Wounds Care & School of Nursing and Midwifery, Griffith University, Australia; 2. Nursing Research, Clinical Governance, Education and Research, Gold Coast Hospital and Health Service, Australia; 3. Southern Cross University, Australia; 4. James Cook University, Australia

Introduction

HAPI risk factors include limited mobility, incontinence, malnutrition, and hospitalisation [2]. Patients aged over 65 years, face increased morbidity and mortality due to frailty, comorbidities, and compromised skin integrity [2] with many developing a HAPI on or soon after admission [5]. Pressure injury prevention (PIP) is a healthcare priority and involves implementing strategies including patient education. Globally, 1.4-37% of hospitalised patients receive PIP education [1], but the delivery rates for older people is unknown. Our study aimed to determine PIP education delivery to patients over age 65 years in their first 24 hours of hospitalisation.

Methods

This cross-sectional sub-study was drawn from a larger multi-site randomised control trial (ACTRESN12619000763145). A consecutive subsample of 170 randomly assigned control group participants over 65 years were recruited from 20 surgical and medical wards at two tertiary hospitals in Australia were recruited between July 2020 and August 2023. Participants were assessed 'at-risk' of PI using the risk score* of ≥ 10 . Clinical and demographic data collection included chart audits, field notes and semi-structured observations. Descriptive statistics were used.

Results

Our sub-sample of 170 participants (Hospital A; $n=87$ (51.2%), Hospital B; $n=83$ (48.8%) comprised of mainly males ($n=111$; 64.9%) with a mean age of 73.36 (SD 6.3) years and a risk score* of 15.35 (SD 3.7) considered "at high-risk". There were more surgical admissions $n=114$ (67.2%), than medical, with participants' body mass index considered "overweight" at 28.57 (SD 5.6). The mean number of co-morbidities were 2.2 (SD 1.2), including $n=143$ (83.6%) participants with at least one high-risk medication. Only six (3.5%) of participants received PIP education within the first 24 hours of hospital admission.

Conclusions

Our study found that PIP education was delivered to only 3.5% of hospital patients over 65 within the first 24 hours of admission. Given PI develop on or soon after admission with this vulnerable population, further research is required to understand the barriers and facilitators to delivery of PIP education.

Conflict of Interest

There are no conflicts of interest to declare.

*Waterlow ©

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A SYSTEMATIC REVIEW OF THE IMPACT OF CARE BUNDLES ON THE INCIDENCE OF PRESSURE ULCER AMONG AT-RISK OLDER ADULTS

Queen Edede, Pinar Avsar, Vishnu Renjith, Zena Moore, Tom O'Connor, Linda Nugent, Declan Patton
Royal College of Surgeons, Ireland

Introduction

Care bundles are a series of structured evidence-based interventions designed to improve clinical outcomes by implementing specific and reliable practices. When implemented regularly, care bundles have been shown to improve patient care by creating a standard of practice that, promotes correct and efficient treatment and control of the infection incidences. Implementing a care bundle allows for the integration of best practices in clinical practices and helps to improve patient outcomes such as morbidity and mortality (Lavallée *et al.*, 2017; Chan *et al.*, 2020). Care bundles are thus thought to reduce complications like healthcare-associated infections, the occurrence of which can be worsened due to non-standardized care and assist in ensuring adherence to protocols and decrease variations in the delivery of care (Zimlichman *et al.*, 2013). Using the PICO model, this systematic review aims to determine the impact of care bundles on the incidence of pressure ulcers among at-risk older adults.

Method

A systematic review was conducted from the following databases: Cochrane Central Register of Controlled Trials (CENTRAL) (The Cochrane Library, 2023 issue), Ovid MEDLINE (1946 to August 2023), Ovid EMBASE (1974 to August 2023), EBSCO CINAHL Plus (1937 to August 2023), PubMed, and Scopus. To prevent possible biases, the search, screening, and data extraction processes were conducted by two independent reviewers. We did a thorough, evidence-based assessment and synthesis of all the extracted data to ensure that data were analysed to high standards.

Results

The search strategy returned 1,642 citations, six studies meeting the inclusion and exclusion criteria. Of these studies, four were conducted in healthcare settings within the United States and two in Sweden. The direct relationship between care bundles and the reduction of pressure ulcers in the elderly was reported in all six included studies.

Conclusions

This systematic review emphasizes the link between care bundles and decreased incidence of pressure ulcers in older adults (≥65 years). Due to the frail skin, older age, and multiple co-morbidities this population has, further exploration of how care bundles can reduce the risk of pressure ulcer development is necessary.

Conflict of Interest

The authors declare that no funding from industry sources was received for this research. All financial support came from academic institution (RCSI), and the authors have no conflicts of interest to disclose

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“I FEEL LIKE A BABY WEARING A NAPPY...IT’S EMBARRASSING”: A QUALITATIVE STUDY OF PATIENTS’ EXPERIENCE OF INCONTINENCE AND INCONTINENCE-ASSOCIATED DERMATITIS

Michelle Barakat-Johnson (1,2,3), Michelle Lai (1,2), Fiona Coyer (2,4)

1. Sydney Local Health District 2. University of Sydney, Australia; 3. University of Huddersfield, UK; 4. Queensland University, Australia

Introduction

This study aimed to examine the lived experiences of patients with incontinence and incontinence-associated dermatitis (IAD), as well as the perspectives of their caregivers. The research focused on their management strategies, perceptions of the conditions, and the broader effects on their quality of life and emotional well-being. This study was part of a larger funded study implementing best available evidence into practice for IAD and pressure ulcers [1,2]

Methods

A qualitative research approach was conducted across 18 wards in six acute and sub-acute hospitals in New South Wales, Australia. Patients with incontinence, either with or without IAD, were invited to participate. In cases where interviewing patients was not possible, their family caregivers were offered the opportunity to take part. Data collection was carried out through semi-structured interviews.

Results

The study included 41 patients (10 of whom had IAD) and three caregivers. [3] Analysis revealed three main themes regarding the experience of incontinence: ‘incontinence impacts every part of my daily life,’ ‘concealing and hiding the condition,’ and ‘believing it’s irreversible.’ Incontinence was often perceived as a natural part of aging, met with acceptance and resilience. Participants managed the condition independently, but it was seen as a disruptive force, leading to feelings of anxiety, embarrassment, and shame. Many reported enduring these challenges in silence. Knowledge of IAD was minimal among participants. The experience of IAD was described under the theme ‘intense discomfort and a yearning for relief,’ with participants detailing the painful, itchy, and burning sensations that caused significant distress.

Conclusions

There is a clear need for enhanced education and support for individuals with incontinence, focusing on reducing stigma and improving management strategies. Additionally, healthcare professionals must educate patients about IAD risks and preventive measures to alleviate the condition’s impact on quality of life.

COI: I have no CIO to declare

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Terminal Ulcers in End-of-Life care: a Scoping Review

Ilaria Saguatti (1), Romina Baldessarini (2), Dalia Caleffi (3), Domenico Cannizzaro (4), Paola Ferri (5)

1. *Clinical and Experimental Medicine PhD Program, Department of Biomedical, Metabolic and Neural Sciences, University of Modena and Reggio Emilia, Modena, Italy*
2. *CRA Luisa Guidotti, Fabbrico, Reggio Emilia, Italy*
3. *Clinical and Experimental Medicine PhD Program, Department of Biomedical, Metabolic and Neural Sciences, University of Modena and Reggio Emilia, Modena, Italy*
4. *Clinical and Experimental Medicine PhD Program, Department of Biomedical, Metabolic and Neural Sciences, University of Modena and Reggio Emilia, Modena, Italy*
5. *Department of Biomedical, Metabolic and Neural Sciences, University of Modena and Reggio Emilia, 41121 Modena, Italy*

Introduction

Terminal ulcers represent a significant issue in the context of end-of-life care, yet there is still limited understanding regarding their causes, risk factors, and management strategies. It is crucial to deepen our knowledge of these ulcers to ensure the well-being and dignity of people at such a vulnerable time. This work aims to shed light on what is currently known about this skin alteration, which is too often overlooked and misclassified as other types of lesions, particularly pressure injuries [1]. Specifically, the researchers want to highlight the issues of definition, assessment, treatment and aetiology of these kind of ulcer, for all patients in all healthcare settings.

Methods

To achieve this goal a scoping review was carried out. Following the framework provided by the Joanna Briggs Institute [2], we systematically searched PubMed, Scopus, Cinahl, Embase, Google Scholar, ProQuest databases, up to March 2025, with no time or methodological limitations. The language included was English. The search terms used were palliative wound care, pressure ulcer, skin ulcer, terminal ulcer, Kennedy terminal ulcer, Trombley-Brennan terminal ulcer. Initial searches identified 930 sources, 26 of which were included in this scoping review.

Results

It has been found that, despite some areas of agreement, such as the inevitability of terminal ulcers [3] and their main characteristics, there remains several controversial issues that can be challenging for both healthcare professionals and their patients and families. For example, there is still no definitive answer to the aetiology of these lesions.

Furthermore, several interesting points have been identified that need to be focused on in order to provide the best possible care for people affected by this kind of skin alteration. These include health professional education, improvement of therapeutic education strategies and the development of appropriate tools and protocols.

Conclusions

This scoping review helps to map our knowledge on this topic. Further research could focus on the training of health professionals in therapeutic education and communication skills. Moreover, interesting points to be developed concern the early identification and the prevention of this kind of ulcer.

Conflict of Interest

The authors declare that they have no conflicts of interest.

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RELIABILITY, ACCEPTABILITY AND FEASIBILITY OF AN END-OF-LIFE WOUND ASSESSMENT TOOL: A STUDY PROTOCOL

Sharon Latimer (1), Brigid M. Gillespie (1, 2)

1. NHMRC CRE in Wiser Wound Care & School of Nursing and Midwifery, Griffith University, Australia; 2. Nursing and Midwifery Education and Research Unit, Gold Coast University Hospital, Australia

Introduction

Despite pressure injury (PI) prevention strategies, some dying patients develop unavoidable PIs such as end-stage skin failure and Kennedy terminal ulcers [1]. These end-of-life (EOL) wounds develop in the absence of pressure in the months, weeks, days, or hours before death [1]. EOL wounds and PIs are similar in appearance, making it difficult for clinicians to distinguish between them yet, their management differs. EOL wounds are hard to heal, with aggressive wound treatment prolonging patient pain and suffering, so instead, comfort care and exudate management are recommended [1]. Complicating this issue, some dying patients can concurrently develop an EOL wound and a PI. To help clinicians identify EOL wounds, we developed a wound assessment tool for use in dying adult patients [2]. This study protocol outlines the processes we will use to determine the consistency of raters using the EOL wound assessment tool and nurses' perceptions of the acceptability and feasibility of implementing the tool in practice.

Methods

This two-phased, multi-method study will be conducted in three Australian palliative care units. Phase one will be a prospective observational study that will test the inter- and intra-(test-retest) reliability of the EOL wound assessment tool between and among trained raters. Over a 6-month period, we will recruit 100 dying patients with a new PI and gather quantitative data on skin blanching, PI prevention strategies, and digital wound photographs. Using the tool, two raters will independently examine participants' 'new PI' and determine if it is an EOL wound (Yes/No). Three months following data collection, each rater will review the blinded clinical data and digital wound photographs, and using the tool, determine if the injury is an EOL wound (Yes/No). Cohen's Kappa will be calculated to assess inter- and intra-rater reliability, with ≥ 0.8 or $\geq 80\%$ considered good agreement.

Phase Two, which has two parts, will examine nurses' perception of the acceptability and feasibility of implementing the EOL wound assessment tool into practice. First, a simulated clinical practice education session on the EOL wound assessment tool will be delivered to nurses at the recruited sites. Immediately following this session, we will recruit 60 nurses and, using the Theoretical Framework of Acceptability survey, we will examine their perception of the tool's acceptability regarding affective attitude, burden, ethicality, intervention coherence, opportunity costs, perceived effectiveness, and self-efficacy. The data will be descriptively analysed. Next, we will conduct semi-structured interviews with 30 nurses regarding the feasibility of implementing the EOL wound assessment tool in their unit, including barriers and facilitators. Using maximum variation, we will purposively sample nurses, ensuring a broad range of perceptions are gathered based on study site, gender, age, years of clinical experience, and role. The qualitative data will be inductively analysed using content analysis.

Conclusions

EOL wounds and PI have significant implications for patient care and healthcare resources. Having a reliable and acceptable assessment tool will help clinicians to identify EOL wounds and may result in the delivery of palliative wound care management strategies aimed at alleviating pain and suffering.

Conflict of Interest

Nil to declare

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OLDER PATIENTS' PERCEPTIONS ' OF PARTICIPATION IN PRESSURE INJURY PREVENTION: A CROSS-SECTIONAL STUDY

Jodie Deakin (1 & 3), Sharon Latimer (1), Rachel Walker (1 & 4) Brigid Gillespie (1 & 2)

1. NHMRC Centre of Research Excellence in Wiser Wounds Care & School of Nursing and Midwifery, Griffith University, Australia; 2. Nursing Research, Clinical Governance, Education and Research, Gold Coast Hospital and Health Service, Australia; 3. Southern Cross University, Australia; 4. James Cook University, Australia

Introduction

Older patients over aged 65 face increased risk of hospital-acquired pressure injury (HAPI), leading to personal, psychological [1] and financial burden, with close to 60,000 early deaths worldwide annually [2]. Unique risk factors for the over-65 population include impaired mobility, compromised skin integrity, fragility, comorbidities and frailty [2]. Understanding patient perceptions of their role in their own pressure injury prevention (PIP) care during hospitalisation is essential given the delivery rates of preventative PIP education vary between 1.4-37% [2]. However, education delivery rates to the over 65 population remains unclear. This study aims to understand the perceptions of patients aged ≤ 65 years regarding their participation in their PIP care during hospitalisation.

Methods

Our sample comprised of 157 participants. This cross-sectional sub-study was drawn from a larger multi-site randomised control trial (ACTRESN12619000763145). Participants were recruited between July 2020 and August 2023 from 20 surgical and medical wards at two large hospitals in Australia. Participants were over 65 years and assessed 'at-risk' of PI using the risk score* of ≥ 10 . The validated Patient Participation in Pressure Injury Prevention (PPPIP) scale [5] was administered to participants who were randomly assigned to the control group across both sites. Control group participants received standard care and patient education. The validated scale measures patients' PIP participation across seven scale items. Based on a four-point response scale (1=strongly disagree to 4=strongly agree), higher scores (7-28) indicate increased patient participation in PIP. The PPPIP was administered to participants within 72 hours of admission. Clinical and demographic data were also collected.

Results

In total, 157 participants (Hospital A; $n=79$ (50.3%), Hospital B; $n=78$ (49.7%) were recruited with an average age of 73.0 (SD 6.2) years; with more males $n=100$ (63.7%) than females. There were more surgical participants $n=105$ (66.9%), than medical, with a mean Waterlow © risk score of 16 (SD 3.5) considered "at high-risk". The mean number of co-morbidities was 2.2 (SD 1.3), and participants' hospital length of stay was 7.3 (SD 13.1) days. The mean PPPIP scale score across the sample was 21.4 (SD 4.5) and scores ranged from 10-28, indicating patients were satisfied with their PIP participation.

Conclusions

Our study highlights adults over the age of 65 are satisfied with their participation in PIP during hospitalisation. Whilst patients believe the PIP care received was right for them, further research is needed to understand how active patients over age 65 years are in participating in their PIP care on or soon after admission for this vulnerable population.

Conflict of Interest

There are no conflicts of interest to declare.

*Waterlow ©

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NATIONAL MULTICENTER STUDY ON PRESSURE ULCERS IN SOCIAL AND HEALTH CARE IN FINLAND

Laura Puikko (1), Tarja Tervo-Heikkinen (2), Asta Heikkilä (3), Sami Sneck (4), Anne Kuusisto (5), Kristiina Junttila (6) on behalf of the national research consortium

The Wellbeing Services Counties of 1. Central Finland, Finland; 2. North Savo, Finland; 3. Southwest Finland, Finland, 4. North Ostrobothnia, Finland, 5 Satakunta, Finland, 6. Helsinki University and Helsinki University Hospital, Finland

Introduction

Pressure ulcers are a significant healthcare issue, causing patient suffering and high costs. They increase infections, prolong length of treatment periods, and reduce quality of life. Preventing pressure ulcers costs much less than treating them. The global prevalence of pressure ulcers varies in different care settings being 12.8% in acute care, 11.6% in assisted living, and 26% in home care. In Finland, the prevalence ranges from 5–25% depending on care context and patient population, costing the healthcare system 460-920 million euros annually. Prevention relies on early identification of at-risk individuals and systematic skin assessments. According to earlier studies, pressure ulcer risk and skin condition assessments are performed only occasionally. Improving prevention and treatment of pressure ulcers requires comprehensive data collection of risk assessment, prevalence, and preventive practices, ultimately enhancing patient care and safety. The purpose of this national multicenter study is to provide information on a) the implementation of skin condition and pressure ulcer risk assessment, b) interventions used to prevent pressure ulcers, c) the occurrence of pressure ulcers during care provided by a health and social care professional, and d) factors related to issues a-c. The aim is to provide information to ensure the quality and safety of national health and social care services and to serve as a basis for the development of nursing care quality.

Methods

After ethical approval and adequate study permissions, the data were collected from adult participants in March 2025. Data collection covered 21 out of 23 Finnish wellbeing services counties and various care environments from several medical specialties in hospitals' inpatient care to home care and assisted living, excluding acute psychiatric care. In all, data included 643 units with 5184 participants.

During the observation, the skin condition of the participants was assessed, and the stages of the observed pressure ulcers were documented using the international guideline [1]. Information on pressure ulcers was compiled on their location and origin. Background information included, for example, age, gender, BMI, diagnoses that increase the risk of pressure ulcers, and preventive interventions. Background information on the participating units was also surveyed, for example, the number of professionals participating in care. The research data will be analyzed using descriptive and applicable multivariate methods.

Results

Preliminary results on pressure ulcer prevalence in various care environments will be presented at the EPUAP Annual Meeting.

Conclusions

To our knowledge, this is the first nationwide prevalence study on pressure ulcers in Finland which covers various care environments both in health and social care sectors.

Conflict of Interest

None

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‘What is the impact of care bundles on the prevalence or incidence of pressure ulcers among at-risk adults in the acute care setting? A Systematic Review’

A Curtis^{1,2}, R Derwin³, G Milne², AM Connor², L Nugent¹, Z Moore¹

¹ School of Nursing & Midwifery, RCSI, University of Medicine and Health Sciences, Dublin, IE

² Maternity Unit, Our Lady of Lourdes Hospital, Drogheda, Co. Louth, IE

³ School of Nursing & Midwifery, Trinity College, Dublin, IE

Introduction

A pressure ulcer is an injury to the skin and underlying tissues caused by pressure, shear or a combination of the two ⁽¹⁾. In Europe, the mean prevalence rate of pressure ulcer is 10.8%, in Ireland it is less than 12% ⁽²⁾. Care bundles are associated with a reduction in pressure ulcer rates ⁽³⁾. Pressure ulcer prevention is an essential value for the overall safety of patients in acute care ⁽⁴⁾.

Methods

Using systematic review methodology, original research studies written in English were included employing pre and post studies, quality improvement initiatives or projects, RCTs and experimental studies. Data was extracted using a pre-designed data extraction tool and quality appraisal was undertaken using the Evidence-based librarianship (EBL) tool, where appropriate, meta-analysis was undertaken using RevMan. The study protocol was pre-registered with the International Prospective Register of Systematic Reviews (PROSPERO CRD42023442711).

Results

Following the search, 628 records were returned, of which 25 met the inclusion criteria. The studies were conducted in a variety of acute healthcare settings. Of the included studies, 16 presented data on incidence and 12 presented data on prevalence of pressure ulcers post-implementation of a care bundle. A meta-analysis of 10 studies discussing incidence indicates the RR of PU is 0.40 (95% CI: 0.21 to 0.78; $p=0.007$) supporting the use of a care bundle. A meta-analysis of 7 studies discussing prevalence indicates the RR of PU is 0.34 (95% CI: 0.21-0.56; $p=0.0001$) demonstrating the reduction in the RR of PU development in favour of the care bundle group.

Conclusions

A variety of care bundle elements were found in the studies. Although results indicated the use of a care bundle was advantageous in preventing a pressure ulcer in the acute care setting, it was unclear which of these elements were most effective.

Conflict of Interest

No conflict of interest to declare.

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A STUDY ON THE USABILITY AND EFFECTIVENESS OF THE PITA QUICK GUIDE FOR MANAGING PRESSURE INJURIES ACROSS AUSTRALIAN HEALTHCARE SETTINGS

Michelle Barakat-Johnson (1,2,3), Hayley Ryan (4), Catherine Leahy (5,6) John Stephenson (2,3) Ann-Maree Dunk (7), Sara Sage (8) Keryln Carville (9) Fiona Coyer (2,10)

1. Sydney Local Health District 2. University of Sydney, Australia; 3. University of Huddersfield, UK; 4. Wound Rescue 5. Western NSW Local Health District 6. Charles Sturt University 7. University of Canberra, ACT health 8. Royal Melbourne Hospital 9. Silverchain 10. Queensland University, Australia

Introduction:

Effective management of pressure injuries is crucial in reducing complications, enhancing patient outcomes, and minimising healthcare costs. The PITA Quick Guide was created by National PI Australian experts to assist clinicians with evidence-based approaches for pressure injury management. This study evaluates the guide's usability and practicality across different healthcare settings, providing insights into its effectiveness in clinical practice.

Methods:

A post-test survey was conducted with a convenience sample (N=398) of healthcare professionals from three healthcare settings across metropolitan, regional, and rural Australia; Acute, Medical and Residential Aged Care Facilities. The survey, developed by national pressure injury experts, included six Likert-scale items assessing ease of use, effectiveness, and integration with workflows. Data were analysed using SPSS.

Results:

A total of 302 responses were received (76% response rate). Clinicians expressed overwhelmingly positive perceptions, with over 95% agreeing or strongly agreeing on the guide's usability and effectiveness. No respondents strongly disagreed with any item. Residential aged care and rural clinicians rated the tool slightly higher than their acute and medical counterparts.

Conclusions:

The PITA Quick Guide was well-received across all settings, demonstrating strong potential to enhance evidence-based pressure injury management.

Conflict of Interest

This project received an educational grant from Molnlycke Healthcare

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WHAT ARE THE PSYCHOMETRIC PROPERTIES OF THE TOOLS MEASURING OUTCOMES OF EDUCATIONAL INTERVENTIONS ON PRESSURE ULCER PREVENTION? SYSTEMATIC REVIEW

Kelly-Anne O'Callaghan (1), Declan Patton (1), Zena Moore (1), Chanel Watson (1), Tom O'Connor (1)

1. Royal College of Surgeons, School of Nursing and Midwifery, Ireland

Introduction

Given the significant prevalence and incidence of pressure ulcers (PU) and their detrimental effects, the implementation of PU prevention education is fundamental for all involved in the care of the at "risk" patient population (1). To assess the outcome of the educational programmes and determine their impact, the use of a validated tool is required to assess outcomes such as knowledge, attitudes and behaviors towards PU prevention (2). An increased focus in health care on the development of instruments and psychometric testing, has allowed both researchers and educators to assess and measure the challenges in a valid and reliable way (3).

The aim of the systematic review (SR) was to examine the psychometric properties in current tools/instruments used to measure outcomes of educational interventions on PU prevention

Methods

The PRISMA guidelines guided the systematic review. The search was conducted in March 2025 using, Cochrane, Ovid Medline, EMBASE, EBSCO CINAHL Plus, Scopus and Google scholar. The search provided a result of 147 records, with 16 of those included in the review. Data was extracted by 2 authors using a pre-designed data extraction table. Quality appraisal was undertaken using the Evidence Based Librarianship (EBL) Tool.

The review was registered with Prospero ID: CRD42023444857.

Results

The psychometric properties of the tools were investigated by testing validity and reliability scores. 4 tests were identified throughout the review. All 16 tools included, measured various constructs and some measuring multiple within a single tool. 8 constructs were identified throughout the review, with Knowledge being the most popular. All tools showed acceptable psychometric properties that can be used in measuring outcomes in future PU prevention education, practice and research.

Conclusions

To assess PU prevention educational programmes a validated tool such as those included in the review are essential to measure the proposed outcomes. The variation of tests, tools items/phases and sample size does not allow for a precise or clear evidence or comparison. None the less these findings serve as a platform for future research to support the need for standardisation of psychometric testing and can potentially optimise PU prevention education. The variation in constructs measured in each tool included in the SR highlights the need for further research to develop a core outcome set for PU education research for health care professionals.



Conflict of Interest

No conflicts of interest to declare.

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NURSES' KNOWLEDGE ON PRESSURE ULCERS AND THEIR PREVENTION – A CROSS-SECTIONAL STUDY AT A UNIVERSITY HOSPITAL

Hulda Margrét Valgarðsdóttir (1), Guðbjörg Pálsdóttir (1,2), Guðný Einarsdóttir (1), Ólafur G. Skúlason (1), Brynja Ingadóttir (1,2)

1. Landspítali University Hospital, Reykjavik, Iceland; 2. University of Iceland, Reykjavik, Iceland

Introduction

Pressure ulcers (PUs) present a significant challenge within nursing practice, leading to patient suffering and substantial costs for the healthcare system. Most PU's are preventable, making their prevention a key responsibility for registered and practice nurses working in hospitals. At Iceland's largest hospital, which serves the entire nation, an improvement initiative aimed at pressure ulcer prevention began in 2020, following the 2019 clinical practice guidelines¹. A clear protocol was established, and in-service education, symposium, and reminders were integral components of the initiative. One of the projects launched in 2022 was the implementation of the SSKIN care bundle in somatic wards for adults. As part of this implementation, all healthcare staff within each ward were expected to engage with educational material regarding pressure ulcers and the care bundle. While it is recognized that nurses' knowledge of PU prevention is an essential prerequisite for practice changes, it is equally important to assess their current level of knowledge on the subject.

Methods

This cross-sectional survey study included all nurses and nursing students employed at an Icelandic university hospital. Knowledge of pressure ulcers and their prevention was assessed using the Pressure Ulcer Knowledge Assessment Tool (PUKAT 2.0), which consists of 24 multiple-choice items with one correct answer each and six subscales. Possible total scores range from 0 to 100 with a score of 60 deemed satisfactory. Data was analyzed using descriptive statistics and parametric tests.

Results

The participants (N=450) were registered nurses (72%), practice nurses (22%) and students (6%). They had long working experience (55% over 10 years) and 58% had postgraduate education. Most participants (50%) worked in general wards but 23% in operating rooms, recovery or intensive care units. A total of 84% of participants worked with direct patient care and 81% said that PU prevention is part of their practice, thereof part of daily practice for 54%.

Mean knowledge score was 42 (SD 14,3, range 0-92) and 10% of participants achieved a satisfactory score. The best knowledge was on risk assessment (65% answered correctly) but knowledge on prevention was the lowest (28% scored correctly). Registered nurses had better knowledge than practice nurses, and nurses with a master's degree in nursing had more knowledge than those with other or no postgraduate education ($p<0.05$). Data analysis is not completed, and more detailed results will be presented.

Conclusions

Despite a comprehensive and ongoing awareness campaign within the hospital in recent years, the knowledge of nurses and nursing students regarding pressure ulcers and their prevention remains



insufficient. These results highlight opportunities to enhance education on pressure ulcers and their prevention for nurses within the hospital.

Conflict of Interest

No conflicts of interest

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PRESSURE INJURY PREVENTION AT THE CLEVELAND CLINIC IN ABU DHABI: KEEPING AHEAD OF THE CURVE

James Lowell, Amani Albsoul, Michelle Ferraris
Cleveland Clinic Abu Dhabi, United Arab Emirates

Introduction

Pressure injuries (PI) are linked to delayed recovery, increased length of hospitalisation and impaired quality of life, and therefore pose a major and persistent health concern [1]. Older adults, hospitalised children, post-surgical patients, and those with limited mobility are at a higher risk of skin breakdown [1,2]. Nonetheless, PI development in these patient groups is considered largely preventable [2,3] and programmes aimed at decreasing PI rates are urgently needed across healthcare facilities [4]. Recent reports from Middle Eastern countries have confirmed the benefits of preventative strategies, in particular multi-faceted care bundles, for patients as well as the healthcare systems [5]. Herein, we present the outcomes of a nurse-led quality improvement programme for PI detection, treatment and prevention at the Cleveland Clinic Abu Dhabi (CCAD) in the United Arab Emirates (UAE).

Methods

CCAD is an extension of the USA-based Cleveland Clinic's Model of Care, brought to Abu Dhabi by M42, a leading global healthcare organisation. In 2015, the Wound Care team identified a need to harmonise training and best practice amongst the diverse nursing staff to ensure a uniform standard of care in the management of skin injuries. Initially formulated as a care bundle, the programme evolved over the following years to address the specific needs of the CCAD patients and staff. Key elements of the intervention included an innovative pressure redistribution protocol for haemodynamically unstable patients, a “reactive redness” protocol to facilitate early detection of PI damage in patients with dark skin tones, as well as a Skin Link Nurse accredited programme to upskill primary nurses. The team incorporated the use of a five-layer prophylactic foam, with a silicone adhesive-coated contact layer that minimises trauma and pain on removal, to protect skin areas under medical devices and bony prominences such as the sacrum.

Results

An overall trend towards decreased incidence of Stage 2 or worse PI was registered from November 2021 to November 2024 (Figure 1A). A marked reduction in Stage 2 or worse PI rates was observed after the implementation of a targeted educational component in January 2023, which focused on patient turns (Figure 1B). Early detection of skin changes through skin assessments and/or palpation, with prompt repositioning of the patient to mitigate the risk of injury, was a key factor for success. The most recent (March 2025) assessment of the Skin Link educational programme showed that 86% of participants had attended ≥ 5 sessions (“prevalence days”) in 2024, and 67% strongly agreed that regular evaluations were essential.

Conclusions

The results of the nurse-led programme implemented at CCAD showcase the importance of early detection and intervention using standardised engagement tools, targeted protocols and innovative products, in improving patients’ skin outcomes and practices within the nursing team. Future directions of development involve the use of objective measurements and tools to drive continuous progress in PI prevention and elevate the overall standard of care at our facility.

Conflict of Interest

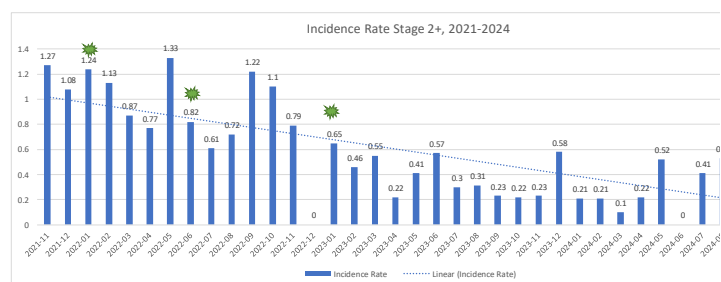
Medical writing support for this abstract was funded by Mölnlycke Health Care. The authors report no other conflicts of interest.

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Figure 1. Outcomes of the quality improvement programme at M42-CCAD

A. Incidence of Stage 2+ PI per 1,000 bed days, November 2021 to November 2024



B. Key components of the improvement programme highlighted in (A)

Column1	Column2	Column3	Column4	Column5	Column6

THE IMPACT OF EDUCATION ON PREVENTING HOSPITAL-ACQUIRED PRESSURE INJURIES

Ali Alibrahim

Ministry of Health, Jizan Health Cluster , King Fahd Central Hospital, Saudi Arabia

Introduction

Hospital-acquired pressure injuries (HAPIs) represent a significant concern in healthcare settings, leading to increased morbidity, prolonged hospital stays, and higher healthcare costs. Prevention of these injuries is a key quality indicator in patient safety. One of the most effective strategies for reducing HAPI incidence is staff education. This study explores the impact of targeted educational programs on the knowledge, practices, and outcomes related to pressure injury prevention among healthcare professionals.

Methods

A quasi-experimental study was conducted in a tertiary care hospital over a six-month period. Nursing staff from medical and surgical units were enrolled and divided into two groups: an intervention group that received structured education on pressure injury prevention, and a control group that followed routine practices. The educational intervention included workshops, hands-on demonstrations, visual aids, and online modules focusing on risk assessment, skin inspection, repositioning techniques, and appropriate use of support surfaces. The Braden Scale was used to assess patient risk, and the incidence of HAPIs was recorded before and after the intervention. Data were analyzed using descriptive and inferential statistics.

