Pressure Injury Current Awareness Service

December 2018

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The article discusses 2018 research which shows that a pressure injury risk prediction model in critical care patients has been developed with help from big data and machine learning
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(2018) "Pressure ulcer prevention" Nurse Aide-VIP 30(12): 16-16
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Background: Hospital-acquired pressure injuries are a serious problem among critical care patients. Some can be prevented by using measures such as specialty beds, which are not feasible for every patient because of costs. However, decisions about which patient would benefit most from a specialty bed are difficult because results of existing tools to determine risk for pressure injury indicate that most critical care patients are at high risk. Objective: To develop a model for predicting development of pressure injuries among surgical critical care patients; Methods: Data from electronic health records were divided into training (67%) and testing (33%) data sets, and a model was developed by using a random forest algorithm via the R package “randomforest”; Results: Among a sample of 6376 patients, hospital-acquired pressure injuries of stage 1 or greater (outcome variable 1) developed in 516 patients (81%) and injuries of stage 2 or greater (outcome variable 2) developed in 257 (40%). Random forest models were developed to predict stage 1 and greater and stage 2 and greater injuries by using the testing set to evaluate classifier performance. The area under the receiver operating characteristic curve for both models was 0.79; Conclusion: This machine-learning approach differs from other available models because it does not require clinicians to input information into a tool (e.g., the Braden Scale). Rather, it uses information readily available in electronic health records. Next steps include testing in an independent sample and then calibration to optimize specificity; ©2018 American Association of Critical-Care Nurses
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Background: Approximately half of hospital-acquired pressure injuries identified among critical care patients are stage 1. Although stage 1 injuries are common, outcomes associated with them among critical care patients have not been examined; Objectives: To examine the outcomes of stage 1 pressure injuries among critical care patients and to identify factors associated with worsening of pressure injuries; Methods: Electronic health records were used to determine which surgical critical care patients at a level I trauma center and academic medical center had stage 1 pressure injuries. Competing risk survival analysis was used to identify factors associated with worsening of pressure injuries; Results: Review of 6377 patient records indicated that 259 patients (41%) experienced stage 1 injuries. The injuries persisted until discharge from the hospital in 92 patients (35%), worsened into injuries of stage 2 or greater in 84 (32%), and healed in 83 (32%) Patients whose pressure injuries worsened were more likely to be older (subdistribution hazard ratio [SHR], 1.02; 95% CI, 1.01-1.03; P = 0.02), or to have higher levels of serum lactate (SHR, 1.06; 95% CI, 1.02-1.10; P = 0.07), lower levels of hemoglobin (SHR, 0.82; 95% CI, 0.71-0.96; P = 0.01), or decreased oxygen saturation by pulse oximetry (< 90%; SHR, 1.50; 95% CI, 1.00-2.25; P = 0.05); Conclusions: Stage 1 pressure injuries worsen in about one-third of patients (32%) Nurses should consider maximal treatment for patients who are older or who experience alterations in oxygen delivery or perfusion; ©2018 American Association of Critical-Care Nurses
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The aim of this study was to identify independent risk factors for pressure ulcer (PU) development in a high-risk nursing home population receiving evidence-based PU prevention. This study was part of a randomised controlled trial examining the (cost-)effectiveness of static air support surfaces compared with alternating pressure air mattresses. The sample consisted of 308 residents at a high risk of PU development (presence of non-blanchable erythema, Braden score ≤ 12 or Braden subscale "mobility" ≤ 2). PU incidence was monitored for 14 days. Demographic variables; functional, physical, and psychological characteristics; and data on skin assessment were collected. Independent risk factors were identified using multiple logistic regression analysis. The overall PU incidence (category II-IV) was 84% (n = 26), and 19% (n = 6) of the residents developed a deep PU (category III-IV). PUs (category II-IV) were significantly associated with non-blanchable erythema, a lower Braden score, and pressure area-related pain in high-risk residents. Even if preventive care was provided, the results highlight the need of a systematic risk assessment, including pain assessment and skin observations, in order to determine and tailor preventive care to the needs of high-risk individuals; © 2018 Medicalhelplinescom Inc and John Wiley & Sons Ltd