Results

The intervention group showed a significant improvement in knowledge scores post-education, with a 35% increase compared to baseline. The incidence of hospital-acquired pressure injuries decreased by 45% in the intervention units, while no significant change was observed in the control group. Improved documentation practices, early identification of at-risk patients, and adherence to repositioning protocols were noted among educated staff. Staff feedback highlighted increased confidence and awareness following the training sessions.

Conclusions

Education has a substantial impact on the prevention of hospital-acquired pressure injuries. Structured and continuous training programs enhance staff competencies, promote adherence to evidence-based practices, and lead to improved patient outcomes. Incorporating pressure injury education into standard orientation, ongoing in-service training, and quality improvement initiatives is essential to sustain low HAPI rates and foster a culture of safety in healthcare facilities.

Conflict of Interest

The authors declare no conflicts of interest and no funding was received from industry sources for this study.

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EARLY MOBILISATION AFTER SURGERY: DECREASE OF PRESSURE ULCERS AFTER IMPLEMENTATION OF THE 30-30-3 RULE

Annelies de Graaf (1), Inge Fourneau (2), Kris Bernaerts (3), Karel Op de Beeck (4)

1. CNS Woundmanagement, co-Chairman PU task force, RN, M.Sc., UZ Leuven, Belgium 2. Vascular Surgeon, co-Chairman PU task force, MD, PhD, UZ Leuven, Belgium 3. CNS Woundmanagement, RN, M.Sc. UZ Leuven, Belgium. 4. Nursing Manager, RN, M.Sc. UZ Leuven, Belgium

Introduction

Pressure ulcers (PUs) are a persistent issue at our hospital, with incidence rates of up to 7% hospital wide. Our patient population is at high risk, with rates ranging from 33% to 95%, depending on the unit. Our hospital-wide preventive protocol, focusing on repositioning patients every 3 hours, has been in place since 2017. In May 2024, we sought to understand the high incidence of PUs in elective surgery despite this protocol. Outdated, non-evidence-based practices, flap surgery habits, and concerns about patient instability in ICU were key issues preventing patients from being repositioned for up to five days post-operatively. Based on the existing literature emphasizing safe early mobilization protocols, we looked to design and implement a new protocol [1, 2].

Methods

We conducted an in-depth root cause analysis in high-incidence units, including cardiac and vascular surgery, and units with a lot of flap surgery, as well as the respective operating rooms, recovery ward, and intensive care units. We identified three key risk factors for the development of PUs after surgery: 1. Insufficient pre-operative risk identification; 2. Lack of a standardized patient positioning protocol in the operating room; 3. The use of two non-evidence-based protocols that stated: "Do not turn a patient with a flap in the neck region" and "Do not turn a patient if unstable," without clear clinical guidelines or parameters. To address these issues, we developed a new interdisciplinary protocol based on EPUAP guidelines, focusing on early mobilization tailored to individual patient needs including 5 key components: 1. Correct pre-operative and daily identification of patients at risk; 2. Standardization of patient positioning protocols in the operating room; 3. Increased attention to post-operative inspection of sacral and heel sites for PUs; 4. The 30-30-3 rule for post-operative mobilization: Mobilization begins within 3 hours of admission for all patients, using a semi-Fowler and 30° lateral position, every 3 hours, unless vital parameters are unstable, with clear clinical thresholds; 5. After flap surgery, patients are mobilized respecting a neutral position for the flap, with stable doppler signals.

Results

Following implementation of the new protocol, we observed an improved identification of at-risk patients in the respective units. Specifically, we recorded: A reduction in false positive risk assessments (from 74% to 26%); An increase in the accurate identification of at risk (from 20% to 28%) and at high risk patients (from 85% to 96%); A 70% reduction in costs associated with alternating mattresses. ICU wards started to adopt early mobilization, with significant improvement in repositioning every 3 hours. Notably, the surgical cardiac ICU showed the greatest change, with correct repositioning rates increasing from 30% to 70%. Our incidence rate, which had steeply increased to 7% by June 2024 (up from 4% in 2023), dropped to below 4% after these changes were implemented.

Conclusions

The rapid implementation of these changes has significantly impacted the outcome of care, and we plan to continue this process hospital-wide. Our current goal is to reduce the incidence rate to under 2%, which would be below the Flemish benchmark.

Conflict of Interest

I don't have any conflict of interest.

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MULTIMODAL SPECTRAL ANALYSIS OF SLOUGH IN CHRONIC WOUNDS

Assem Nurlybayeva (1), Philippe Moguelet (2), Ellie Tang (2), Emmanuel Letavernier (2), Ariane Deniset-Besseau (1), Hester Colboc (3)

1. Institute of Physical Chemistry, Paris-Saclay University, Orsay, France; 2. Tenon Hospital, APHP, Sorbonne University, Paris, France; 3. Rothschild Hospital, APHP, Sorbonne University, Paris, France

Introduction

Slough is a common feature of chronic wounds that refers to devitalized tissue and a possible barrier for the progression of healing [1]. Its fundamental understanding may contribute to improvement of wound debridement and treatment strategies. Therefore, main objective of the study is to characterize structure and chemical composition of slough through multimodal and multiscale analysis.

Methods

Wound debridement samples were collected from an initial cohort of 14 patients with various chronic wounds. They were grouped in two categories based on adherence of slough to the wound bed: 7 non-adherent and 7 adherent. Histological staining and scanning electron microscopy (SEM) provide insights into tissue structure, while complementary use of infrared (IR) micro-spectroscopy and two-photon fluorescence second-harmonic generation (SHG) (multiphoton) microscopy allow chemical speciation.

Results

Non-adherent and adherent slough demonstrate differences in both tissue structure and chemical composition. In case of non-adherent slough, there is a characteristic “honeycomb” fibrous protein matrix, which is likely to be fibrin (Figure 1.A). On the other hand, adherent slough includes both fibrous matrix and necrotic dermis, with sophisticated organization of the latter resembling collagen fibers (Figure 1.B). This is supported by multiphoton microscopy, where SHG signal characteristic of collagen is detected in adherent slough. Both types of slough display presence of bacterial aggregations and immune response cells. Detection of biofilm in these samples challenges modern clinical indicators for differentiation of slough and wound biofilm [2].

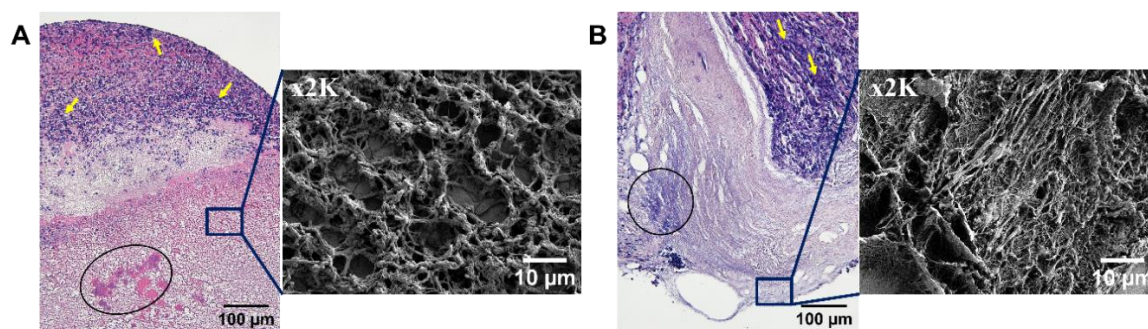


Figure 1. Hematoxylin & eosin staining and SEM images of A) non-adherent slough and B) adherent slough representative samples. H&E staining illustrates highly inflammatory nature of slough: neutrophils (yellow arrows) and bacterial aggregations (black circles).

Conclusions

Multimodal and multiscale analysis of slough has demonstrated promising results for fundamental understanding of chronic wound environment. This has been a first attempt for complementary use of optical, IR, SHG and electron microscopy on slough samples, opening a new direction for non-destructive, spatially resolved chemical characterization of biological tissues.

Conflict of Interest

Master 2 internship of Assem Nurlybayeva on this project has been funded by Urgo Laboratory.

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COMPARISON OF NATIONAL SYSTEMATIC PRESSURE ULCER PREVALENCE DATA VERSUS RESEARCH DATA IN FINLAND

Tarja Tervo-Heikkinen (1), Anniina Heikkilä (2), Terhi Lemetti (2), Kristiina Junttila (2), on behalf of the research group

1. Wellbeing Services County of North Savo and Kuopio University Hospital, Finland; 2. University of Helsinki and Helsinki University Hospital, Finland

Introduction

Globally, one goal is to systematically collect data on pressure ulcers to improve the quality of patient care [1, 2]. Mainly two data collection methods are used: scientific cross-sectional studies on pressure ulcers and continuous, systematic data collection for quality registers. Both methods are important because: 1) data collected for research purposes provides scientific evidence for pressure ulcer prevention and 2) systematic data collection for quality purposes raises awareness of pressure ulcers prevalence and improves pressure ulcer prevention. The aim of this study is to explore the strengths and limitations of pressure ulcer prevalence registry data from the years 2021-2022 compared to the pressure ulcer study conducted in 2018-2019 [3]. The research questions are: 1) How do the research datasets and pressure ulcer prevalence differ from each other? 2) Are there any differences in the prevalence of pressure ulcers between different materials?

Methods

Comparison of cross-sectional study conducted in 2018 and 2019 [3], and monthly conducted prevalence data for 2021-2022 [4]. The data were compared by unit type. Descriptive statistics were applied.

Results

In 2018-2019 research the number of patients at the time of the study was 10,743. Of them, 5754 (54 %) gave their informant consent to the study. While in the systematic prevalence, there were 43,443 patients and 38,378 (88 %) of them were assessed. The pressure ulcer prevalence coverage was 34 % higher in a systematic prevalence than in a research study. Of course, the number of reported pressure ulcers was also higher because data was collected monthly. A clear improvement in the prevalence of patients with HAPI was observed. In the study, their share was 10%, while in the prevalence data, the share of patients with HAPI was 4%.

Conclusions

There is a place for both research and ongoing follow-up. However, attention should be paid to the benefits of regular prevalences in the development of activities through monitoring. In a research study, the informant consent is required from each patient which reduces the number of participants in the study. On the other hand, the anonymous data collected as prevalence is much more limited than the data collected through research. For example, it is not possible to compile information on other factors related to the patient's condition in the prevalence.

Conflict of Interest

The authors declare no conflicts of interest.

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Impact of a Tissue Viability Ward Round in Critically Ill Patients

I.Pukiova

1. Oxford University Hospitals Foundation Trust and National Institute of Health Research (NIHR), United Kingdom

Introduction

Patients in the Intensive Care Unit (ICU) are four times more likely to develop hospital-acquired pressure injuries (HAPIs) compared to those in non-ICU settings [1] due to the combination of severe acute illnesses and pre-existing conditions which contribute to skin deterioration [2]. Despite pressure ulcer prevention policies being in place in a regional Critical Care Unit (CCU) high case of HAPI are occurring, thus a tissue viability nurse was employed to be part of the critical care team to see if they could reduce the occurrences of HAPIs.

Methods

A pre/post retrospective evaluation of the incidence of HAPI between August 2024 and February 2025. Methods used included controlled medical record analysis of all patients who developed a HAPI, completed questionnaire from registered healthcare professional who work in the CCU and reflective diary notes from tissue viability nurse.

Results

Please insert your text here. 1129 patients were admitted to CCU during the study period, 58 (5.14%) developed a HAPI. Pre-implementation reported HAPIs were 37 (6.15%) and post-implementation reported HAPIs were 21 (3.65%).

Analysis of the questionnaires and reflective diary notes found that all of HCP staff were aware of the tissue viability role and initial thoughts of the role was that it was very helpful. It was felt that HCP are being supported through education and management of complex patients.

Conclusions

This service evaluation shows some early promise that the presence of a tissue viability nurse could help reduce incidence of HAPIs, compliance with unit protocols and increased staff engagement and knowledge. Ongoing evaluation of the role is needed to ascertain if the reduction in HAPIs is maintained.

Conflict of Interest

I have not received any funding from a company to undertake this service evaluation.

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PRESSURE INJURIES IN INTER-HOSPITAL TRANSPORT – RISK ASSESSMENT AND INFORMATION TRANSFER BETWEEN HOSPITALS

Miska Vaara (1), Jukka Etelä (1), Sakari Salo (2), Jaana Kotila (3)

1. HUS Helsinki University Hospital: Medical Transport, Finland; 2. Defence Forces: Center For Military Medicine, Finland; 3. HUS Helsinki University Hospital: Nursing Management, Finland

Introduction

In this study we assessed the risk of inter-hospital ambulance patients for pressure injuries (PIs). We also wanted to know whether the receiving units were informed of the patient's risk for the PIs. We observed if the receiving unit had reserved a special mattress for patients with an elevated risk for PIs.

Methods

Ambulance crews assessed patients' risk for PIs according to Prevent Pressure Injuries in Ambulance – operating model, asked whether the unit was aware of patient's elevated risk for PIs and observed if the mattress reserved for the patient was motorized mattress or at least 14 cm thick.

An informed consent was asked from the patient or his/her relative. The study was permitted by the local hospital district's permitting authority (HUS/247/2020). Ethical approval was provided by the local ethics committee (HUS/1706/2020).

Results

158 patients were met, of which 101 were included in this study. Patients were excluded if informed consent was not given. Sometimes it was impossible or unethical to perform the research with very urgent or dying patients.

79 patients were transported with BLS crew, 29 with ALS crew. Once a physician and once a neonatal nurse escorted the patient. 100 patients' age was mentioned varying between 0 and 93 years (average 61.9).

Eight patients were mentioned able to walk. 88 patients were moved on stretchers, two babies in incubator and one in baby basket.

21 patients were admitted to ER, ten to radiological or outpatient units, 35 to wards, 18 to ICUs or intensive surveillance units, eight to coronary catheterization units, five to dialysis, two to ORs and one to endoscopy.

The risk for PIs was assessed for 99 patients, being high for 10, moderate for 52 and low for 37 patients. Four patients had PIs.

The quality of mattress was assessed for 90 patients. 11 mattresses were motorized ones. 23 mattresses were at least 14 cm thick and probably suitable for patients with an elevated risk for PIs.

17 times the receiving units knew about the patient's elevated PI risk, 41 did not. However, the risk assessment models for PIs may differ in various environments.

A probably suitable mattress was reserved for 19 patients with elevated risk for PIs in the receiving units.

Conclusions

Many patients in inter-hospital ambulance transport have elevated risk for PIs. Receiving units do not necessarily get information from the sending units on patients' elevated risk for PIs. Inter-hospital transport ambulances can be used to observe patient admission in various health care units.

Conflict of Interest

No conflicts of interest.



Virtual Technologies in Pressure Ulcer/Injury Assessment

Abdulaziz Binkanan

King Saud Medical City, Ministry of Health, Saudi Arabia

Introduction

Pressure ulcers (PUs) are a major healthcare burden, causing significant morbidity and mortality. Accurate assessment is crucial for timely diagnosis and intervention. Virtual technologies offer promising avenues for improving PU assessment, but their effectiveness and impact need further exploration. This narrative review aims to synthesize current research on virtual technologies for PU assessment, focusing on their potential benefits, limitations, and future direction.

Methods

We searched PubMed, EMBASE, CINAHL, and Cochrane Library from January 2010 to January 2024 using relevant keywords. Studies investigating virtual technologies for PU assessment in adult populations were included. We excluded studies with specific technology limitations or not published in English. We identified studies exploring various virtual technologies, including telemedicine consultations, image analysis tools, and sensor-based monitoring systems.

Results

Telemedicine consultations showed promise for improving accessibility and early diagnosis, particularly in remote settings. Image analysis tools offered potential for objectivity and reduced inter-rater variability in wound characterization and staging. Sensor-based monitoring systems held potential for early detection of pressure complications, but further validation and research are needed. These findings suggest that virtual technologies have the potential to enhance PU assessment across diverse settings. However, challenges regarding technology acceptance, data security, and cost-effectiveness require further consideration. Future research should focus on long-term outcomes, cost-effectiveness evaluation, ethical considerations, and integration into clinical workflows. These findings suggest that virtual technologies have the potential to enhance PU/PI assessment across diverse settings.

Conclusions

Virtual technologies hold promises for revolutionizing PU assessment, potentially leading to improved access, earlier interventions, and better patient outcomes. Further research is crucial to optimize their clinical integration and ensure ethical and effective implementation in routine practice.

Conflict of Interest

No conflict of interest.

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DEVELOPING A SMART MATTRESS FOR PRESSURE ULCER PREVENTION: A LITERATURE REVIEW AND PROOF-OF-CONCEPT

Somtochukwu D. Uche (1), Jacopo Franco (2), Jennifer Olsen (3)

1. Newcastle University, United Kingdom; 2. Newcastle University, United Kingdom; 3. Newcastle University, United Kingdom

Introduction

Pressure ulcers are a major healthcare concern, causing pain, contributing to infection and reducing one's quality of life [1]. They also represent a large economic burden, with treatment costs in the United Kingdom estimated at £1.4 million per day to treat [2]. Up to 70% of long-term care patients are affected [3]. Despite guidelines recommending patient repositioning every 2-4 hours [4], understaffing in hospitals and care homes may hinder its implementation. Pressure relieving mattresses offer a potential solution, but existing evidence for their effectiveness remains inconclusive.

Objective

- To review the available literature on various pressure-relieving mattresses and evaluate their effectiveness in preventing pressure ulcers.
- To develop a low-cost, closed-loop, proof-of-concept prototype that works to minimize pressure ulcer incidence and progression through pressure monitoring and a closed-loop pump system.

Methods

A systematic literature review was conducted across Cochrane, PubMed, and OVID Medline databases, focusing on systematic reviews and randomised controlled trials published within the last 10 years (2014-2024). Inclusion criteria comprised studies on pressure-relieving mattresses used in adult populations. Devices not classified as mattresses and animal studies were excluded. After duplicate removal and screening, 176 articles were included for analysis.

Concurrently, a proof-of-concept smart mattress system was designed using low-cost components. Force-sensing resistors (10 N range) detected localised pressure across PVC air cells. An Arduino microcontroller, motor shield, and 12V air pumps regulated air redistribution in response to high-pressure readings. Silicon tubing facilitated airflow, and a 2 kg dummy weight simulated pressure from anatomical prominences. A fail-safe LED indicator was added to signal when redistribution failed to reduce pressure, enhancing system feedback and safety.

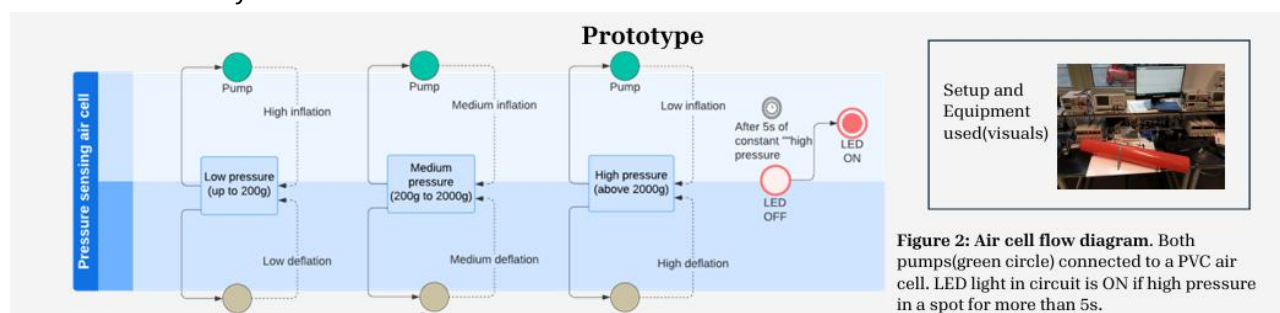


Figure 2: Air cell flow diagram. Both pumps (green circle) connected to a PVC air cell. LED light in circuit is ON if high pressure in a spot for more than 5s.

Results

Alternating pressure mattresses were the most frequently studied, though their superiority over static alternatives remains uncertain. Several prototype systems incorporating sensors have been developed, including TOF (Time-of-Flight) pressure sensors [6] and colour-graded sensor mattresses for bony

prominences [7]. However, no current models utilize force-sensing resistors (FSRs), which were incorporated in our prototype. Preliminary testing demonstrated the feasibility of regulating interface pressures dynamically using the aforementioned affordable materials.

Conclusions and future directions

Our findings suggest that while a variety of pressure-relieving technologies exist, the evidence for clinical efficacy remains limited. The developed prototype demonstrates the potential of a closed-loop feedback system to maintain safe interface pressures using low-cost materials. Further work is needed to validate the clinical impact of pressure reduction threshold and explore the role of additional sensor modalities.

Planned improvements include the integration of solenoid valves for precise airflow control, breathable air cell materials, durable sensor configurations, and potential incorporation of transcutaneous oxygen saturation monitoring. Usability and comfort trials in healthy participants are also proposed.

Conflict of Interest

This work was supported by the Newcastle University Vacation Scholarship Scheme.

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FROM DATA TO DIAGNOSIS: FEASIBILITY OF FORECASTING PRESSURE INJURY RISK

Lindsay Stern (1)(2) and Atena Roshan Fekr (1)(2)

1. Institute of Biomedical Engineering, University of Toronto, Canada; 2. KITE Research Institute, Toronto Rehabilitation Institute – University Health Network, Canada

Introduction

Pressure Injuries (PIs) are prevalent healthcare acquired wounds, affecting 3 million adults within the US and 26% of Canadian patients across all healthcare settings [1] [2]. The development of PIs can increase patients' stay within hospitals, decrease patient quality of life, can be costly to both patients and the healthcare system, and increase the risk of patient mortality [3] [4]. The aim of this study is to identify the prevalence of PIs and key epidemiology factors that can increase the risk of PI development.

Methods

Electronic Health Records (EHRs), captured between 2008-2019, from the Beth Israel Deaconess Medical Center in the US, was made publicly available in collaboration with researchers at the Massachusetts Institute of Technology, published as the MIMIC-IV dataset [5] [6]. This dataset comprises of EHRs from 364,627 patients, aged 18 to 91 years, with a biological sex distribution of 52.65% female and 47.35% male. This analysis focuses on PI prevalence and epidemiology factors that may contribute to an increased risk of PI development.

Results

A total of 1.58% (n = 5,765) were diagnosed with PIs during their stay at this hospital. Stage I PIs accounted for 93.11% of all documented cases, with this value decreasing as PI stages increased. However, 63.57% of patients diagnosed with PIs were confirmed to have at least one Stage II PI and 39.20% had unstageable (very severe) PIs. The sacrum and lower back were the most frequently affected sites, accounting for 40.24% and 37.28% of total cases, respectively. The heel and buttocks were the next most common sites, comprising 15.39% and 13.22% of PIs, respectively. Deep tissue injuries accounted for 8.38% (n = 483) of PIs, with the back, buttock, and heel regions accounting for the primary sites (58.59%).

Male patients comprised a greater proportion of PI cases (52.99%), compared to female patients (47.01%). Additionally, 77.94% of all cases occurred in individuals aged 60 years and older. 33.03% of patients had a BMI between the ranges of 25-29.9 (overweight), closely followed with 32.88% of patients with a BMI of 18.5-24.9 (normal weight). The most common co-morbidities among patients with PIs were diabetes (90.72%), anaemia (85.08%), kidney disease (84.48%), and hypertension (45.86%). Among patients with PIs, 38.11% had a diagnosis of respiratory failure, 16.51% were diagnosed with obesity, and 2.45% had a spinal cord injury. Furthermore 24.22% of patients were diagnosed with depression. Lastly, 52.59% of PI patients were taking anticoagulants (blood thinners medication).

Conclusions

This analysis highlights the importance of investigating retrospective real-world data to evaluate PI prevalence, stage and site risk, and the effects of epidemiological data to help inform and improve clinical outcomes.

Conflict of Interest

The authors declare no conflicts of interest.

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GLOBAL PREVALENCE AND INCIDENCE OF INCONTINENCE-ASSOCIATED DERMATITIS (IAD) IN ADULTS WITH INCONTINENCE

Nils Ohde (1), Ahmed Tafesh (1), Jan Kottner (1)

1. Institute of Clinical Nursing Science - Charité-Universitätsmedizin Berlin, Germany

Introduction

Incontinence-associated dermatitis (IAD) is an inflammatory skin condition that can occur in individuals with incontinence. Clinically, IAD is characterized by erythema and edema of the skin, often accompanied by erosion or serous exudates. Reported prevalence and incidence rates of IAD vary widely depending on the study population and healthcare setting. Systematic summaries investigating the global occurrence of IAD in incontinent adults is lacking. Therefore, this systematic review aims to describe the prevalence and incidence of IAD among incontinent adults in different healthcare settings.

Methods

A systematic review is being conducted following a pre-registered protocol on PROSPERO [1]. It includes studies examining incontinent adults across all healthcare settings. Studies with participants under 18 years of age were excluded. Eligible study designs include descriptive observational studies such as prospective and retrospective cohort studies as well as cross-sectional studies. Reviews, case-control studies, case series, case reports, commentaries, and methodological articles were excluded. Interventional studies were also excluded due to their specific inclusion and exclusion criteria. There were no restrictions regarding setting, time, language, or geographical region. Systematic searches were conducted in the databases MEDLINE and Embase (via Ovid) and CINAHL. All identified studies were screened for eligibility, and both screening and data extraction were independently conducted by two reviewers, with any discrepancies resolved through discussion or, if necessary, by consulting a third reviewer. The methodological quality of the included studies is being assessed using the risk of bias tool for prevalence studies developed by Hoy et al. (2012) [2].

Results

The systematic review includes 30 studies, for which data extraction has been completed. The risk of bias assessment and meta-analyses are currently in progress. The planned meta-analyses will pool prevalence and incidence estimates using a random-effects model. Subgroup analyses will be conducted based on healthcare setting and type of incontinence, depending on the available data. Pooled IAD prevalence and incidence estimates will be available in September 2025 and presented.

Conclusions

By summarizing global evidence on IAD prevalence and incidence, this review supports prioritization and resource allocation for the prevention and treatment of IAD, ultimately enhancing patient care and outcomes.

Conflict of Interest

This research was conducted without external funding or institutional support.

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PATIENTS' EXPERIENCES WITH THE APPLICATION OF MEDICAL ADHESIVES TO THE SKIN: A QUALITATIVE SYSTEMATIC REVIEW

Hannelore Hofman (*)⁽¹⁾⁽²⁾, Tanja Duljic (*)⁽³⁾, Sara Johansson ⁽⁴⁾, Jan Kottner ⁽⁵⁾, Lise-Marie Kinnaer ⁽¹⁾, Mats Eriksson ⁽³⁾, Dimitri Beeckman ⁽¹⁾⁽²⁾⁽⁶⁾

(*) Joint first authorship 1. Department of Public Health and Primary Care, University Centre for Nursing and Midwifery, Ghent University Faculty of Medicine and Health Sciences, Belgium; 2. Skin Integrity research Group (SKINT), Department of Public Health and Primary Care, University Centre for Nursing and Midwifery, Ghent University Faculty of Medicine and Health Sciences, Belgium; 3. Faculty of Medicine and Health Sciences, School of Health Sciences, Orebro University, Sweden; 4. Creative Mammals, Gothenburg, Sweden; 5. Institute of Clinical Nursing Science, Charité Center for Health and Human Sciences, Charité—Universitätsmedizin Berlin, German; 6. Swedish Centre for Skin and Wound Research (SCENTR), Faculty of Medicine and Health Sciences, School of Health Sciences, Orebro University, Sweden

Introduction

Pressure ulcer treatment usually involves the application of wound dressings, some of which are affixed to the skin with medical adhesives [1]. Medical adhesives provide securement of medical devices, facilitate skin protection and allow non-invasive monitoring [2]. Application and removal of medical adhesives can result in pain, dermatitis, trauma or other skin lesions [3-5]. Understanding patients' experiences when subjected to medical adhesives will contribute to the improvement of clinical routines and the development and improvement of new adhesive technologies. A qualitative systematic review was conducted to identify patients' experiences with the application of medical adhesives to the skin.

Methods

CINAHL, EMBASE, MEDLINE and PsycINFO were systematically searched for records published between January 2012 and March 2024. Reference lists of systematic reviews and included articles were reviewed. Studies published in Danish, Dutch, English, German, Norwegian and Swedish that collected qualitative data on the experience of patients with the application of medical adhesives to the skin were considered. There were no restrictions regarding age, gender or setting. Study selection, data extraction and quality appraisal were independently conducted by two reviewers. The methodological quality of the studies under consideration was assessed using the Joanna Briggs Institute Critical Appraisal Tool for Qualitative Research [6]. The extracted data were synthesised using meta-aggregation.

Results

Nine studies describing patients' experiences were included [7-12]. The included studies only reflected experiences with wound dressings. Meta-aggregation of the extracted findings resulted in seven categories that were further synthesised into two synthesised findings: 'strategies to alleviate pain during dressing changes' and 'dressing construction and characteristics'. The synthesised findings illustrate that patients experience pain during dressing change and removal and employ various strategies to alleviate this pain.

Conclusions

Patients experience pain and discomfort when dressings are changed or removed. Future research should focus on enhancing both routines and technologies, with a particular emphasis on advancing skin-friendly adhesives to reduce unwanted side effects.

Conflict of Interest

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HAAVAHOIDON ASIAANTUNTIJA ERIKOISTUMISKOULUTUS

Salla Seppänen

Laurea ammattikorkeakoulu, Finland

Johdanto

Suomessa sairaanhoitajatutkinnon suorittaneiden ammattilaisten on ollut mahdollista opiskella koulutusjärjestelmämme tarjoamana haavahoidon erikoisosaamista vuodesta 1999 lähtien vuoteen 2012 saakka erikoistumisopintoja, ja 2014 korkea-asteen oppisopimustyyppisenä täydennyskoulutuksena. Erikoistumiskoulutuksen mahdollistavat säädösmuutokset tulivat voimaan 1.1.2015. Haavahoidon asiantuntija -erikoistumiskoulutus aloitti ensimmäisenä ammattikorkeakoulujen järjestämänä sosiaali- ja terveysalan erikoistumiskoulutuksena vuonna 2016.¹

Koulutuksen toteuttaminen ja kehittäminen

Haavahoidon asiantuntija -erikoistumiskoulutus tuottaa syventävää osaamista. Koulutus täyttää Suomen Haavanhoito yhdistyksen auktorisoinnilla edellyttämän koulutuksen. Erikoistumiskoulutusta järjestävät ammattikorkeakoulut keskinäisen sopimuksen mukaisesti. Sopimus määrittelee koulutuksen laajuuden, osaamistavoitteet ja keskeisen sisällön. Sopimus on saatavilla opetushallituksen rekisteristä. Koulutuksen laajuus on 30 opintopistettä ja kesto noin 9 kuukautta. Opetussuunnitelma on kansallinen ja se perustuu näyttöön. Opetussuunnitelmaa päivitetään säännöllisesti uusien hoitosuosituksen, kansallisten linjausten sekä koulutuksesta saadun palautteen perusteella. Viimeisin laaja päivitys tehtiin 2023, kun 2021 julkaistiin hoitotyön jaoston laatima ehdotus hoitotyön kliinisistä erikoisaloista kliinisesti erikoistuneen sairaanhoitajan osaamisen kehittämiseksi. Raportissa määriteltiin 17 kliinisen hoitotyön erikoisalaa, joista yksi on haavahoidon hoitotyö. Erikoisaloille määriteltiin yhteiset ydinkompetenssit ja erikoisalakohdaiset osaamiset, joiden osalta opetussuunnitelma arvioitiin ja päivitettiin.²

Tulokset

Haavahoidon asiantuntija -erikoistumiskoulutus on toteutunut vuodesta 2015 lähtien vuosittain koulutusta järjestävissä ammattikorkeakouluissa. Vuosina 2019-23 oli haavahoidon erikoistumiskoulutuksessa aloittanut yhteensä noin 480 opiskelijaa.³ Sosiaali- ja terveysministeriön vuonna 2024 hyvinvointialueille tekemän hoitotyön kliinisen erikoisosaamisen tarveselvityksen mukaan haavahoidon erikoisosaamisen koulutus oli vuonna 2023 366 sairaanhoitajalla, mikä oli kolmanneksi suurin määrä määritellyillä 17 kliinisen hoitotyön erikoisaloilla erikoistumiskoulutuksen käyneistä ammattilaisista. Edellä olivat psykiatrian ja mielenterveyden hoitotyön 772 ja perioperatiivisten hoitotyön 379 erikoisosaamisen koulutuksen käyneiden osuus. Vuoteen 2028 mennessä haavahoidon hoitotyön erikoisosaajien tarpeen arvioitiin hyvinvointialueilla olevan yhteensä 721.⁴

Johtopäätökset

Erikoistumiskoulutus varmistaa tarvittavan tietoperustan ja osaamisen kehittymisen kohti syvää asiantuntijuutta, joka edellyttää kliinistä työkokemusta. Haavahoito on hoitotyön erikoisosaamista, jota hyödynnetään potilaan parhaaksi. Haavahoito tarjoaa sairaanhoitajalle kliinisen erikoisosaamisen ja urapolun, jonka vahvistamista tulisi työelämässä edelleen kehittää.

Ei kaupallisia sidonnaisuuksia. Kunniapuheenjohtaja Suomen haavanhoitoyhdistys ry.

Lähteet

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- ² STM raportteja ja muistioita 2021/36. Kliinisen hoitotyön erikoisalat: Ehdotukset kliinisesti erikoistuneen sairaanhoitajan osaamisen kehittämiseksi. <http://urn.fi/URN:ISBN:978-952-00-8428-8>
- ³ Välimäki M, Rekiranta S, Suvivuo P, Nygrén P. Hoitohenkilöstön erikoistumiskoulutus. Nykytilanne ja toimenpide-ehdotukset. STM julkaisuja 2025:7. Valtionneuvosto. Helsinki. <https://urn.fi/URN:ISBN:978-952-00-4428-2>



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4. ⁴ Karhe L, Nygren P, Kirkonpelto T-M, 2024 Kliinisesti erikoistuneiden sairaanhoitajien ennakoitu lisätarve vuosille 2024-2028. Selvitystyö. STM. Valtioneuvosta. Helsinki. <http://urn.fi/URN:ISBN:978-952-00-5600-1>



PAINEHAAVAN REVISIOPÄÄTÖS: KOSKA TEHDÄÄN, MISSÄ TEHDÄÄN JA KUKA TEKEE?

Tarja Niemi

Haavan revisio, eli puhdistava leikkaus, suoritetaan kuolleen tai tulehtuneen kudoksen poistamiseksi, jotta normaalille paranemisprosessille luodaan edellytyksiä. Painehaavapotilaat ovat usein iäkkäitä, monisairaita ja hauraita, minkä vuoksi paranemisprosessi on hidastunut ja alttius painehaavoille on kasvanut.

Puhdistavia toimenpiteitä tarvitaan pääsääntöisesti painehaavaluokissa 3 ja 4. Kirurginen puhdistus on nopein ja tehokkain tapa poistaa haavasta elinkelvoton ja tulehtunut kudos. tumma, nekroottisessa kudoksessa ei ole tuntoa ja usein voidaan suorittaa vuoteenvieritoimenpiteenä ilman anestesiaa tai paikallispuudutuksessa vuodeosastolla potilaan hoitopaikassa tai poliklinikalla pinsettiä ja saksia apuna käyttäen. Elinkelvotonta kudosta poistetaan kunnes näkyvää verenkiertoa tulee esille tai potilas tuntee kipua. Päivystyksellinen revisio tarvitaan, kun potilaalla on yleisoireita tulehduksen vuoksi tai etenevä pehmytkudosinfektio. Laajat ja tulehtuneet kudokset poistetaan anestesiassa leikkaussalissa, jolloin kivun, potilaan yleistilan ja verenvuodon hallinta on optimaalista ja huono kudos saadaan luotettavimmin pois. Leikkaussalissa on myös tuloksellisempaa puhdistaa onkalomaisista, taskumaisista haavoista kuollutta kudosta, jota ei konservatiivisen hoidon keinoin saada poistettua. Jos potilaalla ei ole yleisoireita haavasta, voidaan revisio toteuttaa, kun kudos on rajautunut. Kuollut kudos muodostaa kasvualustan bakteereille, joten puhdistavia toimenpiteitä ei kannata pitkittää.

Haavan revisio on lääketieteellinen toimenpide, jonka suorittaa aina terveydenhuollon ammattilainen. Potilaan hoito on eri ammattiryhmien välistä yhteistyötä, josta lääkäri on vastuussa. Kuka toimenpiteen suorittaa ja missä se tapahtuu, riippuu haavan tilasta ja laajuudesta, resursseista, henkilökunnan kokemuksesta ja potilaan kliinisestä tilanteesta – pinsetit ja sakset toimivat hoitajankin käsissä vuoteen vierellä, kun taas laajemmat ja syvemmät tulehduspesäkkeet vaativat leikkaussaliolosuhteita, yleisanestesiaa ja kirurgia. Päätös toimenpiteestä tai konsultaatiosta tehdään potilaan vieressä kliinisen tilanteen mukaan. Puhdistus on edellytys haavan paranemiselle.



UUSI KANSAINVÄLINEN EPUAP/NPIAP/PPPIA PAINEHAAVOJEN EHKÄISYSUOSITUS

Maarit Ahtiala

Turku University Hospital

Tällä luennolla kerrotaan uudesta kansainvälisestä painehaavojen ehkäisy- ja hoitosuosituksesta. Suositusta on ollut laatimassa suuri joukko asiantuntijoita eri maista. Suosituksesta on jo julkaistu osia ja niitä julkaistaan lisää, kun uudet osiot valmistuvat. Esityksessä kerrotaan, mistä uuden suosituksen osiot löytyvät, ja onko painehaavan määritelmä muuttunut. Lisäksi kerrotaan uusista suosituslauseista ravitsemuksen, asentohoidon, istumisen, makuualustojen ja kantapäiden osalta.



PAINEHAAVA VAI EI – HAAVOJEN EROTUSDIAGNOSTIIKKA INTERAKTIIVISESTI

Kirsi Isoherranen

HUS Haavakeskus, Helsinki, Suomi

Johdanto

Haavojen onnistuneen hoidon kulmakivenä on oikea diagnoosi. Painehaavat sijaitsevat yleisimmin ristiselän, istuinkyhmyjen ja lonkkien sekä kantapäiden luisten ulokkeiden kohdilla, mutta näillä alueilla voi esiintyä myös muita kuin painehaavoja, ja siksi oikean erotusdiagnostiikan tekeminen on välttämätöntä. Huomioitava asioita ovat mm. diabetes, valtimoverenkierto sekä epätyypilliset haavan syyt.

Menetelmät

Luennossa käydään läpi interaktiivisen menetelmän avulla eri potilastapauksia, missä haavan etiologiana on myös muita syitä kuin paine.

Tulokset

Tärkeitä erotusdiagnooseja painehaavalle ovat mm. diabeettinen jalkahaava, valtimohaava, pyoderma gangrenosum, nekrotisoiva faskiitti, genitaalialueen herpesinfektiot, Marjolinin haava, diffuusi dermaalinen angiomatoosi, hidradenitis suppurativa, kalsifylaksia ja erityiset pieniä verisuonia tukkivat haavasairaudet.

Johtopäätökset

Haavaa sairastava potilas on aina tutkittava kokonaisuutena ja systemaattisesti. Tärkeimpiä huomioitavia asioita ovat haavainfektio, valtimoverenkierto, diabetes, haava-alueelle kohdistuva paine, turvotus sekä haavan epätyypilliset syyt.

Conflict of Interest

Ei sidonnaisuuksia luentoan liittyen.

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EFFECTS OF PATIENT-CENTRED SKIN CARE ON BARRIER FUNCTIONS OF SKIN IN INTENSIVE CARE

Tuğba Yeni (1), Nuray Enç (2), Peter R. Worsley (3)

1. School of Nursing, Koç University, Türkiye; 2. Florence Nightingale Faculty of Nursing, Medical Nursing Department, Istanbul University-Cerrahpaşa, Türkiye; 3. Assistive Technology and Tissue Health, Skin Sensing Research Group, School of Health Sciences, University of Southampton, United Kingdom

Introduction

In recent years, studies have been conducted to better understand the pathophysiology of pressure injuries, demonstrating the importance of skin barrier properties, stratum corneum hydration and skin pH during the early signs of skin damage [1-3]. Addressing factors affecting the pathophysiology of PI can improve the quality of nursing care. However, studies investigating the results of patient-centred care in preventing pressure injuries are limited in the literature [4,5].

The aim of this study is to investigate effects of patient-centred skin care on local skin properties and the incidence of PIs.

Methods

This randomized controlled trial study was conducted in the tertiary intensive care unit of a state hospital. 43 critical care patients were involved, while 22 patients in the intervention group received patient-centred skin care, 21 patients in the control group received standard skin care. The interventions began upon patient admission to the intensive care unit, and each patient was followed for 4 days. Data were collected using a sociodemographic and clinical characteristics form, the Jackson/Cubbin risk scale and skin monitoring form. Transepidermal water loss (TEWL) and skin acidity were measured from the sacrum and trochanters during follow-up. Data analysis was performed using SPSS. One Way ANOVA was used for variables with normal distribution and Wilcoxon Sign Rank tests were used for variables without normal distribution for repeated measurements.

Results

There were no differences in the sociodemographic and clinical characteristics of the patients assigned to the intervention and control groups ($p>.05$). TEWL values tended to decrease in the intervention group. On the 4th follow-up day, the value of sacral TEWL of the intervention group was 21.2 ± 7.9 , while the value of sacral TEWL of the control group was 28.1 ± 10.3 , which was a statistically significant difference between the two groups ($p<.05$). The skin acidity values of both groups were similar ($p>.05$). While the incidence of PI was 38.1% in the control group, it was 9.1% in the intervention group ($p<.05$).

Conclusions

In conclusion, patient-centred skin care is an important nursing intervention in maintaining skin and tissue integrity and barrier function of skin. However, there are many factors that affect the barrier function of the skin in ICU's. It is recommended that future studies be conducted with larger populations and longer follow-up.

Conflict of Interest

This study was funded by European Pressure Ulcer Advisory Panel (EPUAP).

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A NETWORK OF RESEARCHERS AND PRACTITIONERS TO PREVENT AND MANAGE PRESSURE ULCERS IN PRE-FRAIL OLDER ADULTS

Duygu Sezgin (1), Dimitri Beeckman (2-3)

1. University of Galway, Ireland; 2. Ghent University, Belgium; 3. Orebro University, Sweden

Introduction

Frailty is a syndrome often linked to ageing, associated with a higher risk of hospitalisation and premature death [1-2]. It is characterised by increased vulnerability to stress and a reduced adaptation mechanisms [3]. Frailty is also associated with wound healing outcomes and wound healing time [4]. If identified at its early stages, so-called pre-frailty, it might be possible to prevent progression into full frailty, as not everyone who is pre-frail will experience further decline [5-6]. While there are several factors that contribute to both frailty and pressure ulcers, the psychosocial aspects are often underexplored.

Methods

PRE-NET is a network of researchers that was developed with the support of 2023 EPUAP Seed grant funding. It includes researchers and practitioners from various backgrounds including nursing (wound healing, gerontology, and integrated care), medicine (geriatrics and vascular surgery), physiotherapy, social care, engineering and nutrition science. This network of wound care and frailty experts was established with the aim of discussing the gaps in literature and observations regarding unmet needs of older people who are at risk of pressure ulcers, other chronic wounds, and frailty. This abstract presents a summary of our initiatives rather than a conventional research project.

Results

This collaboration of interdisciplinary researchers was initiated with an expert panel, which was followed by the publication of an opinion paper [7] and a Horizon EU grant application with a focus on health and social inequalities in prevention of frailty, pressure ulcers and other chronic wounds. Although the Horizon EU grant was not awarded, it was highly scored and positively evaluated. In light of the constructive feedback received, the members of this project will continue their collaboration in future grant applications.

Conclusions

The EPUAP Seed funding provided the foundation for an interdisciplinary collaboration of researchers and practitioners, facilitating a critical analysis of the gaps in the research and practice to address the unmet needs of older adults living with or at risk of chronic wounds, including pressure ulcers. We recommend prioritising a prevention-focused approach for frailty and pressure ulcers in high-risk populations, especially given the growing number of older adults with complex health and social issues and limited resources in care. While physical factors are important, social factors and inequalities must also be considered in a holistic, person-centred approach to care for older adults.

Conflict of Interest

None.

We acknowledge the support and contributions of the experts who took part in the panel discussions and/or the EU Horizon grant application, which was an outcome of this seed grant.

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LÄÄKÄREIDEN HAAVANHOIDON ERITYISPÄTEVYYS

Jaakko Viljamaa

Verisuonikirurgian yksikkö, Varha, Suomi

Haavanhoidon erityispätevyys on Suomen Lääkäriliiton ylläpitämä koulutusohjelma, joka on suunnattu haavaa sairastavia potilaita hoitaville eri erikoisalojen lääkäreille. Erityispätevyyden tarkoituksena on täydentää erikoislääkärikoulutusta ja syventää haavanhoidon osaamista kunkin erikoisalan kontekstissa sekä laajentaa tätä osaamista koulutettavan oman erikoisalan ulkopuolelle. Lisäksi tavoitteena on antaa koulutettavalle hyvät valmiudet kehittää haavaa sairastavien hoitoa omassa toimintayksikössään ja alueellisesti.

Erityispätevyyden suorittaminen edellyttää Lääkäriliiton jäsenyyttä ja erikoislääkärin tutkintoa soveltuvalta erikoisalalta, joita ovat esimerkiksi yleislääketiede, geriatria, ihotaudit ja allergologia, sisätaudit, endokrinologia, infektiosairaudet, yleiskirurgia, ortopedia ja traumatologia, plastiikkakirurgia ja verisuonikirurgia. Erityispätevyyttä ei ole kuitenkaan sidottu näihin erikoisaloihin, ja myös jokin muu erikoisala soveltuu sen pohjaksi, jos koulutettava työssään hoitaa haavaa sairastavia potilaita ja hyötyisi erityispätevyyden tarjoamasta lisäkoulutuksesta. Erityispätevyyskoulutuksen aloittaminen ei edellytä erikoislääkärin tutkintoa, koulutuksen voi aloittaa jo erikoistumisen aikana.

Koulutuksen käytännön osuuden voi suorittaa myös keskussairaalan tai perusterveydenhuollon toimintayksikössä, jolla on haavanhoidon erityispätevyyden koulutusoikeus, koulutus ei edellytä työskentelyä yliopistosairaalassa. Lisäksi koulutukseen sisältyy teoreettista kurssimuotoista koulutusta, joksi hyväksytään haavoja ja haavanhoitoa käsittelevät koti- ja ulkomaiset koulutustapahtumat ja kongressit. Koulutettava voi hakea erityispätevyyttä suoritettuaan koulutuksen hyväksytysti ja työskenneltään kaksi vuotta valmiina erikoislääkärinä. Hakemus käsitellään haavanhoidon erityispätevyystoimikunnassa, joka myös ohjaa ja valvoo koulutusta ja sitä tarjoavia yksiköitä.

Haavanhoidon erityispätevyyden suorittanut lääkäri on perehtynyt laaja-alaisesti haavaa sairastavan potilaan kokonaisvaltaiseen, moniammatilliseen hoitoon, ja hän tuntee haavojen diagnostiikkaa ja osaa suunnitella potilaan hoidon myös omaa erikoisalaansa laajemmin. Kliinisen työn lisäksi erityispätevyyden suorittanut voi toimia haavanhoidon kouluttajana ja asiantuntijana. Koulutuksellisten tavoitteiden lisäksi erityispätevyyden taustalla on pyrkimys parantaa ja yhdenmukaistaa haavojen diagnostiikkaa ja hoitokäytänteitä ja lisätä eri erikoisalojen sekä perusterveydenhuollon ja erikoissairaanhoidon välistä yhteistyötä.

Sidonnaisuudet

Ei luentoon liittyviä sidonnaisuuksia.

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RECOMMENDATIONS AND THE PRODUCTION OF PLAIN LANGUAGE EDUCATIONAL LEAFLETS FOR PATIENTS

Andrea Pokorná (1), Natália Beharková (1) Dana Dolanová (1) Petra Bůřilová (1)

1. Masaryk University, Faculty of Medicine, Department of Health Sciences, Czech Republic,

Introduction:

Effective patient education is vital in healthcare, and this applies also in preventing and managing pressure ulcers (PUs). However, educational materials often fail to reach patients with limited health literacy due to complex language, dense or detailed text, and poorly designed formats. During the workshop we will present key recommendations and practical strategies for creating plain language educational leaflets that are not only easily readable but also engaging and user-friendly for diverse patient populations.

The underlying principle of plain language leaflet development involves simplifying medical content without compromising accuracy. This includes using active voice, short sentences, and everyday vocabulary (Doak, Doak & Root, 1996). Such educational materials should aim for a reading level at or below the 6th-grade level, assessed through readability tools such as the Flesch-Kincaid or SMOG index (Weiss, 2007; McCaffery et al. 2010; Haun et al., 2016; Stiller et al., 2024; Gerhold et al., 2024).

Beyond text simplification, visual design plays a critical role in enhancing usability.

Leaflets should include:

- **Graphic icons and illustrations** to reinforce key messages and support visual learners.
- **Sans-serif fonts** (e.g., Arial, Calibri) in at least 12–14 pt size for readability.
- **Clear headings and bullet points** to organize content logically and reduce cognitive load.
- **High contrast color schemes** (e.g., dark text on a light background) for visibility, especially in older adults.
- **Ample white space to avoid visual clutter** and improve focus.

Recent literature confirms that thoughtfully designed educational materials significantly improve understanding, satisfaction, and adherence—particularly in older adults and individuals with limited literacy (Nutbeam, 2008; Cormier & Kotrlik, 2015; Shoemaker et al., 2020; Gerhold et al., 2024). Co-design approaches and usability testing with target patients help ensure cultural appropriateness, clarity, and practicality (Okan et al., 2019; O'Connor et al., 2019). Providing multilingual options and audio-visual formats further increases accessibility (Oniani et al., 2022; Weathers et al., 2024).

We propose a structured five-step framework for informational leaflets development: (1) audience and context analysis, (2) plain language drafting, (3) visual and layout optimization, (4) patient feedback and usability testing, and (5) continuous refinement. This practical, evidence-based approach helps ensure that patients receive, understand, and act upon crucial pressure ulcer prevention information/instructions. Producing accessible, well-designed educational leaflets is not only a clinical best practice but a moral imperative. Empowering patients through understandable materials supports their autonomy, adherence, and ultimately, better health outcomes. During the practice-oriented workshop you will have the opportunity to actively participate in the review of already developed information and educational materials from international organizations, as well as to try to create your own version of information and educational material for the patients you care for. You will have the opportunity to share your experiences and opinions in a working group and to look for collective solutions.

Acknowledgement:

This work is supported by the Ministry of Health of the Czech Republic (by Czech Health Research Council) under grant No.NU23-09-00328: “Methodology of creating plain language recommendations for knowledge translation to support evidence-based decision-making in healthcare in the Czech Republic.” All rights reserved.

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THE IMPACT OF CONFORMABILITY AND ANISOTROPY ON DRESSINGS FOR PRESSURE ULCER PREVENTION: A BIOMECHANICAL SIMULATION STUDY

Anna Grou¹, Alit Putra¹, Michael Öberg¹, Charlotta Fredriksson¹ and Gustav Juhlin Onbeck²

¹Mölnlycke Health Care, Entreprenörstråket 21, 431 53 Mölndal, Sweden

²ALTEN Sweden, Kämpegatan 10, 411 04 Göteborg, Sweden

Introduction

Pressure ulcers often develop over bony prominences due to prolonged mechanical loading, which causes tissue deformation and increased stresses in the skin and underlying tissues [1]. Finite element (FE) modelling is a well-established tool for estimating these stresses; however, the influence of dressing properties on stress reduction is not fully understood. Conformability (the ability to mould to anatomical locations) and anisotropy (how a material behaves differently under forces in different directions) are known to influence pressure redistribution and shear stress reduction. While there is considerable clinical evidence to demonstrate the ability of some multilayered foam dressings to be used prophylactically in preventing pressure ulcers [2], the impact of their conformability and anisotropic properties on tissue stress reduction remains unclear. Therefore, this study was undertaken to evaluate the effectiveness of multi-layer foam dressings with varying conformability and anisotropic properties in reducing tissue stresses.

Methods

Physical test data were collected to measure the dressings' conformability and anisotropic properties. Conformability was assessed by measuring the force needed to press down a specimen by 10 mm, while anisotropic properties were measured through tensile tests in two perpendicular directions and then compiled as a ratio with highest ratio being more favourable than lower ratio. FE models of four commercially available prophylactic dressings were developed and validated using 3D scans and experimental tests. An FE model of the sacrum, based on MRI data from a female subject, was created and validated against tissue compression measurements. The load case involved the sacrum model on an inclined bed with gravity and shear loading. Performance was evaluated by comparing cases with and without dressings, focusing on the roles of conformability and anisotropic properties in reducing tissue stresses.

Results

Conformability tests revealed that Dressing A was the most conformable, requiring 1709 mN to displace 10 mm, whereas Dressing B was the least conformable, needing 5077 mN. When evaluating anisotropic properties, Dressing A consistently exhibited the highest anisotropic ratio (7.2), while Dressing C had the lowest (1.1). FE simulations indicated that all dressings reduced overall stress on soft tissue between 16-70% compared to no dressing. The dressing with the highest conformability reduced overall stress by up to 15% more than the dressing with the lowest conformability. Furthermore, the dressing with the highest anisotropic ratio performed better in reducing shear stress by up to 65% compared to no dressing.

Conclusion

A dressing with high conformability and anisotropy performed best overall in reducing stresses on soft tissue. Conversely, dressings with lower conformability typically showed reduced ability to lowering overall stress. There is likely a strong correlation between anisotropy and performance in reducing shear stress, with increased performance observed when the anisotropic properties ratio is higher.

Conflict of Interest

All authors are employees of Mölnlycke Health Care, with the exception of Gustav Juhlin Onbeck who is a paid consultant to Mölnlycke Health Care.



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SENSITIVITY AND SPECIFICITY OF SUB-EPIDERMAL (SEM) MOISTURE ASSESSMENTS IN DETECTING LOCALIZED EDEMA IN AN EX VIVO PORCINE MODEL

Guilio Brunetti (1), Hannah Wilson (1), Zena Moore (1), Colin Boyle(1)

1. The Royal College of Surgeons (RCSI) in Dublin, Ireland

Introduction

Localized edema, or Sub-epidermal moisture (SEM), is the earliest sign of pressure- and deformation-induced cell death and continues to persist or increase until the skin breaks and stageable pressure injuries (PIs) become evident (Stages 2, 3, unstageable and 4).[1] SEM-assessment technology quantitatively measures these changes in localized edema, providing early detection of tissue damage.[2] Literature documents clinical studies on the sensitivity and specificity of SEM assessments in identifying developing PIs and deep tissue injuries (DTPIs) prior to the visible and tactile manifestations diagnosed by healthcare practitioner (HCP) skin assessments.[3] Without gold-standard tests, validation of SEM-assessment technology remains limited to comparisons against HCP skin assessments, which can only detect visible and tactile damage that occurs hours-to-days later than the initial formation of localized edema. A porcine model was developed to objectively assess and evaluate the performance of SEM technology in detecting and measuring localized edema in soft tissues.

Methods

A localized edema condition, mimicking human tissue, was induced in the hind limbs of a porcine model through controlled intradermal injections of Phosphate-Buffered-Saline. Two baseline SEM readings* were taken at the injection site (0 mL fluid injected), followed by two readings at the control site positioned away from the injection area, resulting in four raw SEM-scores. The SEM-delta (Δ) score was calculated as the difference between the maximum and minimum of the 4 SEM readings per 1 mL increments (10x). Based on published clinical evidence, a SEM- Δ value of ≥ 0.6 , indicative of localized edema and developing early tissue damage, was used as the threshold. [3] True/false positive and true/false negative rates were evaluated and analyzed by correlating the effective induced localized edema with SEM- Δ measurements ≥ 0.6 .

Results

A total of 200 SEM-delta readings were collected. Data analysis described a sensitivity of 93% and a specificity of 96% in detecting localized edema in soft tissue.

Conclusions

Results indicate a high diagnostic accuracy for SEM-assessments in detecting localized edema in soft tissues. With no known comparators available, SEM-assessments establish a gold-standard test for the timely detection of localized edema as a symptom of developing tissue damage and are consequential for daily PI prevention and care practices.

Conflict of Interest

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FACTORS INFLUENCING THE SEVERITY OF MEDICAL DEVICE-RELATED PRESSURE INJURIES

Hee Joung Kim, Yeon Kyo Jung, Hyung Min Hahn, Dong Ha Park

Ajou University Hospital, Korea

Introduction

Medical device-related pressure injuries are receiving increased attention because their social and economic costs are increasing. Research and surveys have identified more specific risk factors for MDRPI development; however, the literature is still lacking specific data about which factors have a greater influence on the severity of MDRPI. This study aimed to analyse MDRPI severity levels for each risk factor. This will have a greater impact on the intensive management of MDRPI that has already occurred, as well as aid with the prevention of more serious stages of MDRPI.

Methods

We performed a retrospective analysis of 237 patients. Infants and patients whose MDRPI did not develop in an acute hospital setting were excluded from this study. Patients with unstageable injuries and deep tissue injuries were excluded. Data were collected by an in-hospital wound care team consisting of four plastic surgeons, and three wound care nurses, as well as a patient chart review.

Results

Severity was evaluated by pressure injury stages, and the following categories were considered as risk factors: perceptual functioning, malnutrition, reduced mobility, comorbidities, extrinsic factors, medical devices, anatomical areas, and hospital stay. The stages of pressure injury stages were more for vascular access devices than for respiratory devices. The following were related to severity: mental deterioration-related diseases, mental status, albumin level, haemoglobin level, total cholesterol level, intensive care unit care, days of hospitalisation, and time to develop pressure injuries after admission. Decreased mental status, anaemia, hypoalbuminemia, and low total cholesterol levels were particularly critical.

Conclusions

In this study, we found that patients with risk factors such as decreased mental status, hypoalbuminemia, anaemia, reduced total cholesterol, malnutrition, ICU care, and prolonged hospital stays were more likely to have severe stages of MDRPI than those who did not. In conclusion, intensive care in patients with these risk factors is needed to prevent the development and progression of MDRPI. And the different approach to the management of MDRPI is necessary because MDRPI has different characteristics and affecting factors compared with pressure injury.

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DEVELOPMENT AND APPLICATION OF PRESSURE INJURY EDUCATION USING QR-CODE-BASED SHOOTS FOR NURSES

Hee Joung Kim, Jung Hwa Lee, Myeong Hee Lee

Ajou University Hospital, Korea

Introduction

When pressure injuries occur, patients cause various negative outcomes (pain, loss of function, infection, prolonged hospital stay, and increased costs). So, it is very important to prevent pressure injuries in advance, and major pressure injury prevention guidelines recommend pressure injury prevention measures. Therefore, each medical institution is providing various training programs to prevent and manage pressure injuries. Pressure injury education is important because it can reduce the incidence of pressure injuries by increasing knowledge about pressure injury prevention and management. It also helps provide effective nursing care through appropriate nursing interventions for each stage of pressure injuries.

Methods

This study was conducted to develop pressure injury education content using QR code-based Shoots for nurses and verify the effectiveness and satisfaction after practical application, thereby supplementing the basic practical education method of nursing education and providing empirical data. Therefore, the wound management nurses made a content development plan in March, identified the problems of existing pressure injury education in April, derived the core components of pressure injury education, and established a pressure injury education strategy based on the brainstorming results. They designed the pressure injury education content and components, and based on this, developed pressure injury education content using QR-Code-based Shoots for nurses.

The developed pressure injury education content is as follows:

- Understanding pressure injury stages
- How to apply the correct dressing (Hip, Heel))
- Distinguishing between pressure injuries and skin diseases

Results

Pressure injury education using QR-Code-based Shoots was highly accessible because nurses learned using mobile phones, and it was convenient because it was not restricted by time or place. When composing pressure injury education content, Shoots was used to deliver the main content in a short time, which was evaluated as effective in helping nurses apply the pressure injury education content to clinical practice by increasing interest and concentration.

Conclusions

Learning using QR-Code stimulates the interest of the digital generation, can be used as a useful tool for communication, and allows learners to conduct self-directed learning in real time in the environment they want. In other words, the pressure injury education program using QR-Code-based Shoot has become an effective education program that positively affects the perception, knowledge, and performance of pressure injury education for nurses who tend to have relatively difficult conditions to focus on learning other than work due to the nature of shift work and high work intensity.

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COMPLEX AND HARD-TO-HEAL PRESSURE INJURIES TREATED WITH DRESSINGS MADE WITH A BLEND OF HYALURONATE AND 6 AMINO ACIDS IN POWDER/CREAM FORMULATION: AN INTERESTING CASES COLLECTION

Roberto Cassino

"Zucchi" Clinical Institutes (GSD) Vulnology Center, Monza - Italy

Introduction

In addition to area and volume, the most important wound evaluations are clinical state and type of tissues. Aim of this work is to demonstrate that different professionals give different assessments that direct towards very different and often incongruous treatments and therefore it becomes very useful to use technological devices (AI-Artificial Intelligence).

Methods

We had some pressure injuries, previously analyzed with AI Wound Scanner*, evaluated by 9 doctors and 9 nurses divided into 3 groups (3 doctors nurses each): Novices (no experience in wound care), Wound Specialists (5-10 years' experience) and Experts (more than 10 years' experience). They had to define wound measures (with 1:1 wound edge image and depth probe), clinical state and percentages of tissues: Epithelialization, Granulation, Infected Slough, Necrosis (brown/black), Slough, Other. The data of the 3 groups were compared with each other and with those detected by the Wound Scanner.

Results

There are no statistically significant differences in the measurements. Regarding tissue analysis, results are very different between the 3 groups: Novices tend to overestimate the infection while Wound Specialists underestimate it; Experts are closer to the AI assessment. Error percentages: infection 47.2%, granulation 46.3%, necrosis 29.7%, epithelialization 58.2%.

Conclusions

Accuracy in wound assessment is essential because the greater the precision, the better the approach to the lesions and the greater the chances of success. This work is demonstrating that it's increasingly necessary to use technological devices to achieve the best results in assessment and treatment.

*KroniKare (METI Biosolutions-Italy)

Conflict of Interest

None.



Transforming Pressure Injury Management Through Co-Design and Digital Innovation: Insights from the ICAREWOUNDS Project

Rini Bhatnagar¹, Lissy Augustine², Pratiksha Nagar¹, Maly Morshad Ahmad¹, George Dunwoody¹, Áine Carroll¹

¹School of Medicine, University College Dublin, Dublin, Ireland, ²National Rehabilitation University Hospital, Dublin, Ireland

Introduction: The ICAREWOUNDS project, funded by the European Commission under the European Union Horizon Europe Research and Innovation Programme, is part of a larger portfolio of European projects within the Integrated Care Research Centre. The centre also has embedded researchers at the National Rehabilitation University Hospital (NRH). This project aims to develop and validate a patient-centric digital platform that integrates novel and existing e-health solutions to enhance the sustainability and efficacy of chronic wound (CW) management. This platform will utilise trustworthy artificial intelligence technologies to capture wound images, employ deep learning algorithms for the automatic extraction of CW features and allow data interoperability via healthcare standards. Additionally, it will provide decision support to customise personalised care for CW patients.

Currently, the project is in its initial prototype development phase, which will undergo evaluation via usability and feasibility study. This abstract outlines the co-design methodology deployed in the development of the ICAREWOUNDS patient-centric integrated care (IC) model which includes the ICAREWOUNDS IC pathway for spinal cord injury patients with pressure injuries in Ireland, which will guide further development of the digital platform.

Methods: A co-design methodology was deployed to develop IC model through integrating the expertise of knowledge partners with the needs of local ecosystems in Ireland. The objective of this method was to improve the relevance and innovation of the digital platform for CW management by fostering stakeholder collaboration.