Aim The aim of this study was to (1) examine the reasons for the increased incidence of hospital-acquired pressure injuries (HAPIs) reported in the Incident Information Management System (IIMS), and (2) gain feedback from nurses regarding HAPI being reported in the IIMS at one tertiary hospital in Australia. Materials and methods This prospective descriptive study included a review of patients with a reported HAPI from July 2015 to June 2016. Patient assessment and semi-structured interviews with nurses were conducted. Interview data were anonymised and content thematically analysed. Results Data were collected on 417 patients who were reported to have a HAPI; of these, 363 patients were clinically assessed. 697% (253/363) were inaccurately reported in the IIMS, based on stage, location, not a true pressure injury or not hospital-acquired. A high number of patients (176/363, 48.5%) were found to have various skin conditions that were not HAPIs. Three themes were identified from the interviews: (1) meeting the mandated reporting requirements; (2) incident reporting and communication; (3) difficulties documenting aetiology. Conclusion This study identified inaccuracies in diagnosing, classifying, and reporting pressure injuries. Nurses described barriers and challenges to classifying and reporting HAPIs. Inaccurate reporting can lead to incorrect conclusions, especially when reported data alone is relied upon for patient treatment, benchmarking, and analysis. Guidelines are needed at a national and international level to support the quality of clinical assessment, reporting, and documentation. Findings from this study have led to a new approach to patient assessment and to minimise errors in incident reporting at this organisation. Highlights: • This is the first study to examine HAPIs reported in the IIMS at one hospital in Australia. • Almost 70% of reported HAPIs in IIMs were inaccurately reported. • Nurses described only barriers and challenges to classifying and reporting HAPIs


Chronic wounds are a significant medical and economic problem worldwide. Individuals over the age of 65 are particularly vulnerable to pressure ulcers and impaired wound healing. With this demographic growing rapidly, there is a need for effective treatments. We have previously demonstrated that defective hypoxia signaling through destabilization of the master hypoxia-inducible factor 1a (HIF-1α) underlies impairments in both aging and diabetic wound healing. To stabilize HIF-1α, we developed a transdermal delivery system of the Food and Drug Administration–approved small molecule deferoxamine (DFO) and found that transdermal DFO could both prevent and treat ulcers in diabetic mice. Here, we demonstrate that transdermal DFO can similarly prevent pressure ulcers and normalize aged wound healing. Enhanced wound healing by DFO is brought about by stabilization of HIF-1α and improvements in neovascularization. Transdermal DFO can be rapidly translated into the clinic and may represent a new approach to prevent and treat pressure ulcers in aged patients.

Hospital-acquired pressure injuries (PIs) present a significant challenge to pediatric providers; Purpose: The purpose of this quality improvement program was to develop and implement a debrief protocol and to evaluate compliance with and the implementation of a comprehensive prevention bundle to decrease the overall incidence and severity of pediatric pressure ulcers (PUs)/PIs in a free-standing children's hospital; Methods: As a member of the Children's Hospitals Solution for Patients Safety national network, a PU Hospital Acquired Conditions (HAC) team was created in 2013, followed by the development and implementation of a PU occurrence debrief tool and discussion guide and implementation of multiple staff educational strategies and a comprehensive prevention bundle The PU occurrence debriefing occurred within 24 to 48 hours of a PU Incidence data were collected annually from 2014 until 2017; Results: Compliance on implementation and documentation of bundle elements ranged from 88% to 94%, and PU/PI incidence decreased by 30% from 2014 to 2016 and by 40% in 2017 The overall PU rate was 0057 in 2014, 00050 in 2015, 00036 in 2016, and 00023 in 2017; 65% of all PUs were device-related Of those, >50% were related to respiratory devices, 25% to peripheral intravenous catheters/central lines, 10% to tracheostomies, and 15% to other devices Respiratory device-related PUs decreased by 50% in the pediatric intensive care unit, by 80% in the neonatal unit, and eliminated completely in extracorporeal membrane oxygenation patients; Conclusion: The debriefing process, debriefing tool, educational programs, and prevention bundle reduced the rate of hospital-acquired PIs in pediatric patients and propagated a culture of safety;