Two workshops were conducted at NRH in Ireland, focusing on the target population (spinal cord injury patients with pressure injuries): a stakeholder mapping workshop (n=12) and a co-design workshop (n=13). Participants comprised former patients, nurses, physiotherapists, researchers, policymakers, and representatives from patient support organisations. These workshops were designed to obtain a shared understanding of patient's needs and challenges, facilitate iterative feedback, and multiple expert viewpoints, all of which are essential for the IC model development.

Results: The workshops highlighted critical challenges in CW management. High staff turnover in large acute hospitals significantly hampers the ability of tissue viability nurses to efficiently educate staff about CW management. This has been exacerbated by the lack of adequate tissue viability nursing services at community level in Ireland. Additionally, no technological integration in CW management at NRH represents a major shortfall. Furthermore, staff burnout, resource constraints, restrictive health budgets, and poor integration of healthcare services were identified as compounding issues.

Based on the feedback gathered during the workshops, the ICAREWOUNDS project has developed an IC pathway contextualised for Ireland which illustrates the integration of technology at various stages of pressure injury management.

Conclusions: This project represents a significant advancement in digital, patient-centric CW care. The workshops identified significant challenges, guiding the IC model's refinement to meet practical needs. The digital platform promises to be a valuable tool for healthcare professionals, facilitating continuous and standardised patient-centred care while fostering a more integrated approach to CW management.



INTEREST IN SUCROSE OCTASULFATE IMPREGNATED DRESSINGS IN YOUNG NEUROLOGICAL PATIENTS

Pauline Pavard (1), Julie Doan (2), Emilio Galea (2)

1. Raymond Poincaré Hospital, AP-HP, Garches, France; 2. Urgo Medical, France

Introduction

Although pressure ulcers (PU) are commonly associated with elderly patients with comorbidities, they can also occur in younger subjects with specific risk factors, particularly in cases of total or relative immobility (sensitivity disorders). The management of PU requires a multi-dimensional approach, integrating strategies to relieve pressure, improve mobility, and optimally manage co-morbidities, nutritional status and wounds. Among the options available, TLC-NOSF (Technology Lipido-Colloid - Nano Oligosaccharide Factor) dressings have demonstrated robust efficacy in chronic wound healing (1-4).

In this abstract, we present our experience in the management of neurological patients with PU using a TLC-NOSF-impregnated polyabsorbent fiber dressing*.

Methods

Patients with neurological pathologies who developed PU received appropriate global management (offloading, renutrition, etc.) and TLC-NOSF dressings for local treatment from the first day of detection of the ulcer, in addition to soap and water cleansing and mechanical fibrinolysis.

In this poster, we present 2 cases of PU, a stage 3 PU of the heel and Achilles tendon after bilateral casting and a stage 4 PU of the exposed tendon of the instep after autonomous hyperreflexia under casting.

Results

In these patients, wounds treated with TLC-NOSF dressings progressed very favourably, achieving complete healing in 2-3 months. The efficacy of this TLC-NOSF dressing protocol was associated with good tolerability and acceptability of the dressings. The dressings were comfortable and easy to apply.

Conclusions

The results observed in these patients illustrate the efficacy and good acceptability of an innovative therapeutic strategy combining local care and TLC-NOSF dressing in the management of PU.

Conflict of Interest

The authors declare no conflict of interest.

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*UrgoStart Plus® Pad, UrgoStart Plus® Border



USE OF HIGHLY ABSORBENT WOUND DRESSINGS¹ IN THE TREATMENT OF CHRONIC WOUNDS

Petra Andonovski Fužir (1)

1. General Hospital Slovenj Gradec, Slovenia

Introduction

Chronic wounds are a significant healthcare challenge, especially in elderly patients with multiple comorbidities. Standard treatments often involve frequent dressing changes, which can be burdensome for patients and healthcare providers. The use of highly absorbent wound dressings¹ has been proposed as an alternative to improve healing outcomes and reduce the frequency of dressing changes. This case report presents the results of using highly absorbent wound dressings¹ in the treatment of a chronic wound in an elderly patient.

Methods

The patient, an 83-year-old male with a history of diabetes, arterial hypertension, chronic kidney disease (stage 5), and gout, presented with a chronic wound on his right lower leg. Previous treatments with various absorbency dressings showed limited improvement. After transitioning to highly absorbent wound dressings¹, the wound was monitored for progress, with dressing changes recorded and clinical observations documented. Key factors observed included the duration between dressing changes, wound healing rate, and patient comfort.

Results

Upon initiating treatment with highly absorbent wound dressings¹, significant improvements were noted in the wound's condition. Initially, the dressing¹ lasted for two full days without requiring a change, and over time, the dressings¹ began to last up to three days. The highly absorbent nature of highly absorbent wound dressings¹ effectively controlled exudate, protecting the wound and facilitating faster healing. The dressing¹ also prevented microbial contamination, reducing the risk of infection. Furthermore, the patient reported increased comfort and reduced frequency of dressing¹ changes, which contributed to improved quality of life.

Conclusions

The use of highly absorbent wound dressings¹ significantly improved wound healing outcomes in a patient with a chronic leg wound. The extended wear time between dressing¹ changes enhanced patient comfort and reduced the need for frequent clinical visits. highly absorbent wound dressings¹ proved to be an effective solution in the management of chronic wounds, offering both clinical and patient-centered benefits, including reduced infection risk and faster healing.

Conflict of Interest

The author declares no conflicts of interest related to this case report.

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EVALUATION OF THE EFFICACY OF HONEY-IMPREGNATED DRESSINGS WITH ADDED HYALURONIC

ACID IN THE LOCAL MANAGEMENT OF PRESSURE ULCERS

Catherine Dunyach-Remy¹, Florian Salipante², Anthony Gelis³, Sabine Rouvière⁴, Frederic Pellas⁵, Anais Raynaud⁶, Pauline Malzac⁷, Albert Sotto⁸, Jean-Philippe Lavigne¹

1. VBIC, INSERM U1047, Univ Montpellier, Department of Microbiology and Hospital Hygiene, CHU Nîmes, Univ. Montpellier, Nîmes, France; Affiliation, Country; 2. Department of Biostatistics, Epidemiology, Public Health and Innovation in Methodology (BESPIM), CHU Nîmes, Univ Montpellier, Nîmes, France 3. Centre Mutualiste Neurologique Propara, Montpellier, France 4. Department of Gerontology, CHU Nîmes, 5. Department of rehabilitation, CHU Nîmes; 6. Melipharm, Panazol, France; 7. Alvadiem, Boulogne-Billancourt, France; 8. VBIC, INSERM U1047, Department of Infectious and Tropical Diseases, CHU Nîmes, Univ Montpellier, Nîmes, France

Introduction

Bacterial colonization, to distinguish of infection, is characterized by the presence of bacterial species on a wound without inducing tissue destruction or inflammation. While bacterial colonization is nearly ubiquitous in pressure ulcers (PU), its protective role has been questioned in recent years [1]. Indeed, it may contribute to the progression and persistence of these lesions towards chronicity [2]. Administering antibiotics in this context, rather than promoting wound healing, could inadvertently favor the proliferation of biofilm-producing bacteria thereby exacerbating wound chronicity and selecting for antibiotic (ATB)-resistant strains. A medical device (MD) based on honey, comprising an assembly of monofloral honeys with antibacterial and pro-healing properties combined with pharmaceutical-grade hyaluronic acid, has been developed to avoid ATB use while promoting healing. This study aims to document the efficacy and tolerance of this MD in patients with stage 2 to 4 pressure ulcers.

Methods

This is a single-blind, monocentric, randomized controlled trial with two groups: the "honey (H)" group or the "control (C)" group, which corresponds to the standard care for patients. This clinical trial was conducted in hospitalized patients with a grade 2, 3, or 4 pressure ulcers according to the NPUAP-EPUAP classification, followed at the Nîmes University Hospital and the "Centre Mutualiste Neurologique Propara" (Montpellier). Each patient included in the trial was followed up until 12 weeks. The efficacy of the MD was assessed based on the evolution of the wound surface area at 8 and 12 weeks of treatment. Other characteristics were also studied, including excudate presence, the healing process (RYB (red yellow black) scale), and tolerance.

Results

A total of 24 patients were included (n=15 in the "H" group and n=9 in the C group), with a mean age of 68 years (55, 80). 54% of these pressure ulcers were sacral ulcers, and 63% of the lesions were classified as grade 3 (NPUAP classification). Regarding wound characteristics, no significant difference between the two groups was noted at the inclusion. At 8 weeks, a significant difference was observed in the percentage of wound surface reduction between H groupe (median=-100%, indicating complete healing) (Q1=-100%; Q3=-63%) and the C group (median=-48% (Q1=-88%; Q3=-28%)) (p=0,042). No significant difference was observed regarding other wound characteristics. Concerning tolerance, no difference between the two groups was noted in terms of pain and the occurrence of adverse events.

Conclusions

Despite the limited sample size, this study demonstrates a significant impact of this MD, composed of honey and hyaluronic acid, on the healing of pressure ulcers after 8 weeks of use, thereby reducing the time required for wound management. These promising findings warrant further investigation through a larger-scale study.



Conflict of Interest

Melipharm, France (Manufacturer of *Cicatrimel*[®] miel cicatrisant – miel de thym et acide hyaluronique trade name of Melectis G))

Alvadiem, France (Exclusive distributor of *Cicatrimel*[®] miel cicatrisant – miel de thym et acide hyaluronique)

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EFFECTIVENESS OF NEGATIVE PRESSURE WOUND THERAPY (NPWT) AFTER PUNCH SKIN GRAFTING FOR SCALP WOUNDS; EXPERIENCE WITH 6 CASES

Kyoung Ae Nam, R.N., MSN, WOCN

Department of Dermatology, Severance Hospital, Yonsei University Health System, Seoul, Korea

Aim: Complex wounds of the scalp are difficult to reconstruction. Negative pressure wound therapy (NPWT) is playing an increasingly important role in the management of complex wounds and has been reported for the treatment of complex wounds of the head and neck. A challenge for use on the scalp is sealing the hair-bearing scalp surface. Despite these challenges, NPWT has been used to maintain negative pressure immediately after punch skin grafting with successful results.

Method : Retrospective review of 6 patients (2 males, 4 females) from November 2016 to July 2024 was performed.

Results / Discussion: Mean age of the patients was 60.5 years (42~80 years) with 2 male patients and 4 female patients. The most common anatomical sites were the frontal scalp in three patients, the temporal scalp in one patient, the parietal scalp in one patient, and the vertex in one patient. Patients were diagnosed with angiosarcoma, basal cell carcinoma, nevus sebaceous, squamous cell carcinoma, cellulitis and malignant peripheral nerve sheath tumor. The skin graft donor site was a 3mm punch from the lower abdomen for two patients and a 2mm punch from the occipital containing hair for four patients. NPWT was applied for an average of 11.7days (range : 7~14days). It took 48 days for the wound to heal completely. These results show that a NPWT after punch skin grafting is an excellent therapeutic option for on scalp wounds.

Conclusion : NPWT can be used effectively after punch skin graft in the scalp wounds. In the 2mm hair transplant group, the scars were very small due to hair survival, proving that it was a good treatment.

Key words: Negative Pressure Wound Therapy (NPWT), Punch skin graft, Scalp wounds

CLINICAL STUDY: TREATMENT OF STAGE 3 AND 4 PRESSURE ULCERS WITH A PURE CALCIUM ALGINATE DRESSING⁽¹⁾

Rodrigue Teumawe (1), Laurent Petit (2), Jean-Michel Hoarau (3), Vincent Hernandez (4), Claire Vacher-Coponat (5,6), Emmanuel Bovier (7), Jean-Louis Mazzoni (8), François-Noël Desfemmes (9), Eugénie Apedjinou (10), Elodie Piboyeu (11), Rachel Nau (12), Elouan Cherot (13), Vanessa Palczynski (14), Marc Poterre (1)

1. Fondation Santé Service, France; 2. HADSA, France; 3. AUB, France; 4. MSPB, France; 5. HAD Clara Schumann France; 6. HAD Eure et Seine, France; 7. HAD Soins et Santé, France; 8. HAD de Corse, France; 9. HAD Loir-et-Cher, France; 10. HAD des Vignes et des Rivières, France; 11. HAD Saumurois, France; 12. HAD Val De Loire, France; 13. HAD 35, France; 14. HADAN, France

Introduction

Stage 3 and 4 pressure ulcers are particularly serious chronic wounds. Their management is complex, and they can take several months to heal. These deep-lying pressure ulcers are a real public health problem. The human, social and economic cost is considerable, both for patients and for the healthcare system. In France, the cost of treating pressure ulcers in 2011 (hospital and home) was estimated at €3.35 billion⁽¹⁾. Yet prevention is possible: regular mobilisation, rigorous hygiene, appropriate nutrition and the use of anti-pressure sore mattresses and cushions. Once established, the management of stage 3 and 4 pressure ulcers requires appropriate, often lengthy and costly treatment, including specialized local care, sometimes surgical intervention and rigorous follow-up. Despite their seriousness, stage 3 and 4 pressure ulcers remain little studied in real life. Data from daily practice are scarce, even though they are essential for improving prevention, care organization and therapeutic strategies. 16 Hospital At Home (HAH) in France have joined forces to assess the healing of stage 3 and 4 pressure ulcers.

Methods

This was a multicenter, non-comparative clinical trial. Patients with stage 3 or 4 pressure ulcers received pure calcium alginate dressings for 8 weeks. Preventive measures were applied according to usual practices of the participating HAH facilities (repositioning, support surfaces, nutritional supplementation and hydration). The primary endpoint was the percentage reduction in ulcer surface area at week 8. Secondary endpoints included percentage reduction in ulcer volume, wound condition evolution, ease of use, and product tolerance.

Results

From September 2021 to August 2024, 114 patients were enrolled; 82 were analyzed (30 prematurely dropped out, 2 were excluded due to missing primary endpoint data). The surface area of the pressure ulcers decreased by an average of 55% from baseline to week 8 (13.2 cm² to 5.8 cm²; p<0.001). Complete healing was observed in 14% of pressure ulcers by week 8. Wound volume reduced by an average of 68% (36.7 cm³ to 11.4 cm³; p<0.001). Pressure ulcer condition improved with a significant reduction in exudate at week 8 (p<0.001), a significant improvement in periwound skin condition (p<0.001) and disappearance of local signs of infection. No adverse events related to the dressing were reported.

Conclusions

After 8 weeks of treatment with the pure calcium alginate dressing, both surface area and volume of the stage 3 and 4 pressure ulcers significantly decreased and the condition of the pressure ulcers significantly improved. The study highlights the efficacy of a pure calcium alginate dressing in wound healing of stage 3 and 4 pressure ulcers, as well as the importance of preventive measures.

Conflict of Interest

This study was supported by Les Laboratoires Brothier (Nanterre, France)

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A UNIQUE WAY TO DESTROY THE INFECTION OF PRESSURE ULCERS IN 1 MINUTE

Violeta Vaidotienė

Lithuanian University of Health Sciences Hospital Kaunas Clinics, Lithuania

Introduction

Care and treatment of pressure ulcers are additional costs for medical institutions. In order to speed up the treatment of pressure ulcers and reduce costs, innovative measures are being sought. A local dehydrating agent for the destruction of infection and biofilm in difficult-to-heal wounds, a single-use procedure. This is a new and highly effective method of combating pathogenic wound microorganisms and biofilm - the effect is noticeable just a few seconds after using the agent [1,2].

Methods

Clinical case analysis and presentation.

Results

Clinical case No.1 Female, 79 years. Weight 65 kg. Suspected deep tissue injury, depth unknown. Pressure ulcer in the sacrum area. Hospitalized on 24 November 2024 after suffering a severe brain injury, lying unconscious at home for 2 days, coma according to GWS 4 points. Pressure ulcer in the sacral region is treated successfully during the patient's rehabilitation (figure 1).

Figure 1. Clinical case No. 1



Clinical case No.2 Male, 31 years old. Weight: 230 kg. Stage III. Pressure ulcer located in the sacral area. Hospitalized on 28 May 2024. Diagnosis: Abscessus intraabdominalis. The pressure ulcer formed during surgery. Healing stage III pressure ulcer (figure2).

Figure 2. Clinical case No. 2



Conclusions

Topical dehydrating agent (TDA) is a dynamic wound care innovation that is ideal for all patients, suffering from pressure ulcers, including those facing antibiotic – resistant challenges. Offering a lasting solution where conventional infection management methods fall short. Due to the elimination of the infection, wounds now granulate faster and by this will heal naturally. A single application versus multiple debridement interventions [3].

Conflict of Interest

I have no financial interests or relationships to disclose with regard to the subject matter of this abstract.

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PRESSURE REDISTRIBUTION EFFECTIVENESS AND DURABILITY OF FOAM VS. HYDROGEL PROPHYLACTIC SACRAL DRESSINGS

Matthew Henry (1), Patrick Lamb (1)

1. Biodaptive LLC, USA

Introduction

Pressure injuries/pressure ulcers (PIs/PUs) remain a significant concern in healthcare due to their association with increased morbidity, prolonged hospital stays, and increased healthcare costs. These injuries typically result from prolonged pressure over bony prominences, often leading to tissue ischemia and damage. To mitigate this risk, prophylactic dressings are commonly used to redistribute pressure and protect vulnerable areas such as the sacrum. Although conventional foam-based prophylactic sacral dressings have been extensively evaluated for their pressure redistribution capabilities, these studies typically assess only their effectiveness in reducing peak pressure (PP) during a single loading event [1]. This overlooks the repeated loading and unloading cycles that dressings experience in clinical settings, where patients are routinely repositioned to prevent PIs/PUs. This study aims to evaluate the durability of pressure redistribution properties, specifically PP reduction, in two conventional foam-based dressings and a new hydrogel-based prophylactic sacral dressing over multiple loading/unloading cycles.

Methods

This study evaluated three commercially available prophylactic sacral dressings: two foam-based (Dressing A and B) and a hydrogel-based (Dressing C). During testing, the dressings were placed on the sensor of a high-resolution pressure mapping system to quantitatively monitor the pressure distribution properties of each dressing. A 2.1-kg spherical weight with a 3-inch diameter was applied to the center of each dressing to mimic bony prominences, anatomical features on the body most at risk for developing PIs/PUs. Peak pressure measurements were recorded after the weight was applied to the dressing, and again after a 30-min exposure period. The weight was then removed, and dressings remained “unloaded” for 30-min. This load/unload cycle was repeated seven additional times, with PP measurements taken at the end of each loading phase. This load/unload cycle is meant to simulate a clinical setting where patients are repositioned at regular intervals to reduce the incidence of PIs/PUs. Three samples of each dressing were tested.

Results

Throughout the study, all dressings examined significantly reduced PP compared to the no dressing control ($p < 0.001$). However, the pressure redistribution effectiveness varied among the different dressings, with Dressing C performing the best (≈ 80 -82% PP reduction), followed by Dressing B (≈ 75 -81% PP reduction), and lastly Dressing A (≈ 60 -70% PP reduction). Following each load/unload cycle, all three dressings exhibited an increase in PP transmitted through the dressing. However, the foam-based dressings (Dressing A and B) were shown to become notably less effective at redistributing pressure. This was exhibited by a significant and linear increase in PP, at a rate of 6.9-fold and 4.2-fold greater than Dressing C, respectively.

Conclusions

The findings of this study demonstrate that foam-based, prophylactic sacral dressings are much more susceptible to mechanical fatigue from repeated loading/unloading cycles than hydrogel-based dressings. Additionally, the hydrogel-based dressing consistently outperformed the foam-based dressings in reducing PP and did not suffer significantly from mechanical degradation. As such, hydrogel-based, prophylactic sacral dressings may offer a more durable and effective alternative to reducing tissue pressure and consequently reducing the incidence of PIs/PUs for patients.

Conflict of Interest

The authors are employees of Biodaptive LLC.

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CATEGORY 4 PRESSURE ULCERS TREATED WITH AUTOLOGOUS CYTOKINE-RICH SERUM. A STUDY CASE.

Pere Coca-Alves (1), Cristina Jiménez-de-la-Rosa (2)

1. RN, MSc, PhD Student. Wound Care Unit / Diabetic Foot Care Unit. Parc Sanitari Sant Joan de Déu. Sant Boi de Llobregat. Barcelona, Spain; 2 RN, Wound Care Unit / Diabetic Foot Care Unit. Parc Sanitari Sant Joan de Déu. Sant Boi de Llobregat. Barcelona, Spain.

Introduction

Chronic wounds, such as stage 4 pressure injuries, represent a major clinical challenge due to their complexity in healing and high incidence of complications. In recent years, therapies based on autologous products have emerged as a promising option to modulate the inflammatory response and stimulate tissue regeneration.^{1,2,3} In this context, autologous cytokine-rich serum (ACRS), obtained through a patented closed system,⁴ offers a novel therapeutic approach that combines safety, personalization, and efficacy.⁵ We present the clinical case of a patient with stage 4 pressure injuries treated with this innovative technology, highlighting the clinical outcomes achieved and its potential in the management of complex chronic wounds.

Methods

A 47-year-old male patient, paraplegic since 2015, presented with three category 4 pressure ulcers of six months' evolution, located on the ischium, right and left trochanter. The dimensions of the wounds were 3 x 2 cm, 5 x 4 cm, and 4.5 x 2.5 cm, respectively. The depth of the lesions was estimated based on the volume measured with saline solution, with results of 13 ml, 10 ml, and 6 ml, respectively. The wounds were treated with one application of ACRS, obtained through a patented closed system¹, with the aim of stimulating and accelerating the healing process.

Results

The treatment led to a significant reduction in wound depth during the three-months follow-up after the procedure: the ischial wound volume decreased from 13 ml to 6 ml in 90 days, the left trochanteric wound was reduced from 6 ml to 4 ml in 75 days, and the right trochanteric wound showed complete healing in only 30 days. These results emphasize the effectiveness of the autologous cytokine-rich serum in promoting rapid and progressive wound healing, particularly in complex chronic wounds.

Conclusions

The use of autologous cytokine-rich serum obtained through a patented closed system² proved to be an effective and safe therapeutic option for the treatment of stage 4 complex pressure ulcers. Significant reductions in wound depth were observed. These results suggest that this innovative approach accelerates tissue regeneration and improves outcomes in chronic wound management.

Conflict of Interest

The authors declare no conflict of interest related to this work.

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PREVENTION OF MOISTURE SKIN DAMAGE IN PATIENT AT HIGH RISK OF PU: A TECHNOLOGY FOR A GLOBAL MANAGEMENT

Fabrizia Papa(1), Sergio Parini(2)

1. Wound Care nurse, Italy; 2. Engineer, Italy

Introduction

The primary cause of pressure ulcer (PU) development is prolonged pressure, often combined with shear and friction forces that damage skin and subcutaneous tissues through inflammation, oedema, deformation tissue, and ischemia. These effects are also influenced by local conditions, such as humidity, skin breathability, and temperature, which reduce tissue tolerance to mechanical stress and increase PU risk [1,2,3]. For high-risk patients with moisture imbalance, fluidized beds are commonly used, though costly and complex to manage. A device that combines air-based pressure relief with optimal immersion and moisture control could offer an effective, more practical alternative for preventing PU in clinically critical cases.

Methods

Following experimental tests and proprietary protocols simulating clinical conditions, a new support surface was developed to meet the needs of high-risk patients. Evaluation focused on three key areas: immersion, dynamic pressure relief, and microclimate regulation.

1. **Immersion (Pressure Area Index – PAI):** Immersion was assessed via full-body medical-grade capacitive pressure mapping sensors matrix (12). The Pressure Area Index (PAI) measures the percentage of body surface area under 30 mmHg, a threshold critical for tissue perfusion and pressure injury prevention. (4,6)
2. **Dynamic Mode “Zero Pressure” (Pressure Relief Index – PRI):** The alternating mode was evaluated using the Pressure Relief Index (PRI), calculated from pressure variations over the ischial and heel regions of a 90 kg, 180 cm manikin. Capacitive sensors ($6.5 \times 6.5 \text{ cm}^2$) measured pressure changes across dynamic cycles. Following Tissue Viability Society guidance (2010), performance was assessed using time-under-threshold parameters and pressure amplitude, metrics linked to improved tissue perfusion in both healthy and vascular-compromised individuals. (5,7,10)
3. **Microclimate Regulation (Diffusive Evaporation Index - DEI):** To evaluate moisture management a 200 g water-soaked pad was placed on the cover surface, sealed with PVC film, and compressed with a 40 kg plate. A 36°C heated plate simulated body temperature. This setup allowed for realistic assessment of water vapor transmission, addressing limitations of standard MVTR tests of stand-alone textiles (ASTM E96, JIS L1099).

Results

1. **Immersion:** Pressure mapping showed a mean **PAI** of 100%, indicating full-body contact area maintained below 30 mmHg. This reflects excellent immersion and effective pressure redistribution.

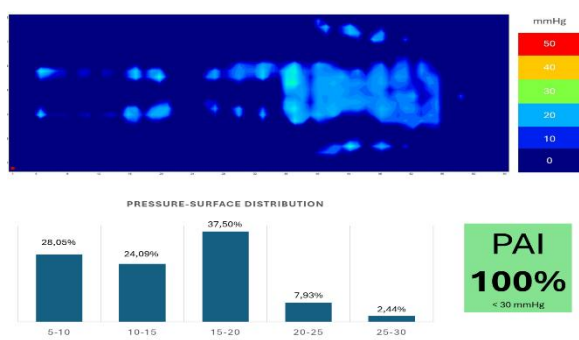


Figure 1: Pressure map during Immersion treatment and pressure distribution with respect to total contact area (right) PAI Pressure area index

2. **Advanced “Zero Pressure” Dynamic Mode:** Measurements at the ischial and heel areas demonstrated pressures below 10 mmHg for over 43% of each cycle, with high pressure amplitude supporting optimal tissue perfusion. Thanks to a novel dual blowers technology (13), pressure alternates between two lines within seconds, extending unloading duration. In the heel region, specially designed cells enabled complete



Thanks to Dual-Drive™ technology, pressure alternates between two lines within seconds, extending unloading duration. In the heel region, specially designed cells enabled complete offloading (<5 mmHg for 46% of the cycle) and limited contact pressure to ≤14 mmHg for 53% of the time.

3. Microclimate Management:

Using Flow Air technology, the system achieved a **diffusive evaporation index (DEI)** of 1870 g/m²/24h—significantly higher than standard air-based systems. This confirms active microclimate control, reducing skin moisture and helping prevent moisture-associated skin damage.

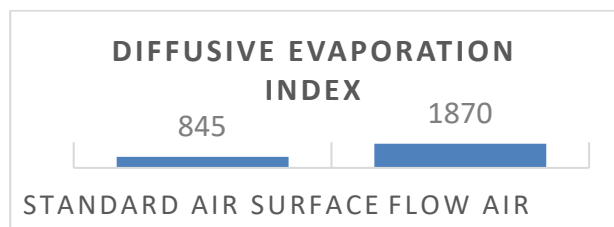


Figure 2: Diffusive evaporation index

Conclusions

In conclusion, this innovative device, equipped with a real-time, feedback-controlled system, continuously monitors and adjusts pressure levels to maintain stable therapeutic conditions even during patient movement. At the same time, it manages excess skin moisture through a constant airflow beneath the cover. This combined approach could significantly reduce the incidence of pressure ulcers and moisture-related skin damage, representing a potential breakthrough in prevention strategies.

Conflict of Interest

The authors state that in the last two years they have had the following financial and employment relationships with commercial stakeholders in the health sector with: MedicAir Group, Service Med.

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11. Authors reference: Service Med, SxT

PREVENTION OF MOISTURE SKIN DAMAGE IN PATIENT AT HIGH RISK OF PU: A TECHNOLOGY FOR A GLOBAL MANAGEMENT

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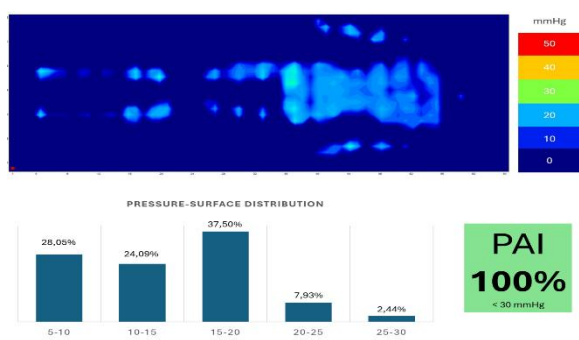


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offloading (<5 mmHg for 46% of the cycle) and limited contact pressure to ≤ 14 mmHg for 53% of the time.

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Using a high efficiency lateral dual-manifold air loss design¹³, the system achieved a **diffusive evaporation index (DEI)** of 1870 g/m²/24h—significantly higher than standard air-based systems. This confirms active microclimate control, reducing skin moisture and helping prevent moisture-associated skin damage.

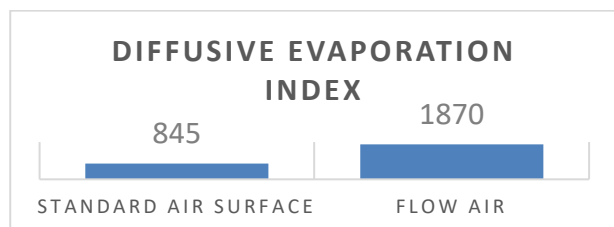


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In conclusion, this innovative device, equipped with a real-time, feedback-controlled system, continuously monitors and adjusts pressure levels to maintain stable therapeutic conditions even during patient movement. At the same time, it manages excess skin moisture through a constant airflow beneath the cover. This combined approach could significantly reduce the incidence of pressure ulcers and moisture-related skin damage, representing a potential breakthrough in prevention strategies.

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THE BENEFITS OF USING TLC-NOSF DRESSINGS AS FIRST-LINE TREATMENT IN CHRONIC WOUNDS : A SYSTEMATIC REVIEW

Dr Sylvie Meaume (1), Dr Hester Colboc, (1,2), Dr Marion Frey, (1,3), Dr Marion Delannoy(2), Laetitia Thomassin, (3)

1. Service Gériatrie - Hôpital Rothschild, France, 2. PHC en Unité Mobile de Soins Palliatifs – Service du Dr SERRESSE, Hôpital Pitié Salpêtrière, France, 3 Laboratoires Urgo France

Introduction

TLC-NOSF dressings* are recommended for treating patients with chronic wounds, but still often reported as second-line options, potentially leading to lost opportunity for patients and additional costs for payers. This review aimed to explore the performances of these dressings when used as first-line treatments.

Methods

A systematic review was conducted following PRISMA guidelines. Four databases were searched up to February 1, 2024. Studies were eligible if dressings had been used as an integral part of the standard of care (SoC) at first patient presentation and/or in recent wounds. Quality of evidence was appraised using well-recognized risk-of-bias tools.

Results

Seventeen studies at relatively low risk-of-bias were included: nine compared TLC-NOSF and standard dressings, both used as first-line; eight reported both first- and subsequent-line uses, and five reported systematic first-line use without control group. Data from the 10,203 wounds analyzed, including 565 patients with pressure injuries, showed that using TLC-NOSF dressings as first-line treatment consistently resulted in significantly higher healing rates, shorter healing-times, and cost savings compared with standard dressings used under similar conditions. Real-life evidence confirmed the results obtained in clinical trials and economic models, within similar ranges, regardless of the characteristics of patients, wounds and settings. The dressings improved patients' QoL and were well tolerated and accepted

Conclusions

These findings are aligned with current guidelines recommending using TLC-NOSF dressings in the treatment of chronic wounds and support their wider implementation as first-line treatment and integral part of SoC in daily practice.

Conflict of Interest

No



IMPROVING OUTCOMES THROUGH SUPPORTED SELF-MANAGEMENT: A CASE SERIES OF 10 PATIENTS WITH COMPLEX WOUNDS

Luxmi Dhoonmoon

Nurse Consultant Tissue Viability, London North-West University Healthcare NHS Trust, United Kingdom

Introduction

Wound management is a significant financial burden on the UK National Health Service (NHS), costing £8.3 billion annually, with 81% of this in community settings (Guest et al., 2020). Among the most costly and complex wounds are pressure ulcers, which contribute to prolonged hospital stays and increased resource use. Community nursing visits alone account for £1.6 billion for unhealed wounds (Guest et al., 2020). There is growing interest in empowering patients to manage their wounds, particularly through supported self-care for pressure ulcers. Glucose oxidase–lactoperoxidase system*, a versatile primary dressing, is ideal for promoting self-care and improving outcomes in pressure ulcer management.

Methods

This case series involved ten patients with a range of wound types, with 40% of the wounds being pressure ulcers. Over four weeks, patients were treated with glucose oxidase–lactoperoxidase system* as the primary dressing in an acute setting before transitioning to community care. Wound assessments, pain scores, and feedback from patients and healthcare professionals (HCPs) were collected. Key objectives included pain reduction, autolytic debridement, infection control, and patient engagement in self-care.

Results

Pain reduction was a key goal for 40% of patients, with all reporting pain on presentation. The average starting pain score was 9.1/10, which decreased by an average of 7.1 points after four weeks. glucose oxidase–lactoperoxidase system* was effective in promoting autolytic debridement, with 100% of pressure ulcers showing improved slough and necrosis removal. Of the wounds suspected of infection (70%), glucose oxidase–lactoperoxidase system* led to a reduction in infection signs and malodour in all cases. Exudate management was successful in 100% of wounds, and 80% of patients had reduced dressing change frequency.

Conclusions

Enzyme Alginogel® demonstrated significant benefits in managing pressure ulcers, improving pain, wound condition, and infection control. Patient feedback showed enhanced quality of life, including better sleep, increased mobility, and a return to daily activities. The dressing's ease of use and versatility allowed for effective self-management, reducing the need for frequent nursing visits. By improving pain control, debridement, and infection management, glucose oxidase–lactoperoxidase system* empowers patients to take an active role in their treatment, leading to better outcomes and reduced healthcare costs.

Conflict of Interest

None

*Enzyme Alginogel®

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SELF-MANAGED DIGITAL TECHNOLOGIES FOR PRESSURE ULCER PREVENTION IN INDIVIDUALS WITH SPINAL CORD INJURY: A SYSTEMATIC SCOPING REVIEW

Samuel David Williamson, MA (1,2), Maria Zofia Geisler, BSc (1), Randi Kjær Steensgaard, PhD (1), Line Trine Dalsgaard, MA (1), Søren Steen Nielsen, BSc (1), Knærke Søgaard, PhD (3,4,5), Sophie Lykkegaard Ravn, PhD (1,2)

1. Specialized Hospital for Polio and Accident Victims, DK; 2. Department of Psychology, University of Southern Denmark, DK; 3. Research Unit for Plastic Surgery, Odense University Hospital, DK; 4. Department of Clinical Research, University of Southern Denmark, DK; 5. Skin Integrity Research Group (SKINT), Ghent University, BE

Introduction

Pressure ulcers (PUs) represent a significant yet largely preventable complication for individuals with spinal cord injury (SCI), affecting roughly one-third of this population [1]. PUs contribute to pain [2], infection [3], and extended hospital stays [4] while also negatively impacting quality of life [5,6] and increasing healthcare costs [7]. Traditional prevention methods primarily rely on manual pressure relief techniques and clinical oversight, which can be difficult to maintain consistently in everyday life. To address these challenges, self-managed digital technologies have been introduced to encourage individuals with SCI to take a more active role in PU prevention. These include: real-time pressure monitoring, interactive feedback systems, and digital self-management platforms. However, the effectiveness of these technologies remains uncertain. To address this knowledge gap, this systematic scoping review seeks to identify and synthesize current evidence on self-managed digital technologies designed to prevent the development of PUs in adults with SCI.

Methods

A systematic search was conducted across seven databases: Embase, Medline, PsycInfo, Web of Science, Scopus, CENTRAL, and CINAHL. Studies were eligible for inclusion if they were peer-reviewed and reported original findings on self-managed digital technologies aimed at PU prevention in adults (≥ 18 years) with SCI. In addition to the systematic database search, supplementary searches were performed using Google Scholar, PEDro, and citation tracking. Data from the included studies were extracted and synthesized for analysis.

Results

A total of 9,797 unique records were identified during the systematic search, of which 12 studies met the inclusion criteria. These studies were classified into two primary categories: i) technology-based feedback systems that provide real-time pressure distribution data and ii) digital self-management and educational systems. Some studies indicated improvements in the frequency and duration of pressure-relieving activities (e.g., weight shifts, push-ups, leaning strategies); however, adherence to reminder-based interventions posed a challenge. Other interventions were associated with enhanced confidence and knowledge regarding PU prevention, with statistically significant effects observed in skin health and posture management.

Conclusions

Self-managed digital technologies show promise in enhancing awareness, confidence, and pressure relief behaviors in individuals with SCI. However, their direct impact on PU prevention remains unclear. Adherence difficulties suggest that these technologies should serve as a complement to, rather than a replacement for, comprehensive prevention strategies.



Conflict of Interest

All authors declare that they have no conflicts of interest.

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AUTOLOGOUS BLOOD CLOT TECHNOLOGY TO HEAL COMPLEX AND CHRONIC WOUNDS

T Coppin, A Wileczek, H Fortey, E Salingue J. Flament and A Puschila.
Vascular Surgery, CH de Douai, route de Cambrai, 59507 Douai FRANCE

Introduction

Chronic wound is considered as a hard-to-heal wound with a surface that has not healed by 40-50% after 4-6 weeks of standard treatment. When the normal sequences of the wound's healing physiology is interrupted due to extrinsic and intrinsic factors, this results in a chronic and non-healing wound. Autologous patient's blood clot was used to treat complex and chronic wound with good results.

Methods

The patient's blood was incorporated with a suspension of calcium gluconate and kaolin powder to form a clot. After 8 minutes of coagulation, the clot is placed on the wound and dressed with a secondary sterile non-adherent dressing. All clot's elements and reagents are disposed of after a single use of the kit. If necessary, the procedure may be repeated after 7 days. This treatment is used to facilitate and to protect the wound healing. Then the ulcer is treated by using classic dressing. All the patients were followed-up every month for the evolution of the wound's healing with good results.

Results

The first patient was a 71 years-old-woman with venous ulcer of the leg with exposing the tendon. Comorbidities were hypertension, obesity and diabetes. The first consultation was held in October 2023. We used several classic dressings without any good results. We decided to use autologous whole blood clot matrix* with complete ulcer's healing after 7 months.

The second was a 63 years-old-woman who was followed for a plantar perforating pain since 1 year. Unfortunately the ulcer has grown and for this reason, autologous whole blood clot matrix* was used with also a complete healing of the ulcer after several months.

The third patient was a 70 years-old-woman with an ulcer of the right lateral malleolus and an ulcer of the left medial malleolus. She has gone an iliac, femoral and popliteal stentgraft. The ulcers were difficult to heal, so we used autologous whole blood clot matrix * on the both of the two ulcers with some good evolution the wounds.

Conclusions

We found autologous blood clot technology to be effective for chronic and complex ulcers, easy to use and well accepted by patients. It was also observed that the time to healing had decreased.

* Actigraft

No Conflict of Interest



“INVESTIGATING WHETHER ROUTINELY COLLECTED BIOMARKERS COULD IMPROVE THE PREDICTION OF HOSPITAL-ACQUIRED PRESSURE INJURY: A RETROSPECTIVE COHORT STUDY”

Author: Ria Betteridge (1), Zoe Maunsell (2) Helen Walthall (3) Debra Jackson (4) Neesha Oozageer Gunowa (5) Kathryn Taylor (6) Clair Merriman (7)

1. Oxford University Hospital NHS Foundation Trust, England Country; 2. Oxford University Hospital NHS Foundation Trust, England; 3. Oxford University Hospital NHS Foundation Trust, England; 4. University of Sydney, Australia; 5. University of Surrey, England. 6. University of Oxford, England; 7. Oxford University

Hospital NHS Foundation Trust, England

Introduction

Hospital-acquired pressure injuries (HAPI) remain a significant challenge in healthcare, contributing to prolonged hospital stays, increased patient morbidity, and substantial healthcare costs. HAPIs are one of the most frequent and often preventable adverse events. The global prevalence in adults is approximately 12% (Rodgers, Sim et al., 2021). Despite widespread use, traditional risk assessment tools such as the Braden score, lack sufficient predictive accuracy due to limited validity. Furthermore, current methods for early pressure injury identification require visual skin inspection, leading to disparities in detection and treatment. Emerging evidence suggests routinely collected biomarkers may offer an objective and reliable approach to identifying patients at risk of HAPI.

Study Aim

To explore the potential of how biomarkers could improve HAPI prediction

Methods

Data approval was obtained from the Trust Research and Development department. Participants were admitted between January and December 2024 to acute adult medical wards in a large teaching hospital in England. The population characteristics of those participants with and without HAPI will be reported and compared, for all and based on subgroups such as hospital length of stay and Braden score. Distributions of biomarkers are plotted. Analyses were carried out in Stata v16 and R v4.4.

Results

Data from 13,942 patient admissions (304 hospital acquired pressure injuries) with median hospital stay for patient with HAPIs was 18 (11.5 to 31) days and 5 (2 to 11) days for those without. Braden scores at admission were mean (SD) 14.7 (3.3) and 17.2 (3.6) respectively. Biomarker distributions and their potential predictive value in combination with the Braden score will be presented.

Conclusions

This study provides critical insights into the potential role of biomarkers in enhancing HAPI risk prediction. By integrating objective biomarkers with the risk score, clinicians may be better equipped to identify high-risk patients and implement timely prevention strategies.

Conflict of Interest

No conflict of interest

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'ISO20342-5: RAISING THE STANDARD' - MATTRESS COVER DURABILITY IN THE POST PANDEMIC WORLD

Richard Haxby (1), Dave Newton (2), Ilias Alexandrakis (3), Estelle Johnson (4)

1. Trelleborg, UK; 2. Arjo, USA; 3. Trelleborg, UK; 4. Trelleborg, UK

Introduction

Support surface contamination through cover ingress has long been a concern (1). The COVID-19 pandemic resulted in a dramatic shift in the cleaning/disinfection of medical products generally and more specifically the technical fabrics used on support surface covers, towards the use of stronger and more aggressive cleaning agents. It demonstrated a clear need for robust and resilient cover fabrics that can still provide the critical performance parameters needed by support surfaces over a long period of clinical use.

The use of impaired and damaged covers in clinical practice can add unnecessary risks relating to infection, potential patient harm and potential legal negligence (2).

The cover of a support surface receives the most wear and tear in use yet forms the interface to the patient. The combination of chemical attack from cleaning materials and physical damage due to ancillary devices located in the patient area can affect product life.

These aspects are explored together with tests demonstrating continued cover integrity and performance after cleaning with a range of cleaning agents.

Methods

Testing to ISO20342 Part 5 (3) demonstrated resistance to cleaning/disinfection as part of a durability test on two different widely used cover polyurethane materials (a standard material and an enhanced durability version) using a range of cleaning agents.

This was undertaken to show the effectiveness in ensuring the support surface cover could continue to provide its function even after extreme levels of cleaning / disinfection that are consistent with those being used routinely in hospitals since the pandemic. Critical performance parameters of a support surface are highlighted.

Results

The results are shown in terms of the number of cycles before failure of the fabric with a number of commonly used cleaning agents.

Example :Standard = X cycles, Enhanced= Y cycles)

The results show the difference in performance between the two fabrics and how some cleaning agents are more damaging than others. The results show that Chlorine bleach, the most widely used disinfectant, is the most damaging to mattress cover fabrics.

Conclusions

The use of modern materials with an increased resilience has demonstrated benefits.

It essential that a vigilant approach to regular product inspection is undertaken as well as complying with the manufacturers recommended cleaning instructions.

The considered combination of a cover material and the design and construction of a support surface is important to both ensure patient safety and the optimum therapeutic operation of a support surface.

Conflict of Interest

The authors are employees of Trelleborg and Arjo

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3. ISO/DIS 20342-5 Assistive products for tissue integrity when lying down — Part 5: Test, method for resistance to cleaning and disinfection



RESEARCH PROTOCOL: THE SEM SCANNER AS A PRESSURE ULCER PREVENTION TOOL IN CRITICALLY ILL PATIENTS

Sofia Vieira (1), Joana Vítor (2), Deolinda Fernandes (3), Leonardo Martins (4), Miguel Rodrigues (5), Abel Viveiros (6)

1. MSc, Medical-Surgical nurse specialist at Dr. Nélío Mendonça Hospital, SESARAM- EPERAM, Madeira, Portugal. PhD in Nursing Student at Universidade Católica Portuguesa – Faculty of Health Sciences and Nursing, Porto, Portugal; 2. MSc, Critical care nurse specialist at Dr. Nélío Mendonça Hospital, SESARAM- EPERAM, Madeira, Portugal. PhD in Nursing Student at Universidade Católica Portuguesa – Faculty of Health Sciences and Nursing, Lisbon, Portugal; 3. MSc, Critical care, nurse specialist at Dr. Nélío Mendonça Hospital, SESARAM- EPERAM, Madeira, Portugal; 4. MSc, Rehabilitation nurse specialist at Dr. Nélío Mendonça Hospital, SESARAM- EPERAM, Madeira, Portugal; 5. Critical care nurse specialist at Dr. Nélío Mendonça Hospital, SESARAM- EPERAM, Madeira, Portugal; 6. MSc, Medical-Surgical Nursing Specialist and in Intensive Care and Resuscitation, Head of the Intensive Care Unit at Dr. Nélío Mendonça Hospital, SESARAM-EPERAM, Madeira, Portugal

Introduction

Pressure ulcers (PUs) are common in Intensive Care Units (ICUs) due to prolonged immobility and complex patient conditions, significantly impacting health and increasing hospital costs (1). Evidence shows up to 95% of PUs are preventable, highlighting the need for effective preventive measures (2). The SEM Scanner is an innovative, non-invasive technology that detects subepidermal tissue changes before visible skin damage occurs, enabling early interventions (3,4). This early detection could reduce PU incidence. Exploring the SEM Scanner's effectiveness in ICU settings is essential for improving care quality, reducing PU incidence, and optimizing healthcare resource use.

Methods

This study will use quantitative, comparative, and correlational design with a quasi-experimental approach, involving two groups: an experimental group using the SEM Scanner and a control group continuing conventional pressure ulcer (PU) prevention methods. The quasi-experimental design allows for the evaluation of the SEM Scanner's effectiveness in a real-world clinical setting, providing valuable data for potential changes in clinical practices and health policies. While not a randomized trial, this approach enables meaningful comparisons between groups and control over external variables, which is crucial in complex settings like ICUs.

The study will take place in a Portuguese ICU, with a target population of adult patients (18+) admitted to the ICU. A convenience sampling strategy will be used, based on an estimated annual population of 600 patients. The total sample size is 470 patients (235 per group), calculated using Raosoft software, with a 5% margin of error and 95% confidence level. The Inclusion criteria are patients with a Braden Scale score below 16, indicating high risk for PU development. Exclusion criteria include a Braden score above 16, existing pressure ulcers on heels or sacrum, amputations, documented arterial insufficiency in lower limbs, and contraindications to mobilization such as hemodynamic instability or fractures.

Results

It is expected that the results will demonstrate a significant reduction in PU incidence in the group using the SEM Scanner, compared to the control group. This outcome could highlight the added value of this technology in the prevention of PUs among critically ill patients. These results could influence health policies and clinical guidelines. Additionally, the study may inspire future research on the SEM Scanner's applicability, fostering healthcare innovation. Technology's adoption could improve clinical outcomes, reduce hospital stay length, and lower PU-related complications, contributing to a more efficient, patient-centered healthcare system.



Conclusions

This study holds transformative potential for clinical practice related to PU prevention in Intensive Care Units. By providing robust evidence on the effectiveness of the SEM Scanner, it aims to support the continuous improvement of care quality, positively impacting patient safety, clinical outcomes, and the efficient management of healthcare resources. The success of this project may serve as a foundation for future research and the implementation of innovative technologies, promoting an institutional culture of safety, innovation, and continuous training in critical care settings.

Conflict of Interest

The authors declare no conflicts of interest.

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TRANSLATION, CULTURAL ADAPTATION AND CONTENT VALIDITY OF THE DECUBICUS-TEST: PRELIMINARY RESULTS

Sofia Vieira (1), António Mostardinha (2), Paulo Alves (3)

1. Universidade Católica Portuguesa - Faculty of Health Sciences and Nursing, 4169-005 Porto-Portugal Center for Interdisciplinary Research in Health|CIIS, Wounds Research Lab, 4169-005 Porto, Portugal;
2. Universidade Católica Portuguesa - Faculty of Health Sciences and Nursing, 4169-005 Porto-Portugal Center for Interdisciplinary Research in Health|CIIS, Wounds Research Lab, 4169-005 Porto, Portugal;
3. Universidade Católica Portuguesa - Faculty of Health Sciences and Nursing, 4169-005 Porto-Portugal Center for Interdisciplinary Research in Health|CIIS, Wounds Research Lab, 4169-005 Porto, Portugal

Introduction

Nurses' responsibility in effectively implementing pressure ulcer (PU) prevention strategies is well-recognized globally. However, challenges such as time constraints, heavy workloads, and insufficient knowledge about PU causes and prevention methods hinder quality nursing care(1,2).Despite efforts to evaluate nurses' knowledge, results remain inadequate. A 2022 study showed that 51.5% of ICU nurses had insufficient knowledge on PU prevention (2). To address this, the translation, cultural adaptation, and validation of the DecubICUs-test (3) for Portuguese ICU nurses were conducted, aiming to assess their knowledge, identify educational gaps, and support evidence-based educational strategies.

Methods

The translation, cultural adaptation, and validation of the DecubICUs-test for the Portuguese population followed the framework of Beaton et al. ((4), combining qualitative and quantitative analyses in six stages:

1. Translation: Two independent versions were made by bilingual translators, one with clinical training and the other without, to capture different perspectives.
2. Synthesis: The versions were consolidated into a consensus version (T12).
3. Back-Translation: T12 was back-translated into English to verify content fidelity.
4. Expert Committee Review: A multidisciplinary committee assessed equivalence using the Content Validity Index (CVI).
5. Pre-Test and Think-Aloud: The pre-final version was applied to 30 ICU nurses, with five participating in think-aloud to identify ambiguities.
6. Psychometric Evaluation: Temporal stability and equivalence were evaluated through test-retest, with further properties being analyzed in a study with 120 ICU nurses.

Results

After the translation, synthesis, and back-translation of the DecubICUs-test, the expert committee's first evaluation led to key modifications, focusing on terminology standardization to align the instrument with current clinical guidelines. The response options were also restructured to better reflect clinical practice and reduce ambiguities, ensuring clarity and relevance for pressure ulcer prevention.

All experts confirmed the idiomatic and conceptual equivalence (100%), while 87.5% highlighted semantic and cultural equivalence. In the second round, the evaluation of the Content Validity Index (CVI) in the domains of clarity, completeness, correctness, and relevance showed high agreement. The global CVI for relevance was



0.974, with the domains of completeness, correctness, and clarity reaching 1.0 (100%), indicating full validation.

A pre-test applied to 30 ICU nurses assessed item acceptability, clarity, and comprehension. The think-aloud technique, applied to five participants, identified interpretive difficulties, allowing for adjustments to improve clarity. Analysis of transcriptions confirmed that participants understood the items adequately.

Finally, using Spearman's coefficient temporal stability was confirmed, through a significant positive correlation ($\rho_s = 0.633$; 95% CI: 0.356–0.808; $p < 0.001$) between pre-test and retest results, demonstrating consistency in scores over time and confirming the instrument's reliability.

Conclusions

The translation, cultural adaptation, and validation of the DecubICUs-test for the Portuguese population ensured semantic, conceptual, idiomatic, and cultural equivalence with the original instrument. The process guaranteed clarity and suitability for ICU nurses in Portugal. High content validity indices and a strong correlation between pre-test and retest results demonstrate the instrument's fidelity, clarity, and stability. The think-aloud technique refined items, improving clinical relevance. Ongoing psychometric evaluations will complete the validation and enhance the instrument's clinical applicability. The Portuguese DecubICUs-test is promising for assessing nurses' knowledge and guiding educational interventions on pressure ulcer prevention.

Conflict of Interest

No conflicts of interest by the authors.

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TRANSLATING EVIDENCE TO EVERYDAY PRACTICE: SEM-DRIVEN PRESSURE INJURY PREVENTION FOR PATIENTS WITH DARK SKIN

Kate Hancock (1), Vignesh Iyer (1)

1. Bruin Biometrics, LLC, Los Angeles, USA

Introduction

Existing care practices frequently fail to detect early-stage pressure injuries (PIs) and deep tissue pressure injuries (DTPIs) in patients with dark skin tones. Visible and tactile signs (VSA) of tissue damage are often obscured by skin pigmentation, leading to a 1.8× higher risk of progression to Stage 2+ injuries. Sub-epidermal moisture (SEM) assessment detects localized edema—the earliest sign of pressure-induced tissue damage. SEM measurements are not impacted by skin pigmentation and identify tissue damage at a median of five days earlier than current practices. To demonstrate the utility of SEM-driven prevention in dark skin tone populations, a series of clinical studies—controlled trial, retrospective analysis, and real-world quality improvement (QI) program—were conducted.

Methods

In a prospective observational cohort study, patients >55 years were enrolled and underwent daily VSA, SEM, and ultrasound assessments for 3–10 consecutive days. Ultrasound-confirmed sDTIs were identified by hypoechoic lesions; SEM-delta ≥ 0.6 over ≥ 2 days was considered abnormal.[1] A retrospective analysis of 69 critically ill adults included SEM data, Braden scores, prevention measures, and PI occurrence within 7 days.[2] A quality improvement study, guided by Kurt Lewin's change model, evaluated SEM integration in routine care among 140 critical care patients over 24 weeks.[3]

Results

The observational study enrolled 15 patients ($n = 4$ with Fitzpatrick type III or higher). In all cases, early SEM-based detection of tissue damage aligned with later confirmation of suspected deep tissue pressure injuries (DTPIs) using ultrasound and visual assessment. The retrospective analysis ($N = 69$) included 26 African American (AA) patients with sacral SEM data; 5 (19%) developed a hospital-acquired pressure injury (HAPI) or a pressure injury present on admission (POA), and 4 of those 5 (80%) had a sacral SEM delta ≥ 0.6 . In the quality improvement study, pre-implementation HAPI incidence was 8.9% (8/90; all AA patients). A 100% reduction ($p < 0.6$) in HAPI incidence was achieved during the implementation period, which included 35 African American patients. Relative risk of HAPI was 1.6× higher (95% CI) in the pre-implementation group.

Conclusions

SEM assessments do not fail dark skin tone patients. Across controlled trials and real-world settings, SEM-guided prevention workflows consistently reduced pressure injury incidence, including in populations with a high proportion of darkly pigmented patients. These findings support routine use of SEM in clinical practice to improve early detection, guide timely intervention, and address disparities in care. Training clinicians to treat localized edema—measured by SEM—even in the absence of visible or tactile signs is critical to advancing equitable pressure injury prevention.

Conflict of Interest

Clinical studies were funded through unrestricted research grants by Bruin Biometrics, LLC.

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EVIDENCE-BASED PRACTICE ENHANCES PATIENT OUTCOMES: EARLY PRESSURE ULCER DETECTION WITH BIOCAPACITANCE TECHNOLOGY AMONG CRITICALLY ILL PATIENTS

Magda Mohamed Bayoumi (1)

1. Medical-Surgical Nursing Specialty, Nursing Department, College of Health and Sport Sciences, University of Bahrain, Kingdom of Bahrain

Introduction

Pressure ulcer (PU) development involves substantial tissue damage beneath the skin surface before visible or tactile symptoms become apparent. Early detection and intervention are crucial to preventing PU progression. SEM assessment technology is designed to detect sub-epidermal moisture (SEM), indicative of localized edema 5-days prior to visible and tactile signs of skin damage. [1] This early detection allows critical care nurses to initiate proactive, preventive measures earlier in the patient's care plan. [2]

Methods

This descriptive, comparative, longitudinal study [3] was conducted in Intensive Care Units (ICUs) at government hospitals in Bahrain. Immobile ICU patients were assessed for PU risk using two methods: SEM assessment technology and the Modified Cubbin and Jackson (MCJ) Scale. Two independent raters, blinded to SEM results, assessed PU risk using the MCJ Scale, while a trained critical care nurse performed SEM assessments. Statistical analyses included sensitivity, true positive rates, and receiver operating characteristic (ROC) curves.

Results

SEM Technology accurately predicted PU development ($\Delta \geq 0.6$) in 51.6% of cases, significantly higher than the 29.7% prediction rate of the MCJ Scale ($p < 0.001$). SEM assessments also demonstrated fewer false negatives, with only 6.2% of PUs unpredicted compared to 28.1% by MCJ. Sensitivity was notably higher for SEM assessments (89.2%) compared to MCJ (48.6%). Furthermore, ROC analysis revealed an area under the curve (AUC) of 0.880 for SEM assessments versus 0.739 for the MCJ Scale. SEM assessments identified risk an average of 3.07 ± 2.93 days earlier than MCJ in 35.1% of readings.

Conclusions

SEM assessment technology demonstrated superior efficacy compared to the MCJ Scale by detecting PU risk approximately three days earlier, providing higher sensitivity and identifying significantly more true positive cases. Incorporating SEM assessments as part of enhanced skin tissue assessments into ICU care protocols, complemented by targeted staff training, can significantly enhance clinical decision-making. This approach reduces variability in skin assessment, decreases both the incidence and severity of hospital-acquired pressure ulcers, and ultimately improves patient outcomes

Conflict of Interest

No conflicts.

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THE LOCAL PROPERTIES OF SACRAL REGION WITH PRESSURE ULCER IN HEART FAILURE PATIENTS: CASE SERIES

Tuğba Yeni (1), Peter R. Worsley (2), Meryem Yıldız Ayvaz (1), Nuray Enç (3)

1. School of Nursing, Koç University, Türkiye; 2. Skin Sensing Research Group, School of Health Sciences, University of Southampton, United Kingdom; 3. Florence Nightingale Faculty of Nursing, Medical Nursing Department, Istanbul University-Cerrahpaşa, Türkiye

Introduction

The pathophysiology of heart failure contributes to circulatory failure, with impaired perfusion recognized as a risk factor for pressure ulcer (PU) development [1,2]. The incidence of heart failure is notably high among intensive care unit (ICU) patients, a group particularly vulnerable to pressure ulcers [3,4]. As such, monitoring early indicators of skin integrity may be crucial for these populations. This case series aims to show how the local characteristics of the sacral region with pressure ulcers change in heart failure patients in critical care and the differences in the presence of stage I and stage II PU.

Methods

Seven adult patients with a primary diagnosis of heart failure were admitted to a tertiary ICU. After developing pressure ulcers, transepidermal water loss (TEWL) and skin pH were assessed over four days, with measurement devices calibrated daily. All measurements were taken twice, and in cases where a significant difference was observed between the two readings, the measurements were repeated. When results were consistent, the average value was accepted. All pressure ulcers were located on the sacrum. The accepted TEWL range for healthy skin was 9-16, and the accepted skin pH range was 4-6 [5,6]. Data analysis was performed using SPSS. Following the completion of the descriptive statistics for seven cases, a re-evaluation of the cases according to the pressure ulcer stages was conducted, and the results were subsequently compared.

Results

The mean age of participants was 78.14 ± 10.35 years, with a Glasgow Coma Scale (GCS) score of 12.29 ± 1.79 and a body mass index (BMI) of 23.34 ± 3.34 . On day 1, the mean TEWL was 20.05 ± 9.44 (range: 9.60-34.50), and by day 4, it increased to 28.31 ± 14.01 (range: 11.30-48.50; mean difference: -8.25, $p < .05$). The sacral skin pH was 6.15 ± 0.53 on day 1 and 6.46 ± 0.62 on day 4 ($p > .05$). Of the seven cases, three were classified as stage I and four as stage II pressure ulcers. Despite the changes in TEWL and pH, no statistically significant differences were observed when the mean values of cases with stage I and stage II pressure ulcers were compared ($p > .05$).

Conclusions

In conclusion, pressure ulcers may adversely affect local properties of sacral skin. However, there is a need for studies with larger samples in which data from specific populations such as heart failure and intensive care unit patients are analysed.

Conflict of Interest

The authors have no conflicts of interest to declare.

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SEQUENTIAL MANAGEMENT OF PRESSURE ULCERS (PU) WOUNDS WITH POLYABSORBENT TLC-AG FIBRE DRESSING AND TLC-NOSF TREATMENT RANGE

Malgorzata Manowska(1), Edyta Szumna(2), Emilio Galea (3)

MSc Nursing. Wound Care Center GOLID, Wałbrzych, Poland(1), Private MSc Nursing, Private Practice , Zabkowice Śląskie, Poland (2), Laboratoires Urgo, 42 rue de Longvic 21300 Chenove (3)

Introduction:

Several factors have been identified that may impair the healing process, including local and systemic factors - local factors include the presence of devitalised tissue, foreign bodies, and wound infection, while systemic factors include comorbidities, advanced age, malnutrition, and other chronic organ diseases¹.

Technology lipido-colloid with silver (TLC-Ag) is supported by high quality clinical evidence, and, moreover, the addition of polyabsorbent fibres, has allowed clinicians to apply this technology to higher exuding wounds to provide a cleaning and antimicrobial action². Furthermore, the TLC with nano oligosaccharide factor (TLC-NOSF) treatment range, with matrix metalloprotease reduction properties, has been shown to reduce healing times and overall wound management costs, and improves the patients' health related quality of life³.

Methods:

Clinical evaluation of the sequential management with polyabsorbent TLC-AG fibre dressing and TLC-NOSF treatment range in two pressure ulcers.

Results:

In both PUs, the management with the two evaluated treatment ranges provided very good results with resolution of local wound infection and rapid wound closure.

A score of 5 (with 0 being the worst and 5 being the most desirable) was given for the dressings for ease of application, ease of removal, non-adherence to wound, conformability, acceptability by clinician, and acceptability by patient, without any adverse events.

Conflict of Interest

No



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MANAGEMENT PROTOCOL FOR MUCOSAL PRESSURE ULCERS IN THE CRITICAL CARE UNIT: CLINICAL SUCSESSES WITH HYPOCHLOROUS ACID 330PPM AND PH 5.5

Authors:

Camilo Valle (1), Emilio Galea(2)
Hospital de La Serena, Coquimbo Region. Chile(1), Laboratoires Urgo, France (2)

Introduction:

Descriptive observational study. Case report including adult patients hospitalized in the Intensive Care Unit presenting with MD-associated PU in mucosal membranes. Patients selected had lesions in moist membranes lining the oral cavity and/or genitourinary tract, secondary to the use of orotracheal tubes and/or indwelling urinary catheters, respectively.

Methods:

A local management protocol was implemented, consisting of oral and/or genital hygiene every 6 hours, pressure relief through MD mobilization every 4 hours, and the application of gauze soaked in HOCl 330 ppm and pH 5.5 over the affected area for 5 minutes every 6 hours.

Results:

Patients exhibited a progressive reduction and containment of lesion size, with an absence of bleeding and a reduction in tissue damage within an average of 3 days.

Conclusions:

Maintaining a standard of care that addresses both the etiology and local management of the lesion promotes effective tissue recovery, with visible results achieved in a short time. The use of HOCl 330 ppm and pH 5.5 in mucosal lesions proved to be a straightforward technique with favorable clinical outcomes and high adherence by healthcare staff. These results suggest that this practice could be replicated in the management of similar lesions.

Conflict of interest

No



ADVANCED WOUND CARE IN A COMPLEX PRESSURE ULCER IN A CRITICALLY ILL NEWBORN: CASE REPORT

María Carolina Medel Sánchez(1), Emilio Galea(2)

Hospital Exequiel González Cortés, Región Metropolitana, Chile(1), Laboratoires Urgo, France (2)

Introduction:

To describe the Advanced Wound Care (AWC) approach in a critically ill newborn with a Pressure Ulcer (PU) in the occipital area.

Methods:

Descriptive study. Clinical case of a 9-day-old newborn hospitalized in the Critical Care Unit, under invasive mechanical ventilation, with acute respiratory dysfunction, renal replacement therapy, and multiorgan failure. After removal of a medical device, a deep tissue pressure injury was observed in the occipital region, which subsequently progressed to complete exposure of the underlying tissue injury. An AWC protocol was implemented using a pure hypochlorous acid cleansing solution (330 ppm, pH 5.5). In case of signs of infection, antimicrobial dressings with debridement capacity were applied. Once the infection was controlled, dressings were used to maintain moisture balance and for atraumatic, painless removal. Dressings were changed twice weekly, and pressure relief measures were implemented.