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Objective: To conduct a systematic review to investigate risk factors, incidence, and preventive strategies for perioperative pressure injuries (PIs); Methods: The authors reviewed four databases for literature published from January 2001 to December 2017 Selected articles included primary quantitative studies with prospective, descriptive, and longitudinal design or randomized controlled trials that evaluated risk factors, incidence, and preventive strategies for perioperative PIs The studies included were evaluated for methodological quality using the Edwards Method Score The authors used a standardized extraction form to extract inclusion and exclusion criteria, participant demographics, methodology, PI risk instrument and classification systems, type of surgery and anesthesia, PI risk factors, incidence, preventive strategies, and outcomes evaluation; Main Results: Of the 115 publications identified, 11 met the inclusion criteria The risk assessment and PI classification instruments used differed in every study Incidence of PI varied throughout the studies and was reduced by warming therapy and by a skin care intervention program; Conclusions: Further studies are necessary to develop a standard risk assessment instrument and preventive strategies and to clarify some contradictions evident in the literature;

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Introduction: The reconstruction of extensive soft tissue defects from pressure ulcers is a great challenge Resurfacing such defects with like tissues and minimizing morbidities are important Here we present our surgical experience using a novel modified keystone flap for pressure ulcer patients; Methods: We retrospectively reviewed the data of 13 consecutive cases reconstructed with the modified keystone flaps between March and December, 2017 The mean dimensions of the reconstructed defect were 77 × 65 cm, while the mean dimensions of the flap were 121 × 83 cm; Results: Time efficient reconstructions with the modified keystone flap were performed without any following major complications Minor wound dehiscence occurred in only one case, which soon healed with conservative management; Conclusions: Considering its simple design, reliable flap survival, minimal donor-site morbidity, optimal flap thickness, and evenly distributed surgical tension, our novel technique of the modified keystone flap is as an excellent surgical option for the reconstruction of pressure ulcers in the gluteal region;