Results:

AWC facilitated progressive healing of the pressure ulcer, with reduced tissue damage and positive evolution. One month after starting treatment, the patient experienced clinical complications (systemic infection and lack of weight gain), which affected the wound. Infected wound management was resumed for two weeks before transitioning back to standard wound care, achieving complete healing within 8 weeks.

Conclusions:

Clinical stabilization of the patient is crucial for successful wound management, as systemic complications can compromise wound healing. A comprehensive approach that considers the patient's clinical status and healing barriers, along with the use of advanced, safe materials for this population, is essential for achieving good clinical outcomes.

Conflict of Interest:

No



The Family's Role in Continuing Pressure Ulcer Care at Home after Hospital Discharge

Ali Alibrahim

King Fahd Central Hospital, , Ministry of Health , Jizan Health Cluster, Saudi Arabia

Introduction

Pressure ulcers are a common and serious complication among patients with limited mobility, particularly those recently discharged from hospitals. Effective post-discharge care is critical in preventing the recurrence or worsening of pressure ulcers. While healthcare providers initiate prevention and treatment during hospitalization, the responsibility for continued care often shifts to family members once the patient returns home. This abstract explores the family's role in ongoing pressure ulcer care, highlighting the importance of education, involvement, and support systems in achieving positive outcomes.

Methods

A narrative review of current literature was conducted, focusing on studies published between 2020 and 2024 that examined home-based pressure ulcer care and the involvement of family caregivers. Databases searched included PubMed, CINAHL, and Scopus. Keywords used were "pressure ulcer," "family caregiver," "home care," "discharge planning," and "education." Articles were selected based on relevance, quality, and applicability to post-discharge care scenarios.

Results

The findings indicate that family caregivers play a pivotal role in pressure ulcer prevention and management at home. Key responsibilities include assisting with repositioning, ensuring proper nutrition and hydration, maintaining skin hygiene, monitoring wound progression, and applying dressings. Education provided at discharge significantly enhances caregiver confidence and competence. Studies show that structured caregiver training, combined with follow-up support from community nurses or telehealth services, leads to improved healing rates and reduced hospital readmissions. However, caregivers often face challenges such as lack of medical knowledge, emotional stress, and limited access to resources.

Conclusions

The family's role in pressure ulcer care after hospital discharge is essential to successful long-term management. Hospitals must integrate family-centered education into discharge planning and provide accessible tools and resources for caregivers. Supportive interventions such as home visits, telehealth check-ins, and clear communication with healthcare providers can bridge the gap between hospital and home care. Enhancing family involvement not only benefits the patient's physical health but also contributes to better caregiver satisfaction and reduced healthcare burden.

Conflict of Interest

The authors declare no conflicts of interest and no funding received from industry sources.

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Role of Self-Adherent Polyurethane Foam 5-Layer Silicone Bordered Dressing in Preventing Hospital-Acquired Pressure Ulcers in the Critical Care Unit at King Fahd Hospital, Gizan

Ali Alibrahim

King Fahd Central Hospital, , Ministry of Health , Jizan Health Cluster, Saudi Arabia

Introduction

Hospital-acquired pressure ulcers (HAPUs) remain a significant challenge in critical care units due to patients' immobility, compromised skin integrity, and multiple comorbidities. Advanced dressings, particularly self-adherent polyurethane foam with 5-layer silicone borders, have emerged as an effective intervention for pressure redistribution and skin protection. This study aims to evaluate the role of these advanced dressings in preventing HAPUs among critically ill patients in the Critical Care Unit at King Fahd Hospital, Gizan.

Methods

A prospective, observational study was conducted over six months involving adult patients admitted to the Critical Care Unit with moderate to high risk for pressure ulcer development, as assessed by the Braden Scale. Patients were divided into two groups: an intervention group receiving the self-adherent 5-layer silicone bordered dressing on high-risk areas (sacrum and heels), and a control group receiving standard preventive measures without advanced dressings. Data collected included incidence of pressure ulcers, stage and location of ulcers, dressing tolerance, and nurse-reported usability and satisfaction.

Results

Among 120 patients enrolled, 60 were placed in each group. The incidence of HAPUs in the intervention group was significantly lower at 3.3%, compared to 13.3% in the control group. Most pressure ulcers observed in the control group were Stage 1 and 2, located on the sacrum and heels. No adverse skin reactions were reported in the dressing group. Nursing staff reported the dressings were easy to apply and remove, adhered well to the skin, and minimized the need for frequent changes. Patient comfort and satisfaction were also noted to be higher in the intervention group.

Conclusions

The application of self-adherent polyurethane foam 5-layer silicone bordered dressings in high-risk patients significantly reduced the incidence of hospital-acquired pressure ulcers in the Critical Care Unit at King Fahd Hospital. These dressings offer an effective, user-friendly, and well-tolerated preventive strategy, and should be considered for routine use as part of comprehensive pressure injury prevention protocols in critical care settings.

Conflict of Interest

The authors declare no conflicts of interest and no funding or sponsorship received from industry sources for this study.

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PATIENTS AND CAREGIVERS SATISFACTION ON VIRTUAL WOUND CARE SERVICES IN SAUDI ARABIA

ABDULAZIZ BINKANAN

KING SAUD MEDICAL CITY, MINISTRY OF HEALTH, SAUDI ARABIA

Introduction

The global burden of chronic wounds including pressure ulcer is substantial, contributing significantly to morbidity, disability, and healthcare costs worldwide.^{1–3} Traditionally, wound care has required in-person visits to healthcare facilities, involving comprehensive assessments by multidisciplinary teams care.^{4,5} However, barriers such as limited access to facilities, conflicting work time or caregiving responsibilities, mobility challenges, and transportation issues can impede timely wound care access, especially in regions with vast geographic distances and underserved areas.^{6,7} Virtual wound care services involve remote assessment, monitoring, and management of wound healing through digital health platforms, telemedicine, and other internet-enabled technologies.¹¹

Despite the promising benefits of virtual wound care, patient and caregiver satisfaction remains a pivotal element in the successful adoption and sustainability of these services.¹²

Methods

A cross-sectional survey was collected among 4190 respondents, comprising 2300 patients and 1890 caregivers who had used virtual wound care services from 11th of April to 10th of December 2024. The survey captured socio-demographic details, satisfaction levels, and experiences with various wound care system domains.

Results

Results revealed that patients reported significantly higher satisfaction levels compared to caregivers. Younger participants, males, and individuals with higher education or full-time employment were more likely to report high satisfaction. Domains such as voice and visual quality, personal comfort, and team courtesy were rated higher by patients, while caregivers expressed concerns regarding accessibility and communication. Approximately half of patients (42.2%) indicated a strong willingness to reuse telehealth services and recommend them, reflecting positive acceptance of virtual wound care in Saudi Arabia.

Conclusions

Virtual wound care services are generally well-received in Saudi Arabia, with patients showing greater acceptance than caregivers. Findings highlight the importance of targeted support and training to address caregiver needs, improve accessibility, and promote equitable telehealth satisfaction.

Conflict of Interest

No conflict of interest.

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INNOVATIVE APPROACH IN PRESSURE ULCER PREVENTION IN SPINAL CORD INJURED PATIENTS

*Abdulaziz Binkanan
King Saud Medical City, Saudi Arabia*

Introduction

Pressure ulcer (PU) is a major burden for patients and healthcare system. Especially in spinal cord injured (SCI) patients due to several identified factors including but not limited to immobilization. As it cast a long shadow on healthcare system, innovative and creative solutions are required clinically. A tried example is Hydraulic Lifting (HL) for bed ridden patients to minimize and relieve the pressure on bony prominence.

Methods

Observational method used in SCI inpatients composed of 96 patients over a 3 months period from January 2nd to March 27th. Patients age varies between 20-60 years. HL used every two hourly to relieve the pressure in addition to standard of care for PU prevention. This study is approved by IRB committee and the principal of ethics taken into consideration.

Results

Despite the increased cost of providing HL beside every patient, it showed effectiveness in PU prevention. 68% decreases in PU incidence compared to previous quarter and 54% compared to the same quarter in the last year.

Conclusions

PU prevention in SCI patients remain a challenge to every clinician. However, overcome these challenges by providing all possible option and facilitating prevention strategy play a crucial positive role in conquering difficulties.

Conflict of Interest

No conflict of interest.

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SYSTEMATIC REGISTRATION AND ANALYSIS OF PRESSURE ULCER TREATMENT AT A HOSPITAL: CHALLENGES AND COMPLEXITY

Britt Hansen (1), Aase Fremmelevholm (2)

1. Odense University Hospital, Department of Plastic Surgery, Denmark 2. Odense University Hospital, Department of Plastic Surgery, Denmark

Introduction

Odense University Hospital has conducted annual prevalence studies on the occurrence of pressure ulcers/pressure injuries (PU/PI) since 2012. In 2025, the prevalence was 5,5 % (18 PU/PI among 327 patients). A dedicated wound care nurse is employed at the hospital with the primary task of reducing the number of hospital-acquired PU/PI¹. The nurse also assists with wound care treatment and visits patients with different types of wounds across the hospital. Despite this relative low prevalence, a large number of bedside wound assessment and treatment in PU/PI are carried out, across the departments of the hospital. In October 2024 all professional contacts related to wound care were registered more systematically. This included wound care treatment for patients as well as professionals consultations with caregivers, physicians and municipal and home care nurses.

Methods

A structured questionnaire was developed using SurveyXact to register the following:

- Department or care setting
- Type of wounds
- Time consumption
- The complexity of wound treatment
- Tasks and challenges in wound care treatment

The questionnaire is completed on a daily basis. The aim was to gain an overview of wound care activities, with PU/PI care as the primary focus of this analysis.

Results

Since October 2024, 124 PU/PI cases were registered.

- 50 % (n=62) involved were reported as complex wound care (e.g., debridement of necrotic tissue, management of recently developed PU/PI, and challenges related to prevention).
- 50 % (n=62) involved basic wound care (e.g., dressing-selection for older PU/PI, development of wound care plans for municipal follow-up, and treatment of category 1 or 2 PU/PI).

The majority of wound care activities were registered in medical departments, while fewer were reported in surgical departments. A significant portion of the professional support also extended to municipal care settings, including coordination and clinical guidance for home care nurses.

Conclusions

Many PU/PI are treated at the nursing home or other municipal care settings. Therefore, collaboration across sectors is essential.

In addition, there is a need for bed side learning and increased competencies among caregivers in the hospital, particularly in medical departments, to enable them to handle basic wound care independently.

Conflict of Interest

Nothing to declare.

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INCREASING COMPETENCE IN WOUND CARE WITH WOUND MAPPING

1. Jalonen Leena, tissue viability nurse, RN, 2. Ylönen Minna, Administrative Nurse Director, PhD, RN

The wellbeing services county of Southwest Finland, Finland

Introduction:

To prevent pressure ulcers, nurses need comprehensive information about the individual situation of patients and ulcers. At the organizational level, there is limited access to information on wound care without the development of a wound mapping form.

Aims:

The first objective is to identify the actual situation of pressure ulcers and wound care. The second and more important objective is to improve the competence in wound care through education based on the results of the wound mapping.

Methodology:

Mapping means that all patients with wounds under treatment are mapped for one week. The mapping questionnaire contains structured (e.g. wound diagnosis, maximum wound length, width and depth, pressure ulcer risk and nutritional status assessment) and open-ended questions (e.g. current wound care). The questionnaire is completed by the nurse caring for the patient with the wound. The questionnaire also has an educational purpose, which means that it contains information that should be recorded on the medical records by nurses. [1] The survey was carried out in 2024 in elderly care, outpatient care and disability services.

Results:

Gaps in competence in different areas of wound care were identified, such as pressure ulcer identification, prevention, assessment and documentation.

Conclusion:

The results of wound mapping present the reality of wound care and in this it makes it possible to really target education to real competence development needs. Wound mapping is one way to support nurses to use evidence-based information and to support wound healing and patient well-being. Also nursing leadership is important in implementing evidence-based wound care. [2]

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Empowering Families Through Telemedicine: Supporting Prevention of Pressure Injury

Selsjord Anne (1), Irgens Ingebjorg (2), Kirkevold Marit (3), Svendsen Edel (4)

1. Sunnaas Rehabilitation Hospital, Norway; 2. Oslo Metropolitan University, Norway; 3. VID Specialized University, Norway.

Introduction

Flap surgery is the preferred treatment for closing deep and severe pressure injury (PI) (Gelís et al, 5:352-354, 2018), but the surgery is associated with severe complications such as pressure injury recurrence (PIR), pain, and infections (Morel et al, 2:77-83, 2018), and require that the patient follows a strict restriction plan the first months post- flap surgery (Black & Black, 3:10-13, 2017). For family members to individuals with spinal cord injury (SCI) treated with flap surgery, knowing that their loved ones are receiving high-quality follow-up care at home post-surgery can be a huge relief. The use of telemedicine follow-up from the SCU in collaboration with the patient, their relatives and healthcare providers in the community has proven to be as good as regular wound care from the outpatient clinic (Irgens et al, 4, 2022), and may have the potential to prevent PIR after flap surgery (Chen et al, 9, 2022). However, little is known about family members experiences with the telemedicine follow-up. Therefore, the aim of this study was to explore how family members experiences telemedicine follow-up@home first year post flap surgery, with special concerns regarding empowerment, and support in PIR prevention.

Methods

This study is a part of a larger study, exploring experiences with telemedicine in individuals with SCI treated with flap surgery living at home, their relatives and health care providers in the community. The study employs a qualitative design and utilizes semi-structured interviews with 5 family members to individuals with SCI, who have received telemedicine follow-up within the first-year post flap surgery. Data was transcribed, coded, and analysed with thematic analysis conducted to identify key patterns and themes.

Results

Preliminary results indicate that telemedicine follow-up provided family members with confidence and eases their worries, lightens the emotional and practical burdens, and contributes to increased knowledge about PIR-prevention, by ensuring accessibility to specialist healthcare, ensures continuity of care, and high-quality professional support.

Conclusions

Preliminary results indicate that telemedicine follow-up provided family members with confidence and eases their worries, lightens the emotional and practical burdens, and contributes to increased knowledge about PIR-prevention, by ensuring accessibility to specialist healthcare, ensures continuity of care, and high-quality professional support.

Conflict of Interest

This study is a part of a Ph.d-project funded by DAM Foundation

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ARE PRESSURE ULCER CATEGORISATION SYSTEMS A DISTRACTOR FROM THE REAL WORK OF PREVENTION AND TREATMENT?

Jacqui Fletcher

1.NHS England, England

Introduction

Kottner et al (2020) [1] stated “ PU/PI classification system are only worth implementing, when the diagnostic information improves clinical decision making leading to improved prevention and treatment”.

In England significant clinician activity is directed to allocating numerical categories to pressure ulcers (PU). Once they occur a number must be allocated, often taking 2 nurses (to reach agreement) and may then be verified (agreed or corrected) by a specialist nurse.

Allocation of specific numbers triggers a cascade of administrative work, reporting into clinical incident systems, case review, root cause analysis and discussion at PU panel. The outcomes inform local learning systems, with action plans. Similar processes have been in place for over 10 years and little new learning occurs with common themes still being:

- need for more education,
- risk assessments / repositioning were not completed,
- equipment was not available
- communication failed.

What is not clear is what impact, if any, the allocation of this number has on clinical practice and more importantly the patient outcomes. There is little data on outcomes for patients with PU, we do not focus on healing rates once the number is allocated and categorisation systems do not allow for progression to a lesser number to indicate a form of healing. Many patients have unhealed wounds for months or years and data are not captured on their progress or lack thereof.

Methods

In November 2024 a 4 category system was introduced [2]. Unstageable and Deep Tissue Injury were removed and an alternative system (see figure 1) including links to care pathways was implemented. These pathways focused not on the number but on what care would be needed.

- Where skin is not broken there is preventative care and good skin care, this pathway includes any vulnerable skin * including that described as category 1 and previously described as deep tissue injury. Preventative care is paramount to prevent further deterioration or evolution of damage.
- Where skin is broken the pathway instigates ongoing prevention and a pathway of wound assessment and review – to increase the emphasis not just on prevention but improving patient outcomes in relation to the wound.
- Where skin is broken and bone is visible there is an additional consideration of the risk of osteomyelitis.

Results

Early feedback suggests that whilst there has been significant effort implementing the change there has been reduction in time required to both categorise and follow up PU (where previously they were called Unstageable or DTI). The time taken to educate staff and switch their focus to prevention and healing cannot be under estimated. Senior members of organisations need to fully understand the changes and the impact on their overall pressure ulcer numbers when benchmarking data. .



Conclusions

This work is in its early stages and is a significant shift in focus. It is hoped that it will have benefits for patient and be more rewarding for staff as they are focussed on prevention and healing rather than a number and a punitive incident reporting system.

*This also ties into the implementation of the PURPOSE T risk assessment tool introduced in November 2023

Conflict of Interest

No conflict of interest

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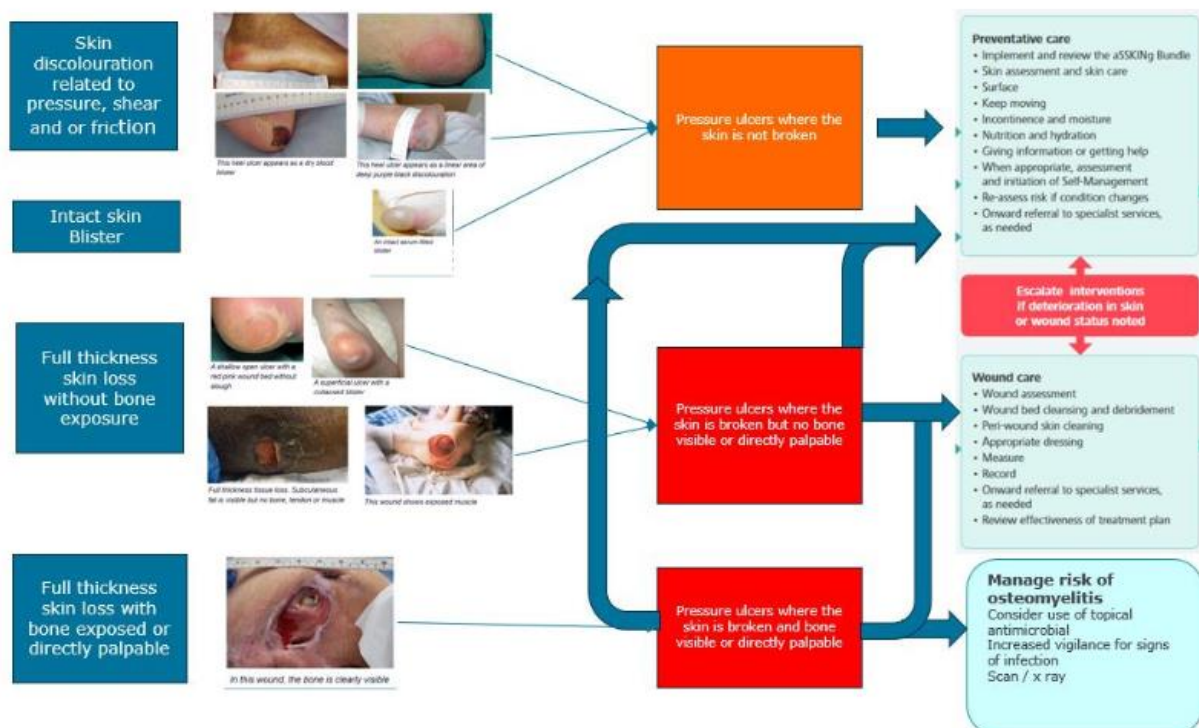


Figure 1: The new clinical pathways

REDUCING PRESSURE ULCER INCIDENCE AND ENHANCING PREVENTION ACTIVITIES IN HOSPITALIZED PATIENTS: A QUALITY IMPROVEMENT APPROACH

Hyunsuk Park¹, Hyejeong Jung³, Eun Jin Han³, Ahyoung Kim⁴, Moonjin Choi⁵, KIM SUNGHOON⁶

RN, MSN, WOCN, CWCN, COCN¹, RN, APN, CWCN, CFCN² RN, APN, APN^{3,5,6}, RN, APN, CWCN⁴,

Severance Hospital, Yonsei University Health System, Seoul, Korea,^{1,2,3,4,5,6}

Introduction

Pressure ulcers are a significant nursing concern, particularly in hospitalized patients, affecting vulnerable populations such as the elderly and those with sensory impairments or functional disabilities. Effective prevention and early intervention are key to minimizing the incidence of pressure ulcers and improving patient outcomes. This Quality Improvement (QI) initiative was undertaken to reduce pressure ulcer incidence in hospitalized patients by enhancing reporting practices and strengthening prevention interventions.

In 2022, the pressure ulcer incidence rate in the wards was reported at 3.01%, with notable differences across wards (141 ward: 5.41%, 152 ward: 4.18%, 172 ward: 12.0%). The error rate in pressure ulcer reporting was 28%. This QI project aimed to reduce these errors and improve the implementation of preventive measures to ensure patient safety.

Methods

A multidisciplinary QI team was formed, including the IPSG committee from three wards, clinical departments (Respiratory Medicine, Integrated Medicine, and Plastic Surgery), and wound ostomy nurses. The team implemented several improvement strategies, including enhanced nurse training on pressure ulcer prevention, the introduction of a structured monitoring system, and the development of an Electronic Medical Record (EMR) system to reduce reporting errors.

Data on pressure ulcer incidence and reporting errors were collected quarterly from 141, 152, and 172 wards. Self-reported prevention activity performance was assessed using a structured questionnaire, and direct observations of high-risk patients were conducted to verify the implementation of prevention measures.

Results

The results of the QI intervention showed a reduction in pressure ulcer incidence from 9.63% to 5.3% across the three wards. Ward-specific reductions were also observed (141 ward: 5.46% to 5.04%, 152 ward: 7.25% to 4.88%, 172 ward: 16.17% to 5.97%). Additionally, self-reported performance of prevention activities improved, with significant increases in the "always perform" category for key interventions such as pressure redistribution and position changes.

Despite these improvements, challenges such as irregular nursing work schedules and the inclusion of newly recruited staff impacted the consistency of prevention activities, highlighting the need for ongoing education and support.

Conclusion

This QI initiative successfully reduced pressure ulcer incidence and improved the implementation of prevention strategies. Continued efforts are necessary to address barriers such as staff turnover and to ensure consistent application of prevention practices. Future initiatives will focus on enhancing nurse education, strengthening real-time feedback systems, and simplifying pressure ulcer management protocols to ensure sustainability and further improvements in patient care.



STANDARDISING BEST PRACTICE FOR PRESSURE INJURY PREVENTION: RESULTS OF A LARGE-SCALE AUDIT IN ABU DHABI

Salvacion Cruz, Linda Haskins
Sheikh Khalifa Medical City, United Arab Emirates

Introduction

Beyond the considerable physical and emotional impact on patients, pressure injuries (PI) pose an economic burden on institutions and healthcare systems [1]. The pioneering interventions at the Sheikh Khalifa Medical City (SKMC) in Abu Dhabi [2,3] have demonstrated the feasibility of preventative measures, coupled with regular audits, in reducing the prevalence of hospital-acquired (HA) PI whilst improving the standard of care. Several other successful interventions have been reported by centres from the Middle East [4,5]. Nonetheless, gaps in awareness and compliance regarding PI prevention in this region remain [6].

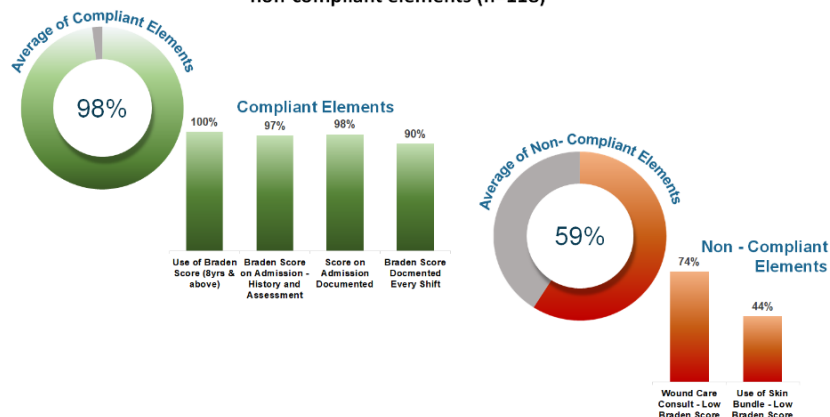
Methods

The SKMC is a flagship tertiary hospital in the United Arab Emirates. Despite efforts by the SKMC team, an increase in PI prevalence was observed between 2013 and 2018, highlighting an urgent need to understand local practices. Initially prompted by the COVID-19 pandemic, a 2020 audit conducted at various healthcare facilities (HCF) across the Abu Dhabi Healthcare Company identified a need to act. Therefore, a clinical re-audit was undertaken in 2022 to review current practices against the revised hospital standards, using retrospective data from 606 patients and a 22-standard audit tool. Further to this, a clinical audit at the SKMC focused on skin risk assessment and the use of validated tools such as the Braden and Braden Q scores. This audit used electronic medical records collected between 25 March and 30 June 2022 in 150 patients hospitalised at the SKMC.

Results

The Braden Score was applicable to 118 patients (aged ≥ 8 years), and Braden Q to 32 patients (aged 3 weeks to < 8 years). High ($\geq 90\%$) levels of compliance were reported for a number of the components audited, such as: use of the appropriate risk assessment tool; risk assessment scoring based on patient's history; documentation of risk score on admission; and documentation of risk score at every shift (Figure 1). Meanwhile, compliance with HCF guidelines on placement of wound care consultation and use of skin care protocol based on score was sub-optimal (Figure 1). Similar results were reported for Braden Q assessments, with an average of 93% compliant elements compared to 98% for Braden score. Following the audit (Q3 2022), several changes were made to the SKMC electronic medical record system to facilitate the placement of wound care consultations based on a patient's PI risk.

Figure 1. Use of Braden Score at the SKMC: Compliant and non-compliant elements (n=118)



Conclusions

Excellent progress has been made in PI prevention at the SKMC, evidencing a need for a consistent approach to improve patient outcomes. The 2022 audits have highlighted the value of interventions to mitigate the findings of the initial (2020) audit through clear action plans, standardised practice and enhanced compliance with existing protocols. Certain areas of clinical practice, such as risk assessment, will require further improvement through ongoing review of practices and education of the wound care staff through a number of initiatives, including collaborations with industry partners.

Conflict of Interest and Acknowledgements

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PRESSURE RELIEF: THE EFFECTS OF THERAPEUTIC SURFACES AND BED INCLINE ANGLES ON BODY PRESSURE DISTRIBUTION

Lindsay Stern (1)(2) and Atena Roshan Fekr (1)(2)

1. Institute of Biomedical Engineering, University of Toronto, Canada; 2. KITE Research Institute, Toronto Rehabilitation Institute – University Health Network, Canada

Introduction

Therapeutic mattresses, such as foam or alternating air support surfaces, are commonly used to assist in reducing the impact of prolonged pressure and shear forces on patients suffering from Pressure Injuries (PIs) [1]. Pillows are commonly used to remove the pressure from high risk regions (e.g. heels) while in bed [2]. Lastly, clinical best practice guidelines recommend limiting the head of bed (HoB) incline angle to a maximum of 30° to reduce friction and shear forces caused by patients sliding downward [3]. This study aims to evaluate how the combination of these therapeutic strategies and clinical best practice guidelines affect overall body pressure distribution.

Methods

Whole body pressure data was captured from 20 healthy participants using a pressure sensitive sheet composed of 1,056 sensors, with a sampling rate of 1 Hz. Participants were tasked with lying in the supine posture with and without a pillow placed underneath the calves on both a foam and an alternating air mattress at HoB incline angles ranging from 0° to 30° with 10° increments. The pressure distribution images were segmented into six parts, including the full body, the head and neck, the upper torso, the lower torso, the right and left legs, and the right and left foot [4], shown in Figure 1. A Wilcoxon Signed-Rank Test, with an $\alpha = 0.05$, was conducted to compare pressure distribution between mattresses at each HoB incline angle and between the use and omission of a pillow underneath the heels.

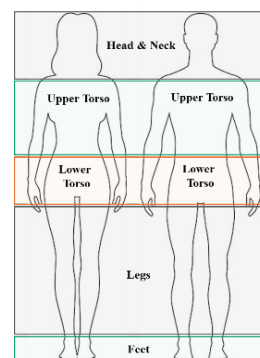


Figure 1: Body segmentation for female and male participants.

Results

When comparing the alternating air and foam mattresses, no statistical differences were discovered, except on the lower torso region. For HoB inclines from 10° to 30° for the lower torso region, the p -values ranged from 0.001 to 0.0064. When comparing between the use and omission of a pillow underneath the calves for the alternating air and foam mattresses, the heel and lower torso regions had statistical differences in pressure. The heel pressure decreased with the addition of pillows, resulting in p -values of 0.0001 for each mattress. Contrastingly, the pressure increased at the lower torso region with the addition of the pillows, resulting in p -values between 0.0054 and 0.0086 for the foam and alternating air mattresses, respectively.

Conclusions

These results can help inform clinical decision making for PI prevention, such as increasing HoB incline angles may increase the risk of PI development. It was confirmed that the alternating air mattress is beneficial in decreasing pressure in the torso region. Furthermore, though using a pillow removes the pressure from the heels, the lower torso region, another high-risk region for PIs, is at risk due to the increase in pressure at this region.

Conflict of Interest

The authors declare no conflicts of interest.

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PREVENTIVE PREVENTION OF PRESSURE ULCERS IN SURGICAL PATIENTS: A RETROSPECTIVE STUDY AND TECHNOLOGICAL OUTLOOK

L.Veverkova¹, P.Doležal²

¹ Faculty of Medicine of Masaryk University Brno, CZ , ² EFS Masaryk University, Brno, CZ

Introduction: Pressure ulcers (PUs) remain a persistent complication in hospitalised surgical patients, contributing to prolonged hospital stays, increased morbidity and significant healthcare costs.

Methods This retrospective study evaluates the effectiveness of prevention strategies implemented over a ten-year period (2015-2024) in a tertiary surgical care setting, while also exploring future opportunities enabled by artificial intelligence (AI) and emerging technologies.

Results Analysing data from 26,486 surgical patients, the incidence of PUs was found in 1,713 cases (6.5%), with the sacrum (37.6%), heels (33%) and buttocks (17%) being the most commonly affected anatomical sites. The highest incidence was observed in patients with femoral neck fractures (36.7%), oncological diagnoses (12.03%) and acute abdominal conditions (10.6%). Statistical analyses revealed a significant reduction in PU prevalence over time - from 33 cases in 2015 to 12 in 2023 ($p < 0.01$) - coinciding with the implementation of evidence-based protocols, including the Braden scale, planned repositioning, advanced pressure-relieving surfaces, and targeted staff education.

Looking ahead, the integration of AI-based predictive models and wearable monitoring systems offers a transformative opportunity. Machine learning algorithms have demonstrated predictive accuracy in excess of 74%, outperforming traditional assessment tools. Smart technologies - such as pressure-sensing mats and real-time alert systems - can improve early detection and response, potentially reducing nurse workload and improving outcomes.

Conclusions: This study highlights the value of a combined strategy: using established clinical practices with novel technological tools. Continued investment in interdisciplinary research, clinical validation and ethical oversight will be essential to realise the full potential of predictive wound care and achieve sustainable reductions in the prevalence of PU across healthcare systems.

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ACTIVITIES OF THE PATIENT ORGANISATION ZAHOJÍME, Z.S. IN THE PROCESS OF WOUND HEALING IN THE CZECH REPUBLIC

Adéla Holubová^{1,2}, Andrea Pokorná^{3,4}

¹ Patient organisation, Zahojíme, z.s., Sezimovo Ústí, Czech Republic, ² Faculty of Health and Social Sciences, University of South Bohemia, České Budějovice, Czech Republic, ³ Department of Health Sciences, Faculty of Medicine, Masaryk University, Brno, Czech Republic, ⁴ Department of Health Sciences, College of Polytechnics Jihlava, Jihlava, Czech Republic

Introduction

The successful treatment of non-healing wounds needs a multidisciplinary approach, with a key role played not only by healthcare professionals, but also by the patients and their family members or lay caregivers. Without their active cooperation and support, it would not be possible to reach optimal results and provide complex care. In order for patients and carers to be able to contribute fully to the treatment process, it is essential that they have sufficient and understandable information. Only an informed and motivated patient can become a full partner of the healthcare professionals in the healing process and thus make a significant contribution to improving his/her health.

Methodology

In January 2023, the patient organisation “Zahojíme, z.s.” was founded with the main aim of supporting patients, their careers and health professionals in the treatment of non-healing wounds. The organization focuses on education, providing professional information, support and training, and improving access to comprehensive care. “Zahojíme, z.s.” has a scientific board composed of leading specialists (Key Opinion Leaders) in the treatment of non-healing wounds and associated disciplines. With the expert oversight of the scientific board, the high quality and validity of the documents produced is guaranteed, ensuring their benefit to patients, caregivers and healthcare professionals. To identify the effect and knowledge about the organisation the online survey was done.

Results

“Zahojíme, z.s.” is a professional patient initiative with the support of professional societies and a broad base of patients and their caregivers. Its main objective is to keep abreast of the latest developments in wound healing, legislative changes and the needs of patients with non-healing wounds. The organisation actively listens to patients, providing them with clear and sufficient information, while emphasising the involvement of their lay carers, who form an important part of the healing process. “Zahojíme, z.s.” publishes educational materials, newsletters, and informational pamphlets, and continues to develop additional materials aimed at improving the quality of care for patients with non-healing wounds, with the goal of providing up-to-date information and support to all those involved in their treatment. The survey has been answered by 59 respondents. All of them evaluated the organisation as helpful and beneficial.

Conclusion

The patient organization “Zahojíme, z.s.” is focused on supporting patients, their caregivers and professionals in the treatment of non-healing wounds. Its main mission is to listen to the needs of those struggling with wounds and related complications, provide them with the information they need and facilitate access to quality care. The organization not only focuses on educating the public and caregivers, but also actively collaborates with healthcare professionals and professional societies. The collaboration with EWMA is started nowadays.



DYNAMIC BIOMARKER MONITORING DURING MULTISTAGE SURGICAL MANAGEMENT OF PRESSURE ULCERS IN A PARAPLEGIC PATIENT

Alica Hokynková^{1,5}, Hana Paulová², Petr Šín^{1,5}, Marie Nováková³, Petr Babula³, Andrea Pokorná⁴

¹ Department of Burns and Plastic Surgery, University Hospital Brno,

² Department of Biochemistry, Faculty of Medicine, Masaryk University, Brno, Czech Republic

³ Department of Physiology, Faculty of Medicine, Masaryk University, Brno, Czech Republic

⁴ Department of Health Sciences, Faculty of Medicine, Masaryk University, Brno, Czech Republic

⁵ Faculty of Medicine, Masaryk University, Brno, Czech Republic

Introduction

Multiple pressure ulcers (PUs) in paraplegic patients represent a complex clinical and surgical challenge. Biochemical and nutritional status significantly influence wound healing and surgical outcomes. This case study investigates the relationship between oxidative stress (8-hydroxy-2'-deoxyguanosine, 8-OHdG), inflammatory response (C-reactive protein, CRP), and nutritional markers (albumin, prealbumin) during multistage PU reconstruction.

Methods

A case report of 61-year-old paraplegic male with three deep PUs (ischial, trochanteric, sacral) underwent six hospitalizations over 17 months. During each hospitalization, blood and urine samples were collected in a standardized timeline (pre-debridement and pre-reconstruction flap surgery). 8-OHdG was analysed via LC/MS/MS from urine, while CRP, albumin, and prealbumin were measured in plasma. Surgical outcomes and wound dynamics were correlated with biochemical changes.

Results

Early phases were characterized by malnutrition, systemic infection, and elevated CRP. Low 8-OHdG and prealbumin levels delayed surgery. Intensive enteral and parenteral nutritional support improved parameters, allowing staged reconstructions. Final outcome included complete PU healing.

Conclusions

Real-time biochemical monitoring - particularly of 8-OHdG, prealbumin and CRP - proved essential for surgical timing and treatment success. This case highlights the possibility of integration oxidative stress markers into clinical protocols for PU management in patients with complex comorbidities.

Conflict of Interest

This work was supported by the Ministry of Health of the Czech Republic under grant no NU21-09-00541, "The role of oxidative stress in pressure ulcer treatment in a patient with spinal injury." All rights reserved.



INTERDISCIPLINARY COLLABORATION IN THE TREATMENT OF PRESSURE INJURIES IN A 64-YEAR-OLD ONCOLOGY PATIENT

Andreja Klinc, Martina Goličnik

Institute of Oncology Ljubljana, Slovenia

Introduction

A 64-year-old paraplegic cancer patient is being treated for rectal cancer. He started oncological treatment in October 2021. He felt no pain due to his paraplegia, which put him at high risk of pressure injury. The patient lived alone. He developed extensive pressure injuries.

Pressure injuries can have serious consequences, including infection, sepsis and even death.

We accelerated the healing of the acquired pressure injury with interdisciplinary approach to wound management. Members of the interdisciplinary team included: specialist wound nurses, registered dietitians, physiotherapists, wheelchair specialists, social workers, mental health professionals and doctors. Patient assessments included nutritional status, pressure injury risk assessment, supportive surfaces/positioning assessment, seating assessment (i.e. cushion review and functional assessment), wound assessment and management, pain assessment and mental health screening. Patient received routine pressure injury care (necrectomy, NPWT, autologous tissue grafting), secondary pressure injury prevention with appropriate airbag and positioning, nutritional support, physiotherapy, and social and psychological support.

Methods

Wound care nurses are often at the forefront of preventing and managing pressure injuries. We are instrumental in developing care plans that focused on positioning, moisture management and pressure injuries healing strategies. We are responsible for daily wound assessment, dressing changes and patient education. We are a key link in the integration of different professional groups. We provide key information to the rest of the medical team to ensure that pressure injuries are managed and treated appropriately.

Results

The wound healing process took two years. However, by following a plan to heal the primary acquired wounds and prevent secondary pressure injuries, with an interdisciplinary approach and the use of appropriate support surfaces, the healing outcome was successful.

Conclusions

Studies have shown that patients who receive care from an interdisciplinary team have better outcomes, including faster wound healing, reduced infection rates and improved quality of life. Collaboration ensures that the patient's care plan is individualized and tailored based on ongoing feedback from healthcare professionals. By combining the expertise of different healthcare professionals, patients benefit from a holistic, integrated approach to treatment that addresses not only the physical, but also the psychological and social factors that influence healing. When healthcare teams work seamlessly together, patients with pressure injuries experience better outcomes, faster recovery and improved quality of life.

Conflict of Interest

No conflicts of interest have been declared by the authors.

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'MICROCLIMATE DOES MATTER' - ANALYSIS OF RCT-BASED RESULTS FOR AT-RISK PATIENTS

Dave Newton , Sara Tackson

Arjo Inc, USA

Introduction

A pressure ulcer/injury (PI) results in adverse clinical impact for patients and staff along with increased financial burden to the healthcare facility, potential litigation costs [1] and additional reporting implications [2].

Implementing the right solution at the right time for the patient is a well-established clinical option for the prevention and treatment of PI's [3]. The application of a microclimate coverlet onto an appropriate pressure redistribution surface can be used to address the patient's microclimate needs while also reducing associated friction and shear forces [4].

This study further analyses results of a randomized control trial (RCT) regarding the effectiveness of microclimate management features of support surfaces/mattresses for PI prevention [5]. The RCT involved known 'at-risk' patients with clinically identified microclimate conditions (e.g. Braden moisture sub-scale 1 or 2).

Methods

Analysis of the results from 2 of the 7 original RCT trial groups was undertaken; these groups provided a unique comparison within the wider trial structure.

The 2 groups (n=65 in each) shared the same underlying reactive support surface without microclimate management, however one group's surface was provided with a microclimate coverlet intended to manage microclimate using negative airflow.

Results

Overall, PI incidence within the entire RCT was 33/451 patients = 7.3%

In the sub-groups under analysis:-

PI incidence in the subgroup without microclimate management was 7/65 = 10.7%

PI incidence in the subgroup with microclimate management was 4/65 = 6.1%

This difference in the PI incidence between these two groups was identified as a notable difference.

Conclusions

The microclimate coverlet provides a continuous, high level of microclimate management [4] across the entire body. This can augment other clinical interventions such as manual repositioning or the use of prophylactic dressings.

Patient care cost per PI case is reported as \$20,900 - \$151,700 [1]

There was a difference of 3 PI's in the studied RCT sub-groups, representing a potential variation in the PI cost of \$60,000 and \$450,000, less than the cost of providing the microclimate coverlet on both sub-groups as a preventative measure.

The preventative and interventional use of the microclimate coverlet with negative airflow could provide a cost-effective, sustainable and implementable option.

Conflict of Interest

The RCT was performed independent of industry. This analysis involved authors who are industry based.

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'DOES MICROCLIMATE MATTER?' – LESSONS LEARNED FROM A SECONDARY ANALYSIS OF A RCT

Dave Newton (1), David Brienza PhD (2)

1. Arjo Inc, USA; 2. University of Pittsburgh, USA;

Introduction

A randomized controlled trial (RCT) was recently completed to evaluate the effectiveness of microclimate management with airflow (MMA) features in mattresses for pressure ulcer (PU) prevention in acute care settings [1]. The study enrolled 451 patients identified as 'at risk' based on clinical microclimate factors, specifically Braden subscale scores of 1 or 2. Clinical guidelines recommend enhanced preventive strategies for patients with these risk profiles [2, 3].

A descriptive analysis of the RCT results revealed a notable difference in PU incidence between two closely related arms assigned to mattresses with different microclimate management performance. This observation, consistent with the trial's primary hypothesis, warranted further investigation.

Methods

The analytical approach included:

Baseline Comparison – Evaluation of patient characteristics across groups to ensure comparability.

Chi-Square Test – To determine whether group assignment (7 levels) was associated with PU incidence.

Post-Hoc Power Calculation – Estimation of the sample size required for a future trial based on the observed effect size between the two subgroups of interest.

Results

The overall PU incidence across all seven groups in the RCT was 7.3% (33 of 451 patients). The chi-square test indicated no association between group assignment and PU incidence ($p = 0.883$). In the two subgroups of interest:

Without microclimate management: 7 of 65 patients developed a PU (10.8%)

With MMA-enabled coverlet: 4 of 65 patients developed a PU (6.2%)

This difference suggests a small to moderate effect size. A post-hoc power calculation indicated that a sample size of 1,248 patients (624 per group) would be required to detect a statistically significant difference in PU incidence between groups at $\alpha = 0.05$ with 80% power.

Conclusions

This focused sub-analysis highlights a notable difference in PU incidence associated with the addition of microclimate management in a mattress coverlet. While statistical significance was not reached, the findings support further investigation in a dedicated trial and may help guide clinical decisions regarding support surface selection for high-risk patients.



Conflict of Interest

There was no funding of the study by industry.

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JOURNAL CLUBS SUPPORT PRESSURE ULCER PREVENTION

Sanna Rautiala (1), Satu Rauta (1), Tii Kouvalainen (1), Nelli Lönnrot (1), Tarja Pöllänen (1)

1. Perioperative and Intensive Care, University of Helsinki and Helsinki University Hospital, Finland

Introduction

It is estimated that 55 000-85 000 patients develop pressure ulcer (PU) in Finland each year [1]. It is also known that perioperative patients are at risk of having a PU during the perioperative period [1,2]. At Jorvi Hospital's Anesthesia and Surgery Unit K (Helsinki University Hospital), we treat approximately 3,900 elective and 4,500 emergency patients annually in endocrinology, gastro, plastic, and burn surgery. We consider the PU prevention as an important quality indicator. We participate in an annual one-day prevalence survey of PUs and a review of practices. In addition, we conducted a survey to assess the implementation of our organization's PU Prevention policy. The results revealed that the policy had not been fully implemented within our department. In response, we launched a journal club to increase nurses' competence in PU prevention.

Methods

A working group was formed, and a development project was initiated. The purpose was to prevent PU in our patients while improving staff knowledge on prevention practices. To achieve this, we introduced practice guidelines on PU prevention and patient positioning for various surgical procedures. We also revisited our organization's PU Prevention model, analyzed our clinical performance, and identified areas for improvement.

Results

Between 2019 and 2024, nine journal clubs focused on PU prevention were conducted. Each session was attended by 5 to 11 nurses or nursing students, with a total of 69 participants. The ideas generated during these sessions were discussed and actively implemented. Evidence-based guidelines, completed with pictures and videos, were created and used in staff meetings, orientation, and student training. Additionally, a variety of PU prevention products were purchased for the ward, leading to increased utilization of these resources. Education on documentation, PU risk assessment, and the organization's PU prevention policy was provided. A prevalence study was conducted in November 2024. The findings revealed that skin assessments and PU risk assessments were performed for nearly all patients. Previously PU assessments were not performed. In the operating room, skin assessments were documented for every patient, but PU risk assessments were only carried out for half of the patients. Moreover, PU prevention interventions were implemented in both the operating and recovery rooms.

Conclusions

Journal clubs have played a key role in supporting the implementation of PU prevention interventions. However, ongoing communication of accurate policies and critical reviews of current practices are essential. Journal clubs have become a vital component in the development of our activities and in promoting EBP.

Conflict of Interest

No conflict of interest

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MEASURING MORE THAN PRESSURE ULCER PREVALENCE: TOWARDS TARGETED WARD IMPROVEMENT PLANS

Lara Bos (1), Denise Spoon (2), Monique van Dijk (2), Lisette Schoonhoven (1,3)

1. Julius Center for Health Sciences and Primary Care, University Medical Center Utrecht, Utrecht University, Utrecht, the Netherlands; 2. Internal Medicine, Division of Nursing Science, Erasmus MC University Medical Center Rotterdam, Rotterdam, the Netherlands; 3. School of Health Sciences, Faculty of Environmental and Life Sciences, University of Southampton, United Kingdom.

Introduction

Pressure ulcers (PUs) remain a challenge in healthcare, impacting patient well-being, prolonging hospital stays, and increasing costs [1]. Although extensive knowledge on prevention strategies exists, adherence remains suboptimal [2]. Nurse champions play a crucial role in bridging this gap by promoting best practices, educating colleagues, and translating findings into practical improvements [3]. Additionally, they could help maintain awareness of PU prevention among nursing staff and management, keeping it a priority across all levels [3]. As part of the Champion study, we aimed to improve leadership and the sense of ownership of nurse champions. PU prevalence measurements by nurse champions were introduced to determine how this effort would affect current practices. This abstract presents insights gained from the implementation of this practice-oriented approach.

Methods

Nurse champions received targeted training on PU prevalence measurements and collaborated closely with wound care specialists. Following a defined process to guarantee uniformity across wards and hospitals, measurements were designed to assess the presence of preventive measures, pre-existing risk factors, and other relevant clinical observations, in addition to determining prevalence. Nurse champions were responsible for conducting and documenting the measurements, compiling the results, and sharing findings with nursing staff and management on their wards.

Results

A total of 564 patients (mean age 60) were assessed in two academic hospitals in the Netherlands. PU prevalence ranged between 2% and 61%, depending on the type of ward. Nurse champions identified trends such as the incorrect use of pressure-reducing mattresses, lack of heel elevation, and delayed initiation of preventive measures for at-risk patients. PU prevalence measurements provided insight into the specific needs of each ward, enabling nurse champions to prepare ward-specific improvement plans. For example, in wards with a higher prevalence of heel PUs, nurse champions identified the need for additional heel cushions. This led to discussions with colleagues and managers, which ultimately resulted in their purchase.

Conclusions

Introducing PU prevalence measurements provided valuable insights into areas for improvement, offering a more comprehensive understanding of the number of patients with PUs, the severity of PUs, associated risk factors, and the preventive interventions that were implemented or required. Giving nurse champions the authority to oversee PU prevalence measurements may enhance nursing staff awareness and a sense of accountability, thereby highlighting their critical role in PU prevention. Further research through in-depth interviews with nurse champions, nurses, and managers will explore these effects in more detail.

Conflict of Interest

This study received funding from ZonMw (10040022230006).

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THE USE OF CASE-BASED LEARNING AS AN ACTIVE TEACHING AND LEARNING METHODOLOGY ON PRESSURE ULCERS MANAGEMENT

Pedro Sardo (1,2,3), João Lindo Simões (1,2), Alexandre Rodrigues (1,4)

1. Escola Superior de Saúde da Universidade de Aveiro, Portugal; 2. Instituto de Biomedicina da Universidade de Aveiro, Portugal; 3. Associação Portuguesa de Tratamento de Feridas, Portugal; 4. Centro de Inovação em Biomedicina e Biotecnologia/CEISUC, Portugal

Introduction

The wound care curriculum is widely discussed by national [1] and international organizations [2-6]. Pressure ulcer prevention and treatment [7] are explored in most of the wound care courses. However, some institutions continue to use traditional educational models. Nowadays, active teaching and learning methodologies are key topics in Excellence Education [8]. Case-Based Learning has shown advantages in the development of knowledges, skills and attitudes (in health students and professionals), when compared to traditional methodologies [9]. This work aims to describe the use of Case-Based Learning strategies, on pressure ulcer management, during a post-graduate course in wounds and tissue viability; and to analyse the competences related to pressure ulcer management, developed by the nurses who attended the post-graduate course.

Methods

The proposed methodology is grounded in active teaching and learning methodologies as the Case-Based Learning. The course has 6 curricular units that were interconnected. At the beginning of course, the students were invited to work in specific topics related to wound care and prevention, such as “pressure ulcer management in home care setting”. Each proposed clinical case served as support for theoretical and practical sessions and as a starting point for some evaluation moments of different curricular units. A clinical case related to pressure ulcer management were used in 3 different curricular units. In the first curricular unit (Multidimensional approach to the person with wound risk), we developed a high-fidelity simulation scenario with actor patients (patient and caregiver) and exposed the students to a clinical case of a dependent woman with several health problems that was cared for by her mother. In the second curricular unit (Care of the person with a wound), the students should identify and assess the pressure ulcer, describing (for example) the wound bed, the wound edge and the periwound skin based on previous learnings. On the third curricular unit (Decision-making on therapeutic options), the students should implement a therapeutic plan based in the best available evidence. During this process, the students developed their evaluation works in standard scientific formats. The entire process was monitored by the course lecturers.

Results

The results of these teaching and learning experience were in line with the competences required in the clinical context. Through those 3 curricular units, each student developed different knowledges, skills and attitudes on pressure ulcer risk assessment, prevention, diagnose, classification, treatment and/or research. In the first curricular unit the students carried out a comprehensive assessment of the person with pressure ulcer risk/pressure ulcer. They used several instruments to support clinical practice such as: Braden Scale for pressure ulcer risk assessment; MUST and/or NSR-2020 for nutritional risk assessment; Wound-QoL for assessing the quality of life and Zarit to assess caregiver's burden. In the second curricular unit the students characterise the pressure ulcer and monitor the healing process through PUSH, PSST, DESIGN-R and/or RESVECH 2.0. In the third curricular unit the students continued to use the TIMERS and DIME tools/mnemonics to assess and prepare the wound bed; the NERDS and/or STONES mnemonic to diagnose superficial bacterial burden and/or deep tissue infection; and implement an accurate care plan to promote the healing process. The development of the evaluation works in standard scientific templates such as: abstracts, posters, and/or case studies promoted the dissemination of some studies with the scientific community.

Conclusions

These pedagogical strategies represented an excellence practice in pressure ulcer management education. The use of case-based learning methodologies increased the nurse's autonomy in the learning process and ease the development of different knowledge, skills and attitudes related to pressure ulcer management and



research. Currently, this post-graduate course is under evaluation by the Nacional Council of Nurses to enable the certification of increased competences in Tissue Viability and Wound Nursing.

Conflict of Interest

The authors declare no conflict of interest.

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ASSESSING PRESSURE ULCER ATTITUDES, PILOT STUDY

Tarja Tervo-Heikkinen (1), Minna Mykkänen (1), Ulla-Mari Kinnunen (2)

1. Wellbeing Services County of North Savo and Kuopio University Hospital, Finland; 2. Wellbeing Services County of North Savo and University of Eastern Finland, Finland

Introduction

Pressure ulcers (PU) remain a significant problem wherever patients are cared for and negative attitudes towards PU prevention can lead to suboptimal preventive measures. Nurses' knowledge and attitudes have been evidenced to effect PU prevention [1]. However, unfortunately, according to a review [2] nurses' attitude towards PU prevention is only on a satisfactory level. Attitude related to nurses' competence in the prevention of PU had the lowest scores when the Attitude towards Pressure Ulcer Prevention (APuP) instrument [3] was used. The aim of our pilot study was to find out head nurses' (HN), registered nurses' (RN) and licensed practical nurses' (LPN) attitudes towards pressure ulcer prevention.

Methods

APuP instrument [3] was used to find out HNs', RNs' and LPNs' attitudes level before and after implementation of systematic pressure ulcer prevalence model. APuP include 13 items which are divided into five subscales (Personal competency to prevent pressure ulcers, Priority of pressure ulcer prevention, Impact of pressure ulcers, Responsibility in pressure ulcer prevention, Confidence in the effectiveness of prevention). Data were analysed using descriptive statistics.

Results

The survey included 344 respondents, with 96 participants providing responses both before and after the implementation of the systematic PU prevalence model. Among the respondents, 10 % of respondents were HNs, 33 % RNs, and 57 % LPNs. A significant majority (95 %) engaged in PU prevention and early intervention activities at least weekly. Prior to the implementation 46 % of respondents reported meeting pressure ulcer patients at least weekly, compared to 70 % after implementation of the model.

The total attitude towards PU prevention increased especially for HNs (78 %, 100 %) and RNs (84 %, 96 %). The personal competency subscale increased for HNs (33 %, 43 %) and RNs (41 %, 52 %), the priority subscale increased for HNs (33 %, 43 %) and RNs (41 %, 52 %) as well as responsibility subscale, HNs (78 %, 100 %), RNs (84 %, 100 %). Confidence subscale increased for HNs (89 %, 100 %). For LPNs only responsibility subscale increased (87 %, 90 %). The impact subscale remained at the same level for all respondents (92 %, 92 %). For the whole instrument for all participants attitude increased from 91 % to 94 %.

Conclusions

Although the survey data was quite small, a positive attitude change can be noted. Both HNs, RNs and LPNs have already knowledge about PUs financial, societal and patient related effects. Competencies and priority issues related PU prevention in daily nursing care must be increased by educational interventions.

Conflict of Interest

None.

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IMPROVING PRESSURE ULCER CARE IN A COMPLEX INTENSIVE CARE SETTING BY TRANSLATING EVIDENCE

Ulrika Grenholm

Karolinska University Hospital, Sweden

Introduction

Thoracic intensive care patients are particularly at risk to develop pressure ulcers (PU) due to surgical, treatment related and intrinsic factors [1]. Health care, especially intensive care unit (ICU), is a complex system that continuously adapts [2]. Effective care activities preventing and curing pressure ulcers come with a strong recommendation to adapt to the individual situation [3]. The local Thoracic ICU focuses on production and surgical outcome. Measures related to nursing care are less prominent. The need to improve PU-care was identified in 2022 and resulted in an ongoing improvement effort. Thus, PU care activities need to be balanced with patients' needs and organisational structures.

Methods

Effective and relevant items from the PU guideline [3] were summarized in a pocket guide. As implementing evidence-based care alone is not enough to achieve improvement, the framework Successful Healthcare Improvements From Translating Evidence (SHIFT-Evidence) [4] is used. Monthly measurements, which are conducted by reviewing nursing records, and the adaptation of selected PU-items are in line with the framework's principle 'act scientifically and pragmatically'. The second principle 'embrace complexity' is the guiding star of all activities within the improvement effort and led to the chosen adaptations. As the nursing staff are pivotal to carrying out PU-care, the third principle 'engage and empower' focuses on them. An extensive educational program was conducted during autumn 2022 and has continued with lectures, workshops and quizzes. The pocket guide serves as a guide, the nursing staff are empowered to choose and execute PU-care to suit the individual patient's needs. Review results are reported monthly and successes celebrated. The nursing staff is involved in choosing motivating goals.

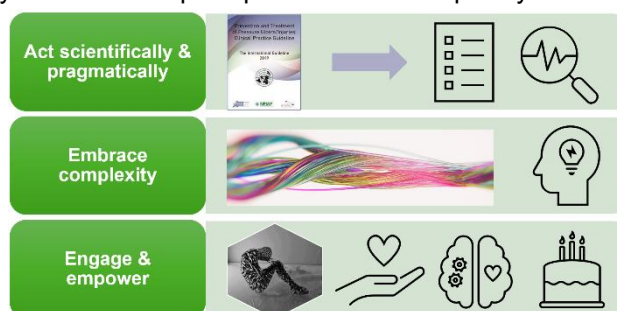


Figure 2: Visual representation how the SHIFT-Evidence framework is used in the local improvement effort

Results

The improvement effort has achieved an increased awareness and ability to execute PU-care and strengthened PU-activities' meaningfulness. Behavioural changes have been maintained. Estimated 286 PUs have been avoided based on 24 review months. PU-related risk and suffering has thus been reduced.

I am more aware that my preventive efforts have a great effect on the patients.

Figure 2: Survey answer spring 2023, translated to English by the author

Conclusions

Improvement efforts need to be tailored to the local complex adaptive system. Adaptive entails the ability to change which is possible if the staff is engaged in and empowered by the improvement effort. A high level of engagement needs to be maintained as the challenge to prevent PUs starts anew every day.

Conflict of Interest

The author declares no conflict of interest.

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REDUCE THE PRESSURE AND DON'T SWEAT IT - VERTICALISATION THERAPY

Sharon Maris¹, Dominic Baily² Carroll Gillespie³

1. Arjo Global Medical Affairs, UK; 2. Arjo Research & Development, UK; 3. Arjo Inc. Clinical Solutions, USA

Introduction

In critically ill patients, prolonged bed rest and immobility can lead to severe physical deconditioning, significant loss of muscle mass, and increased muscle weakness¹. Verticalisation therapy is utilised as a component of early critical care recovery protocols. In addition, the challenge of skin tissue breakdown as a result of intense and/or prolonged exposure to sustained deformation², and insufficient management of microclimate between the skin and support surface, contributes to the development of pressure injuries². These challenges co-exist and consideration of their combined management should form part of the overall patient risk assessment. This work explores the possibility of combining progressive standing and weight bearing using a tilting bed platform as an intervention to aid rehabilitation early in the acute phase of critical illness, with a product to also influence skin/surface microclimate to improve overall surface performance of the bed system as it moves through various angles of incline.

Methods

In order to investigate the impact on the support surface performance of various tilting angles, laboratory testing was performed for pressure redistribution properties using pressure mapping and S3I testing apparatus³ for microclimate, immersion and envelopment.

The testing was performed on a verticalisation bed system with integrated support surface and repeated adding a microclimate coverlet designed to draw away excess moisture from the skin/surface interface.

Results

Results for the metrics described in the test method, will be tabulated and combined with graphical output of pressure redistribution performance at various angles of incline during verticalisation.

The immersion, envelopment and offloading of the support surface showed no detrimental impact with addition of the coverlet. However the impact on Pressure Area Index (PAI), shear and Moisture Vapor Transfer Rate (MVTR) showed an increase in performance.

Conclusions

Skin protection considerations remain a priority when considering verticalisation therapy during early rehabilitation in the acute phase of critical illness. Combination technologies have a positive impact on support surface performance and should be a consideration when risk assessing patients to minimise deformation (pressure/shear) and microclimate needs as part of a pressure injury prevention strategy.

Conflict of Interest

This poster is industry initiated. The authors are paid employees of Arjo.

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PRESSURE ULCER PREVENTION IN A CANCER CARE ESTABLISHMENT

Susy Pramod

Tissue Viability Matron, UK

Introduction

In a palliative care setting, pressure ulcer prevention involves a holistic approach, including regular repositioning, using pressure-reducing surfaces, addressing nutritional needs, and managing moisture, while respecting patient preferences and goals (1). Maintaining skin integrity plays a key role in the ongoing care and comfort of patients at the end of life as patients receiving cancer treatments are at higher risk of altered skin integrity (2).

There is an abundance of support surfaces available with differing techniques for managing pressure, they can be classified as reactive or active systems. Reactive surfaces use envelopment and immersion to redistribute an individual's weight over a larger contact surface area, thus reducing interface pressure. Active surfaces use interface pressures that vary over time to provide temporary offloading, allowing improved tissue reperfusion and promote reactive hyperaemia.

The standard mattress used in this organisation is a hybrid mattress. Hybrid surfaces use a combination of both active and reactive principles, they are specifically designed for patients considered to be at 'Very High Risk' of pressure ulcer development which is most appropriate for this clinical environment.

Methods

A robust training plan and processes are in place to ensure the equipment is used to its best advantage to enable patient comfort and reduce the risk of pressure damage.

Within each clinical area there is an identified link nurse; they receive regular training on the mattress system which they regularly cascade within their clinical area, competencies are also completed to ensure full understanding.

In line with current guidelines, the organisation uses the aSSKING pressure ulcer prevention bundle of care. PURPOSE-T is used which has been a positive move in relation to identifying the patients at most risk and initiating the appropriate plans of care. In relation to the "keep moving" part of the process, there are occasions when it is difficult to implement the prescribed repositioning schedule due to the patients level of pain, medical intervention or requests from the family.

Results

Using a standard mattress system has ensured a consistent approach and the patients receive the most effective pressure ulcer prevention process. The proficient training program enables increased confidence in the system and negates the uncertainty when an alternative system should be used.

Considering the complexity of this cohort of patients and often the inability to adhere to the prescribed repositioning schedule, the organisation has demonstrated an extremely low pressure ulcer incidence.

- 42% reduction in Pressure Ulcers
- Annual cost reduction of £108,086, or 48% reduction (£223,966 down to £115,880)
- Over 5-year period this produces a significant cost saving of £540,433 (-48%), from £1.1m down to £579k

Conclusions

Although research has demonstrated that pressure ulcers are more common in patients being cared for in palliative care settings than in the general population by utilising the hybrid approach; this organisation has managed to reduce their pressure ulcer incidence whilst ensuring high quality of care for their patients.

Conflict of Interest

No conflict of interest

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IMPACT OF IMPLEMENTING A PREVENTIVE FOAM DRESSING PROTOCOL ON PRESSURE INJURY INCIDENCE AND SEVERITY

Christina Encarnacion (1), Julie Murdoch (2), Mandy Spitzer (2)

1. Medstar Franklin Square, USA; 2. Smith and Nephew, UK

Introduction

A community hospital in Baltimore, Maryland had a hospital-acquired pressure injury (HAPI) rate of 3.18 in 2022. It was observed that the intensive care unit (ICU) had the highest number of HAPIs, and the majority were located on the sacral region and were of an advanced stage (e.g., Stage 3, 4, or unstageable), which are reportable to Centers for Medicare and Medicaid¹. These results prompted the formation of a quality improvement council that would enact measures to reduce the ICU HAPI rate and severity of stage.

Methods

A protocol was developed for the application of a prophylactic foam dressing to the sacral area for all qualifying patients in the ICU. A clinical nurse completed chart audits to track adherence to the new protocol and provided real-time, peer-to-peer feedback to the ICU nursing staff. Prophylactic dressing usage was also reinforced during wound nurse rounding. As a result of the outcomes, the protocol was later expanded to Intermediate Care (IMC). Pre/post HAPI incidence per 1000 patient days would be calculated to evaluate the effectiveness of the protocol.

Results

In both ICU and IMC it was observed that HAPI incidence per 1000 patient days, whether located on the sacrum or elsewhere on the body, were reduced following implementation of the prophylactic foam dressing protocol. Additionally, the overall severity of the HAPI stage diagnosed was reduced. In the ICU, advanced stage HAPI per 1000 patient days was 0.19% in the baseline period and 0.04% in the first year following protocol implementation. In the IMC, advanced stage HAPI per 1000 patient days was 0.15% in the baseline period and 0.05% in the first year following protocol implementation. Overall, the ICU experienced a 36% reduction of HAPIs and the IMC a 48% reduction from baseline.