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Study Aim: The main aim of the study was to identify the knowledge and attitudes of nurses towards pressure ulcer prevention in a major public hospital in Cyprus; Material and Methods: A descriptive and cross-sectional study design was used to collect the data between December 2014 and February 2015, the sample consisted of n 102 nurses employed in a major public hospital in Cyprus Customised and standardised Pressure Ulcer Knowledge Test and an attitudes Likert questionnaire was used to investigate both parameters Descriptive and inferential statistics, parametric (t-test), non-parametric tests (Mann-Whitney U) and Pearson test was applied Statistical significance was set at p 005; Results: The majority of the participants (441%) n 45 were employed in the intensive care unit, were female (618%) n 63, registered nurses (931%) n 95, had more than 5 years of experience (594%) n 32 and 108% (n 11) had a postgraduate title The mean value regarding the knowledge questionnaire was 1616, IQR: 17(15-18) correct answers 77% In the attitudes questionnaire the median value was 4182, IQR: 43 (40-46) Knowledge and attitudes correlated positively and statistically significantly (Pearson's R 0.223, p 0.019); Conclusion: The result suggests that nurses had relatively inadequate knowledge levels and positive attitudes, attitudes and knowledges correlated statistically significantly and positively It is proposed that through the development of educational programs and the frequent measurement of the two parameters further improvement can be achieved; Copyright © 2018 Tissue Viability Society All rights reserved
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Pressure sores remain a common health problem, particularly among the physically limited or bedridden elderly, and can cause significant morbidity and mortality This study aimed to present our surgical treatment and strategy for patients with multiple pressure sores Between January 2010 and December 2016, 18 patients were enrolled After adequate debridement, pressure sores were managed based on our treatment protocol Patients' age, aetiology, defect size and location, flap reconstruction, outcome, and follow-up period were reviewed A total of 10 men and 8 women (average age, 823 years) with a mean follow-up period of 283 months (6-72 months) were included The mean defect area was 637 cm2 The most common aetiology of the bedridden state was cerebrovascular accident (3889%), and the most frequent sores were trochanteric pressure sores (5357%) The average operative time and blood loss were 1055 minutes and 1008 mL, respectively No haemodynamic variation or blood transfusion was noted during the surgery The complication rate for each sore was 107%, including late recurrence In conclusion, treating pressure ulcers requires careful patient education, intensive multidisciplinary optimisation, and meticulous wound care, and our treatment protocol ensures a shorter surgery time, less bleeding, and low complication rate
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Pressure Ulcer (PU) prevention remains a main public health issue The physio-pathology of this injury is not fully understood, and a satisfactory therapy is currently not available Recently, several works suggested that mechanical strains are responsible of deformation-induced damage involved in the initiation of Deep Tissue Injury (DTI) A better assessment of the internal behavior could allow to enhance the modeling of the transmission of loads into the different structures composing the buttock A few studies focused on the experimental in vivo buttock deformation quantification using Magnetic Resonance Imaging (MRI), but its use has important drawbacks In clinical practice, ultrasound imaging is an accessible, low cost, and real-time technic to study the soft tissue The objective of the present work was to show the feasibility of using B-mode ultrasound imaging for the quantification of localised soft-tissue strains of buttock tissues during sitting An original protocol was designed, and the intra-operator reliability of the method was assessed Digital Image Correlation was used to compute the displacement field of the soft tissue of the buttock during a full realistic loading while sitting Reference data of the strains in the frontal and sagittal planes under the ischium were reported for a population of 7 healthy subjects The average of shear strains over the region of interest in the fat layer reached levels up to 117% higher than the damage thresholds previously quantified for the muscular tissue in rats In addition, the observation of the muscles
displacements seems to confirm previous results which already reported the absence of muscular tissue under the ischium in the seated position, questioning the assumption commonly made in Finite Element modeling that deep tissue injury initiates in the muscle underlying the bone Highlights • Development of tissue damage involved in the initiation of DTI is tightly related to localized soft tissue strains • Yet in vivo experimental assessment of localized soft tissue strains in human buttock subdermal tissues during loading never reported • Proposed methodology consists in measuring subdermal soft tissue displacements throughout the full progressive loading of the buttock during sitting motion using B-mode ultrasound imaging in two perpendicular planes and mapping strains using DIC • Results demonstrate the feasibility of in vivo assessment of buttock soft tissue strains during sitting by ultrasound imaging

This cross-sectional, multicentre study was conducted in hospitals to investigate nutritional interventions conducted in patients aged 70 years or older with (risk of) pressure injuries A total of 1412 patients from 33 hospitals with 208 wards participated in the study A standardised questionnaire was used to collect demographic data and data on care dependency, malnutrition risk, risk for/prevalence of pressure injuries, and nutritional interventions Data analyses were conducted by using descriptive statistics, chi-square tests, or independent t-tests According to the Braden Scale, 678 (480%) of the patients were at risk of developing pressure injuries, and 71 patients (50%) had at least one pressure injury (assessed by skin inspection) The most frequently conducted nutritional interventions in patients with pressure injuries were providing support during mealtimes (507%), food specifically desired by the patient (408%), and conducting a malnutrition screening (394%) One quarter of the patients with pressure injuries were referred to a dietitian The provision of an energy-enriched/protein-enriched diet (183%), energy-enriched/protein-enriched snacks (127%), or oral nutritional supplements (85%) was rare Nutritional care in older patients with risk of pressure injuries is suboptimal Health care professionals need to raise awareness regarding the importance of nutrition in the management of patients with pressure injuries; © 2018 The Authors International Wound Journal published by Medicalhelplinescom Inc and John Wiley & Sons Ltd