Conclusions

Reduced overall HAPI and advanced HAPI resulted in positive quality outcomes. The protocol was well-received by both staff and hospital administration. Education, auditing, and data collection to promote continuing education and adherence to the protocol is ongoing.

Conflict of Interest

CE received resource (non-monetary) support for the development and writing of this abstract. JM is an employee of Smith and Nephew.

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EARLY CLINICAL EVALUATION OF A NEW NEGATIVE PRESSURE WOUND THERAPY PUMP IN LONG-TERM CARE

Melissa Gosse (1), Angela Arsenault (1), Julie Murdoch (2), Mandy Spitzer (2)

1. Health Association Nova Scotia/igility, Canada; 2. Smith and Nephew, UK

Introduction

Negative Pressure Wound Therapy (NPWT) can be a complex therapy, both in application and resource utilization¹. This case series presents the outcomes of 2 patients with complex pressure injuries (PI) that were treated with a new NPWT pump in the long-term care setting. The aim is to evaluate the importance of collaborative evidence-based practice, holistic patient care, and to demonstrate the safe and effective use of NPWT alongside optimized wound care strategies and interventions including a comprehensive wound care portfolio.

Methods

Patient 1 is a 59-year-old male with a history of cerebrovascular accident which resulted in paraplegia, wheelchair dependence, and incontinence. He developed a PI on the left buttock, resulting from a combination of incontinence-associated skin damage and pressure. NPWT was initiated due to the lack of wound progression after 23 weeks of local wound care, nutritional optimization, and attempted pressure relief. Patient 2 is a 43-year-old male with multiple comorbidities, including limited mobility, who developed an unstageable PI to the right heel. The wound was non-healing with a history of infection, unsuccessful antibiotic treatment, and osteomyelitis. After 4 weeks of sharp debridement, treatment with an alternative NPWT device, and antibiotics, the new NPWT pump was initiated with black foam filler. Following clinical improvement, including reduction in wound size and exudate levels, treatment was stepped across to a single-use negative pressure wound therapy system.

Results

For Patient 1, the new NPWT pump allowed the patient to continue daily activities whilst managing the wound and promoting healing and the wound progressed towards healing despite compromised pressure offloading. For Patient 2, the patient reported that treatment with the new NPWT pump brought them hope due to the fast and effective results. Patient 1 and Patient 2 exhibited a 98.67% and 95.66% percent wound volume reduction, respectively, throughout the duration of therapy with NPWT.

Conclusions

The new NPWT pump utilized in the treatment of these chronic PIs, along with collaborative evidence-based practice, achieved successful healing outcomes and was supportive to the patients' quality of life.

Conflict of Interest

AA and MG received compensation from Smith and Nephew for their time spent developing this abstract. JM is an employee of Smith and Nephew.

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THE CORRELATION OF VISUAL SKIN ASSESSMENT AND ELPO SCALE EVALUATION IN IDENTIFYING SURGICAL PRESSURE ULCERS

Rhavenna Oliveira⁽¹⁾, Fabiana Ramos⁽¹⁾, Karime Oliveira⁽¹⁾, Graziela Almeida⁽¹⁾, Tamara Bicudo⁽¹⁾,
Rubia Alencar⁽¹⁾, Aglecia Budri^(1,2), Marla Avila⁽¹⁾

1. São Paulo State University (UNESP)/School of Medicine; Botucatu, Sao Paulo; Brazil;

2. The Royal College of Surgeons in Ireland (RCSI)/School of Nursing & Midwifery; Dublin; Ireland

Introduction

Surgical patients, because of immobility, are vulnerable to the action of compression and shear forces⁽¹⁾. Injuries identified on the patient's skin within 72 hours postoperatively are considered surgical pressure ulcers (PU)⁽¹⁻²⁾. A validated tool developed in Brazil, the ELPO scale (Risk Assessment Tool for the Development of Injuries Resulting from Surgical Positioning), was created to support nurses in identifying patients at risk for PU in the intraoperative phase and to improve care quality⁽³⁻⁴⁾. Thus, the aim of this study is to evaluate the correlation of Visual Skin Assessment (VSA) and ELPO scale evaluation in identifying surgical PU.

Methods

A cross-sectional, descriptive study with a quantitative approach was conducted in a tertiary hospital in São Paulo, Brazil, involving 109 adult patients of both sexes who underwent surgical procedures of various specialties. These procedures were performed on weekdays during daytime hours and lasted at least 120 minutes. Data collection was carried out during the intraoperative phase using the ELPO scale, and on the first, second, and third postoperative days through VSA, which was performed in accordance with the guidelines of the National Pressure Ulcer Advisory Panel (NPUAP). The risk of developing PU was assessed using the ELPO scale, an instrument composed of seven items: surgical positioning, duration of surgery, type of anesthesia, support surface, positioning of limbs, comorbidities, and patient age. Each item is rated on a 5-point Likert scale, resulting in a total score ranging from 7 to 35 points. Higher total scores indicate a greater risk of PU related to surgical positioning. Scores between 7 and 19 are considered low risk, while scores from 20 to 35 indicate high risk. Statistical analyses were performed using SPSS software to calculate the accuracy, sensitivity, and specificity of the ELPO risk classification in comparison with VSA, which served as the gold standard.

Results

The prevalence of surgical PU identified through VSA was 6.4% (n=7) and 27.5% (n = 30) patients were classified as "high risk" according to the ELPO evaluation. The agreement between PU identified by VSA and the ELPO high-risk classification showed an accuracy of 71.6%, with a sensitivity of 43% and a specificity of 73.5%.

Conclusions

The ELPO scale demonstrated approximately 70% agreement between the classification of patients as "high risk" and the identification of PU through VSA. In addition, the scale showed a specificity greater than 70%, indicating a good ability to correctly identify negative cases. These findings suggest that the ELPO scale is a useful tool for assessing the risk of surgical patients developing surgical PU.

Conflict of Interest

This study was supported by the Conselho Nacional de Desenvolvimento Científico e Tecnológico (CNPq), a Brazilian government agency, under grant number 403545/2024-2.

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GLOBAL INTERTRIGO PREVALENCE AND INCIDENCE: A SYSTEMATIC REVIEW AND META-ANALYSIS

Ahmed Tafesh (1), Sabrina Blomeier-Schaffran (1), Jan Kottner (1)

1. Institute of Clinical Nursing Science - Charité-Universitätsmedizin Berlin, Germany

Introduction

Intertrigo is a common inflammatory condition that affects skin folds, primarily caused by friction and moisture. Despite its frequent occurrence, comprehensive global epidemiological data are unknown. This systematic review and meta-analysis aim to summarize the available epidemiological data on this frequent skin condition.

Methods

A systematic search was conducted in five databases (Medline, Embase, Cochrane, CINAHL, and Web of Science) covering publications from January 1945 onwards, with no language restrictions. Studies reporting prevalence or incidence for intertrigo across various age groups, regions, and healthcare settings were included. Eligible study types included cross sectional and cohort studies. Additional outcomes of interest included anatomical location and severity of intertrigo. Exclusion criteria were: animal studies, and publication types such as interventional studies, abstracts, posters, conference presentations, or study protocols. The review protocol is registered in PROSPERO (CRD42024558239)[1]. Initial screening was independently performed by two reviewers. The internal and external validity of each included study will be assessed using the risk of bias tool for prevalence studies developed by Hoy et al. (2012)[2]. Prevalence and incidence estimates will be pooled using a random-effects model.

Results

Of the 2,615 records initially identified, 169 studies were selected for full-text screening. Preliminary findings indicate substantial variability in reported prevalence and incidence, with higher rates observed among older adults, bedridden individuals, and those with obesity—particularly in settings such as intensive care units and palliative care. Studies from hot and humid regions are notably overrepresented. Variations in results may be attributed to differences in diagnostic criteria, study design, and population characteristics. Final data will be presented by September 2025 through tables and figures with standard errors and 95% confidence intervals (CI), including forest plots to highlight geographic disparities.

Conclusions

This review will be the first to provide a comprehensive synthesis of the global epidemiology of intertrigo. The findings will offer valuable insights into the burden of intertrigo across populations, inform targeted public health strategies, and identify research gaps related to risk factors and outcomes.

Conflict of Interest

None

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Effects of Seating Posture and Wheelchair Configuration on Pressure Distribution and Shear Forces: A Case Study

Nienke Conijn (1), Tim Helming (1), Bart Van Der Heyden (2)

1. Vicair, Netherlands, 2. Super-Seating, Belgium

Introduction

This case study focuses on evaluating the effects of seating posture and wheelchair configuration on pressure distribution and shear forces in a 37-year-old male wheelchair user with spina bifida L4-L5. The individual experienced back and shoulder pain, along with difficulties related to slouching and sliding in his wheelchair. Although he did not initially report issues with his seating system, since he used an appropriate wheelchair cushion, consisting of hundreds individual air-filled cells in multiple compartments. A comprehensive analysis involving physical examination, pressure mapping and shear force measurements aimed to identify and address the root causes of these problems, ultimately leading to a seating intervention [1].

Methods and Intervention

The study began with a detailed medical history and physical examination. The user exhibited mild scoliosis that was correctable and a limited left hip angle (104° flexion, pelvis to thigh), which explained his tendency to slouch and rotate his pelvis in the wheelchair. Assessments included pressure mapping using a high-resolution pressure mapping system [2] and shear force measurements using a horizontal shear force sensor [3]. The assessments were conducted under three seating configurations: slouched posture & upright posture with the current setup, and a new setup with adjustments to the back support and pelvic orientation.

Results

Pressure Distribution: The pressure mapping revealed significant differences between the three seating configurations. The slouched posture resulted in high peak pressure (246 mmHg) at the right Ischial Tuberosity (IT), which was indicative of uneven pressure distribution. In the upright posture, despite some pressure reduction (180 mmHg), the user still experienced pelvic rotation due to the limited hip angle, leading to an asymmetrical posture. In contrast, the new setup, with the backrest tilted and raised to accommodate the user's pelvic tilt, improved pressure distribution. Peak pressure decreased by 29%, and pressure was more evenly distributed between the left and right IT (53/86 mmHg, vs slouched 111/170), indicating a more balanced seating posture.

Shear Force Measurements: The shear force sensor measured horizontal shear forces exerted on the seating interface. The slouched position resulted in the highest shear force (3.06 kg), while the upright position with the current setup exerted 1.46 kg of shear force. The new setup showed a substantial improvement, with minimal shear force (-0.06 kg), indicating reduced strain on the user's body.

Conclusions

Six months following the intervention, the user reported significant improvements, with no further back or shoulder pain. This study highlights the critical role of a well-designed wheelchair cushion that redistributes pressure, immerses, and envelops the user, reducing both pressure and shear forces. However, the study also underscores that an adequate cushion alone is not enough to address all posture-related challenges. A holistic approach is required: thorough assessment of the user's physical needs, adjustment of the wheelchair configuration, and optimization of both cushion and back support adjustment. The new seating setup significantly improved comfort, posture, and pressure distribution, reducing the risk of pressure injuries.

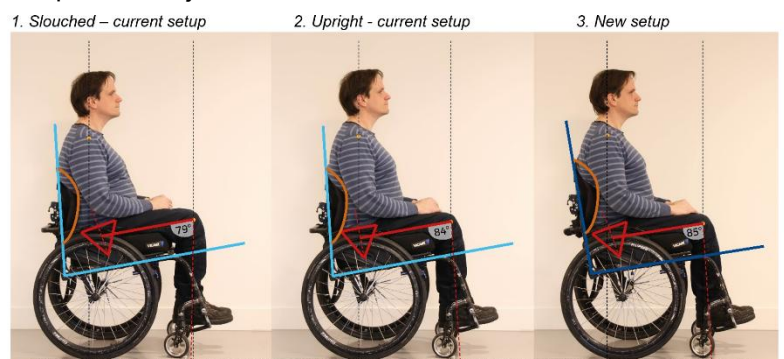
The results demonstrate that combining tools like pressure mapping and shear force sensors with a tailored wheelchair configuration can enhance user comfort, prevent pressure injuries, and improve long-term health outcomes. Optimizing both pressure distribution and shear forces is essential to preventing complications associated with poor wheelchair posture and seating.

Conflict of interest

Author is working for Vicair B.V.

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Figures 1. Depict various wheelchair configurations and accompanied postures, showcasing changes in knee angle (lower to upper leg angle), pelvic orientation, position in wheelchair, neck cervical angle, and wheelchair setup.

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Effects of Seating Posture and Wheelchair Configuration on Pressure Distribution and Shear Forces: A Case Study

Nienke Conijn (1), Tim Helming (1), Bart Van Der Heyden (2)

1. Vicair, Netherlands, 2. Super-Seating, Belgium

Introduction

This case study focuses on evaluating the effects of seating posture and wheelchair configuration on pressure distribution and shear forces in a 37-year-old male wheelchair user with spina bifida L4-L5. The individual experienced back and shoulder pain, along with difficulties related to slouching and sliding in his wheelchair. Although he did not initially report issues with his seating system, since he used an appropriate wheelchair cushion, consisting of hundreds individual air-filled cells in multiple compartments. A comprehensive analysis involving physical examination, pressure mapping and shear force measurements aimed to identify and address the root causes of these problems, ultimately leading to a seating intervention [1].

Methods and Intervention

The study began with a detailed medical history and physical examination. The user exhibited mild scoliosis that was correctable and a limited left hip angle (104° flexion, pelvis to thigh), which explained his tendency to slouch and rotate his pelvis in the wheelchair. Assessments included pressure mapping using a high-resolution pressure mapping system [2] and shear force measurements using a horizontal shear force sensor [3]. The assessments were conducted under three seating configurations: slouched posture & upright posture with the current setup, and a new setup with adjustments to the back support and pelvic orientation.

Results

Pressure Distribution: The pressure mapping revealed significant differences between the three seating configurations. The slouched posture resulted in high peak pressure (246 mmHg) at the right Ischial Tuberosity (IT), which was indicative of uneven pressure distribution. In the upright posture, despite some pressure reduction (180 mmHg), the user still experienced pelvic rotation due to the limited hip angle, leading to an asymmetrical posture. In contrast, the new setup, with the backrest tilted and raised to accommodate the user's pelvic tilt, improved pressure distribution. Peak pressure decreased by 29%, and pressure was more evenly distributed between the left and right IT (53/86 mmHg, vs slouched 111/170), indicating a more balanced seating posture.

Shear Force Measurements: The shear force sensor measured horizontal shear forces exerted on the seating interface. The slouched position resulted in the highest shear force (3.06 kg), while the upright position with the current setup exerted 1.46 kg of shear force. The new setup showed a substantial improvement, with minimal shear force (-0.06 kg), indicating reduced strain on the user's body.

Conclusions

Six months following the intervention, the user reported significant improvements, with no further back or shoulder pain. This study highlights the critical role of a well-designed wheelchair cushion that redistributes pressure, immerses, and envelops the user, reducing both pressure and shear forces. However, the study also underscores that an adequate cushion alone is not enough to address all posture-related challenges. A holistic approach is required: thorough assessment of the user's physical needs, adjustment of the wheelchair configuration, and optimization of both cushion and back support adjustment. The new seating setup significantly improved comfort, posture, and pressure distribution, reducing the risk of pressure injuries.

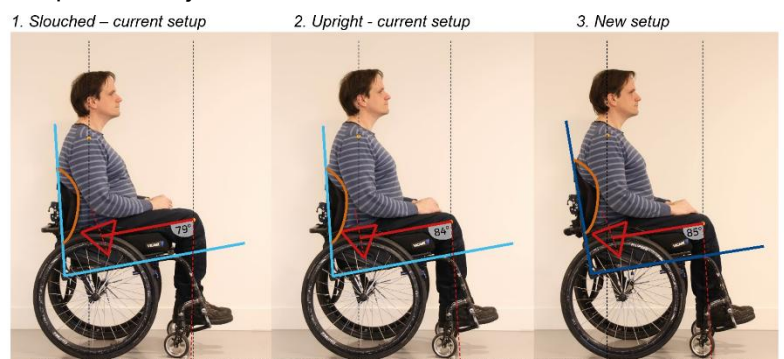
The results demonstrate that combining tools like pressure mapping and shear force sensors with a tailored wheelchair configuration can enhance user comfort, prevent pressure injuries, and improve long-term health outcomes. Optimizing both pressure distribution and shear forces is essential to preventing complications associated with poor wheelchair posture and seating.

Conflict of interest

Author is working for Vicair B.V.

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Figures 1. Depict various wheelchair configurations and accompanied postures, showcasing changes in knee angle (lower to upper leg angle), pelvic orientation, position in wheelchair, neck cervical angle, and wheelchair setup.

PRESSURE INJURIES IN INTER-HOSPITAL TRANSPORT – LONG-DURATION TRANSPORTS TO OTHER HOSPITAL DISTRICTS

Miska Vaara (1), Jukka Etelä (1), Sakari Salo (2), Jaana Kotila (3)

1. HUS Helsinki University Hospital: Medical Transport, Finland; 2. Defence Forces: Center For Military Medicine, Finland; 3. HUS Helsinki University Hospital: Nursing Management, Finland

Introduction

In a Swedish study, 9 % of patients transported to emergency rooms on ambulance stretchers had PIs in heels. In this study the average transportation time was 25 minutes [1].

In 2019, our transport system made 120 776 non-urgent and emergency patient transfers. 76 083 of transfers were made by Advanced Life Support (ALS) or Basic Life Support (BLS) ambulances. 44 693 transfers were made by patient transport vehicles.

We wanted to know the amount and duration of long transfers to other hospital districts.

Methods

All transfers to other hospital districts in 2019 with a patient on a stretcher or on a wheelchair were collected from our transport data system. These patients were thought to have the highest risk for PIs. Walking patients were thought to have lower risk for the PIs and were excluded from this study.

The data system doesn't contain exact times of meeting or leaving the patient or lifting the patient to or from the stretcher. Estimation of the patients' time spent on the ambulance stretchers was therefore calculated as the time between the arrival of the ambulance at the departing unit and the arrival of the ambulance at the receiving unit. It was assumed that picking up the patient after the arrival of the ambulance at the sending hospital took the same amount of time as handing over the patient after the arrival of the ambulance at the receiving hospital.

Our method can result in slight overestimation. It typically takes a bit more time to pick up than to hand over a patient.

The study was permitted by the local hospital district's permitting authority (HUS/157/2020).

Results

There were 787 transports to other hospital districts with a patient on stretcher or wheelchair. 774 of these transports had a reliable time log. The transport times varied between 32.3 minutes to 665.5 minutes with an average of 148.0 minutes, median of 121.6 minutes, standard deviation of 83.0 minutes and average deviation of 58.1 minutes. 394 transfers lasted over 120 minutes.

Conclusions

In our inter-hospital ambulance service, hundreds of patients with a potentially elevated risk for PIs are yearly transported to other hospital districts. There was a need to create operating instructions to prevent PIs and consider the use of antidecubitus mattresses in ambulances.

Conflict of Interest

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PRESSURE INJURIES IN INTER-HOSPITAL TRANSPORT – ATTITUDES AND KNOWLEDGE OF AMBULANCE CREW (PRELIMINARY RESULTS)

Miska Vaara (1), Jukka Etelä (1), Sakari Salo (2), Jaana Kotila (3)

1. HUS Helsinki University Hospital: Medical Transport, Finland; 2. Defence Forces: Center For Military Medicine, Finland; 3. HUS Helsinki University Hospital: Nursing Management, Finland

Introduction

Patient's risk for pressure injuries (PIs) may rise in ambulances due to exposure to weather and strain forces in movement, medical and support devices, and less possibilities for reposition treatment and skin checks. Our crew has had lectures on the PIs. We assessed their attitudes to and knowledge on the PIs.

Methods

The crew responded to seven-level Likert scale questionnaire containing 25 statements measuring knowledge on PIs and attitudes to PIs, and two statements on other tasks in ambulance work. The study was permitted by the local hospital district's permitting authorities (HUS/247/2020 and HUS/1564/2020).

Results

29 workers of approx. 45 workers participated in the study. The results are presented in table.

	Strongly disagree			Neutral		Strongly agree	
	-3	-2	-1	0	1	2	3
1. It is important to prevent pressure injuries on short journeys (a)	0	1	1	1	7	10	7
2. I am able to assess patient's risk for pressure injuries (a)	0	0	0	1	9	16	1
3. Forceful braking may predispose to pressure injuries (k)	0	0	1	7	8	7	4
4. It is more important to treat pressure injuries well than to prevent them (k)	9	6	5	4	1	1	2
5. It is important to prevent pressure injuries on long journeys (a)	1	0	0	0	1	1	26
6. The patient transport has equipment to prevent pressure injuries (a)	1	4	2	6	10	5	0
7. Remarkable obesity may predispose to pressure injuries (k)	0	0	0	2	0	10	17
8. Pressure injuries cause remarkable additional expenses (k)	0	0	0	0	1	8	20
9. Remarkable underweight protects from pressure injuries (k)	16	7	1	1	2	0	2
10. I have received education on pressure injuries (a)	1	2	6	6	9	5	0
11. Treatment and prevention of pressure injuries gets too much resources (a)	7	8	7	4	2	0	1
12. Redness of skin may indicate an incipient pressure injury (k)	0	0	0	0	4	7	18
13. Most pressure injuries can be prevented (k)	0	1	0	0	2	12	14
14. Pressure injuries do not have much signification to patients (a)	19	4	0	0	1	3	2
15. Preventing pressure injuries adds value to my multi-skilled professionalism (a)	0	0	1	1	6	12	8
16. In the future I need more support to my work on pressure injuries (a)	1	5	1	5	10	6	1
17. I pay regard to prevent pressure injuries in my daily working (a)	0	0	1	2	7	15	4
18. Swelling of tissue reduces risk for pressure injury (k)	16	6	3	3	0	1	0
19. It is important to take care of patient's basic life support in an ambulance (a)	0	0	0	0	0	2	27
20. I have knowledge and skills to prevent pressure injuries (a)	0	0	0	1	7	18	2
21. Preventing pressure injuries takes too much time (a)	10	11	5	1	2	0	0
22. The patients I've met motivate me to prevent pressure injuries (a)	0	0	2	6	5	10	5
23. It is important to prevent pressure injuries in an ambulance (a)	0	0	0	2	4	11	12
24. Prevention of pressure injuries is a sign of good nursing (a)	0	0	0	0	1	12	16
25. It is not possible to get pressure injuries in an ambulance (k)	15	5	0	2	0	3	2
26. Preventing pressure injuries makes me more proud of my professionalism (a)	0	0	0	7	9	9	4
27. It is important to keep the ambulance clean (a)	0	0	0	0	0	7	22

Table. Ambulance crew's attitudes to (a) and knowledge (k) on the pressure injuries.

Conclusions

The crew seems to be motivated in the prevention of PIs, which seems to be of bit lower importance than some other tasks (statements 19 and 27). The crew have relatively good knowledge on PIs. There are some developmental needs (see statements 3, 4, 6, 10, 16). More statistical analysis can be done from the results.

Conflict of Interest

No conflicts of interest.

HOW A CONTINUOUS SIDE TO SIDE MOVING, CURVED MATTRESS, HELPS IN TREATING PRESSURE ULCERS; REDUCING COSTS; CASE STUDIES

MENNO VAN ETEN (1)

1. Tidewave Medical, Norway

Introduction

Category 3 and 4 pressure ulcers on the sacrum are notorious for the time and efforts they cost to be healed 1), 2). Normal procedures in these cases are planned interventions like a mattress with improved pressure redistributing qualities, regular repositioning, the use of preventive aids like positioning cushions, dietary advice and proper hydration etc, and of course extensive wound care. 3), 4) There are in many articles' questions about what a correct frequency for repositioning should be, but also which positions should be used and what a proper mattress quality should be 5), 6), 7). In this article case studies are presented of individuals who were either assessed as having difficult to heal pressure ulcers or having PU's which would take a lot of time and effort to heal.

Methods

The patients were positioned in supine on a special mattress. The mattress, when started, is first shaped into a curve, whereafter the mattress and patient move together, slowly and continuously, from side to side. The pump settings were on a sacrum wound healing program: bilateral side to side movement, maximum curve and approximate 30 degrees sideways movement, 30 minutes pause at end of side movement and highest speed comparable to a 40-minute cycle without the pause. Complete cycle was 100 minutes.

Results

In all cases the wounds started to heal immediately resulting in significant shorter wound care and or hospital admission time. The cost savings were considerable in all cases, in one case expected stay in a clinic was reduced by 4 -6 weeks which gave a cost saving of at least € 33.600. In addition, the patients had improved sleep patterns, the general well-being was improved, they had less pains and discomforts. For the nursing staff knowing the patient was well taken care of on the curved mattress, combined with no need to reposition since the mattress was always moving and that the wounds healed faster was a very positive feeling, giving a relaxed mind set.

Conclusions

The curved mattress used in this article has the unique feature that it curves around the patient and then slowly moves the mattress, with the patient safely positioned in the curve, from side-to-side. The patient does not notice the movements, since they are too slow to notice. The patient stays in the same position on the mattress but will never have pressure on the same spot. With the results of pressure ulcers, especially those around the pelvis, will start healing immediately. A better life for the patient and the care staff does not need to change position on fragile patients. In addition, all wounds started the repair process immediately, all patients had improved sleep patterns and felt more alert when awake, all patients had strong reductions in VAS.

Conflict of Interest

The mattresses used are provided by Tidewave medical AS, Norway. The company had no influence on the results, but the results were compiled by the author, Competence Manager in Tidewave Medical

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THE AGING POPULATION, INCREASING PRESSURE ULCERS, AND THE OVERWORKED HOME HEALTH CARE NURSES

MaDolor “Lani” King, Annika Daphne Bilog, Anne Dominic Bilog, Angelica Hamilton
Athome Healthcare, Inc.
California, United States

Introduction

The number of Americans age 65 and older is projected to rise from 58 million in 2022 to 82 million by 2050 (a 47% increase), with their share of the population increasing from 17% to 23%. The U.S. population is older than ever. Home health agencies (HHAs) are essential in improving healthcare services and fostering growth in the industry. Recent trends show a rising incidence of wound care among older adults receiving home health care, leading to more serious issues like pressure ulcers. Effective wound care is crucial, affecting around 15% of Medicare government insurance beneficiaries in the U.S., with costs estimated between \$28 billion and \$97 billion. The loss of seasoned staff poses serious challenges, worsened by the COVID-19 pandemic, which has led to heavier workloads and more significant burnout among nursing staff.

Methods

This methodology outlines a five-year-old home health company's approach to critical issues like nursing burnout, staffing shortages, and Medicare reimbursement challenges, focusing on preventing pressure ulcers in the elderly. The agency has implemented a Scorecard System using the IDS (Issue, Detail, Solution) framework to monitor clinician burnout, reimbursement processes, and patient pressure ulcers. This system addresses adversities by detailing immediate issues and providing practical solutions for clinicians caring for elderly patients with comorbidities, complicated further by ulcers beyond Medicare reimbursement limits. The initiative aims to improve patient outcomes, reduce clinician burnout, and enhance the agency's financial viability.

Results

Applying the balanced scorecard framework, specifically the Scorecard IDS system, to enhance data performance within the home health care organization improves patient care, reduces clinician burnout, and decreases the frequency and costs associated with home health wound care, particularly for pressure ulcer visits. By prioritizing the needs of clinicians and patients while improving assessment, education, communication, and coordination, the treatment processes are streamlined, leading to better clinical outcomes and more efficient expense management.

Conclusions

The Scorecard IDS system is a balanced scorecard framework that schedules accountability tasks from Monday to Friday and is routinely reviewed by team members, including leaders, nursing staff, the office manager, and medical billers, every Friday at 4 pm. It alleviates clinician burnout and improves patient care by enhancing communication, facilitating mindful issue resolution, and providing detailed information through a comprehensive solution. This method optimizes staffing needs, reduces costs for pressure ulcer treatment, and decreases home health visits. It offers a practical solution to wound care management's financial and logistical challenges, particularly in home health settings.

Conflict of Interest

The author declares that this research received no funding from any industry sources.

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PRESSURE OFFLOADING IN PRONE POSITION BY INDIVIDUAL CELL DEFLATION OF 3-CELL ALTERNATING PRESSURE AIR MATTRESS

Lucie Řehořová (1), Susana Esteves (1)

1. LINET, Czech Republic

Introduction

The incidence of pressure injuries (PIs) among patients in the prone position significantly increased during the COVID-19 pandemic, reaching up to 57% [1]. While UK guidelines recommend proning for 12 hours daily [2], extended durations of up to 39 hours [3] further elevate PI risk due to sustained pressure, immobility, and device-related pressure points. Proned patients experience PI rates as high as 51.5%, compared to 24.2% in non-proned patients [4]. Effective pressure redistribution is crucial for PI prevention and can be achieved manually or through advanced support surfaces such as alternating pressure mattresses [5].

Methods

This experimental study assessed the efficacy of the 3-cell alternating pressure air mattress featuring individual cell deflation [6]. Pressure offloading was measured using the high-resolution pressure map [7] in two healthy volunteers in the prone position (female: 56 kg, 175 cm; male: 98 kg, 180 cm). Baseline pressure measurements were followed by targeted cell deflation at high-risk areas (breast, hips, knees, feet). Continuous data collection across two alternating cycles generated pressure maps indicating average pressure distribution, maximum pressure peaks, and changes in contact area.

Results

Results demonstrated substantial pressure relief in areas of targeted cell deflation. Both volunteers showed notable decreases in maximum pressure (32% female, 25% male) and reduced contact area (47% female, 31% male). The male volunteer experienced greater average pressure reduction, likely due to a higher baseline pressure (male: 26.7 mmHg; female: 19.5 mmHg), indicating greater relief potential in higher-pressure scenarios.

Conclusions

In conclusion, although the prone position is essential for managing moderate to severe acute respiratory distress syndrome (ARDS), the associated elevated risk of PIs remains challenging. The 3-cell alternating pressure air mattress featuring individual cell deflation significantly reduced pressure peaks by approximately 30%, confirming its potential for PI prevention in prone-positioned patients. Future studies should involve diverse body types and consider patients with medical devices to enhance clinical relevance. Despite these limitations, effective offloading was clearly demonstrated at key pressure points.

Conflict of Interest

Authors are employees of LINET spol. s.r.o., Czech Republic.

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HOME CARE CLIENT'S WOUND CARE PATH

Marja Vihavainen (1), Grette Vingal (2), Mira Aisamaa (3), Heidi Sipiläinen (4)

1. RN, Authorized Wound Care Nurse, Finland; 2. RN, Authorized Wound Care Nurse, Finland;
3. RN, Finland; 4. RN, eMBA, Phd, Finland

Introduction

Home nursing plays a significant role in the prevention, detection, diagnosis and treatment of wounds. According to a wound survey conducted in Helsinki Home Care in 2020, a large number of long-term wounds are treated in home care, of which pressure injuries account for a large proportion of them. In practical work, it has been noticed that not enough attention is paid to the prevention of wounds, and other professionals are not consulted early enough. Methods that support the prevention and healing of wounds, such as lightening aids, are not used in time. In order to resolve the situation, it was decided to harmonise home care wound care practices, intensify multi-professional cooperation and develop a wound care path for home care. With the help of the wound care pathway, the prevention and treatment of wounds become more efficient, wounds do not become chronic, and treatment delays are reduced.

Methods

In 2024, a wound care path for home care clients was developed to support the work of doctors and nurses. The wound care path was developed in cooperation with different professional groups, and it took into account national evidence-based treatment recommendations.

Results

As a result of the development work, the wound care path of the home care client was completed. The Wound Care Path is a process description that guides operations, describing wound prevention and risk identification, as well as timely wound care, measures to support its healing and multi-professional consultation. The home care wound care path was introduced in autumn 2024 as a tool for the work of nurses and doctors. In connection with the deployment, home care authorized wound nurses organised training events for home care staff on the wound care path and how to use it in their own work.

Conclusions

The wound care path of a home care client has clarified the wound care process and the role of different professionals in it. Many measures that prevent wounds and support their healing, such as lightening aids, have been taken into account better than before. The wound care path for home care clients has only just been introduced, and more detailed information on its benefits and long-term effects is not yet available. The wound care path is expected to increase competence in identifying wound risk factors and for example preventing the development of pressure injuries. That will bring financial savings to both home care clients and the organisation, for example, in terms of saved working hours. However, the most important thing is to improve the quality of care for the home care client. The Wound Care path can also be modified to work in other organisations.

Conflict of Interest

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