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Background Pressure ulcer risk assessment provides an indicator of quality of care in French health establishments The reliability and validity of assessment tools have been shown to be lower for people with spinal cord injury (SCI) We hypothesized that skin complications would be less frequent in people with traumatic SCI and tetraplegia (TSCI), who were initially managed in French regions with a high level of specialized SCI rehabilitation experience Methods First, we used the most recent French territorial survey about SCI to determine a ‘Level of Regional Experience (LRE) in Specialized Physical Medicine and Rehabilitation’ We then studied the individual variables reported in the Tetrafigap survey (which compiled a cohort of TSCIts people to assess their trajectory and life conditions following their return to community life by questionnaires) using univariate analysis according to these LREs (chi2test using a significance threshold of P < 005) Finally, we performed a series of logistic regressions to determine the link between LREs and pressure ulcers Results Management in high-LRE regions was linked with a lower declaration of pressure ulcers during early treatment and in the long term (on average, 8 years post-trauma) Conclusions Using pressure ulcers as a marker, our study showed the protective element of regional experience in the early management of TSCIts patients A dilution effect between SCI specialized units and more polyvalent physical medicine and rehabilitation departments should be prevented within each region within the scope of a regional organization that would link referral centres and local health care networks

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Introduction: Pressure injuries are harmful, painful, and potentially preventable. Although hospital-acquired pressure injury prevalence is decreasing, it is unclear if some pressure injuries develop before hospital admission. The objective of this study was to investigate the prevalence of pressure injury in adults on arrival by ambulance to the emergency department (ED).

Methods: An observational, cross-sectional descriptive study design was used. Participants (n = 212) were recruited from the EDs of two Australian tertiary hospitals. Full skin inspection and pressure injury risk assessment, using Braden and Waterlow scores, were undertaken within 1 h of presentation. Results: Pressure injuries were identified in 11 of 212 participants, giving a prevalence of 52% at presentation. Nearly all were admitted to hospital, giving a prevalence of 78% at this entry point. Participants with pressure injury and those at high risk of injury were found to have spent longer in the ambulance and within the ED. During ambulance transport and in the first hour of presentation to the ED, it was rare that pressure-relieving interventions were implemented, even for those with an identified pressure injury and those at high risk.

Conclusions: The results indicate that early pressure injury surveillance and risk assessment are merited at the point of presentation to the ED, so that prevention and treatment can be implemented at the earliest possible opportunity. Although it is more challenging to manage pressure injuries within the ambulance and ED, the use of pressure-relieving devices should be considered for those at greatest risk. Further research is recommended.

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Objectives: Pressure injuries (PIs) are one of the most common types of complex wounds and impose a huge economic burden on the healthcare system and the patients. A plethora of topical treatments is widely available for PI treatment, yet there is a paucity of evidence with regard to the most effective treatment. The objective of this study was to compare the effect of various topical treatments and identify the best treatment choice(s) for PI healing.

Design: Systematic review and network meta-analysis.

Setting and Participants: All published randomized controlled trials that compared the effectiveness of 2 or more of the following dressing groups: basic, foam, active, hydroactive, and other wound dressings.

Measures: The outcome was the relative risk (RR) of complete healing following treatment and the generalized pairwise modeling framework was used to generate mixed treatment effects against hydroactive wound dressing, currently the standard of treatment for PIs. All treatments were then ranked by their point estimates.

Results: 40 studies (1757 participants) comparing 5 dressing groups were included in the analysis. All dressings groups ranked better than basic (ie, saline gauze or similar inert dressing). The foam [RR 118; 95% confidence interval (CI) 095-148] and active wound dressing (RR 116; 95% CI 092-147) ranked better than hydroactive wound dressing in terms of healing of PIs when the latter was used as the reference group.

Conclusions/Implications: There was substantial uncertainty around the point estimates; however, evidence from our analysis supports the use of hydroactive wound dressings to replace basic dressings. Foam and active wound dressing groups seem promising and therefore need further investigation. High-quality, rigorously conducted research on the clinical effectiveness of the topical treatments in these 2 groups developed in consultation with health professionals, patients, and their carers is needed to identify if indeed foam and active wound dressings provide advantages over hydroactive dressings.

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Pressure ulcers (PUs) are one of the largest unsolved medical complications today. The burden of PUs on society and healthcare cost continues to grow rapidly with the ageing population and spread of chronic diseases. The overall absence of advanced biomedical pressure ulcer prevention (PUP) technologies that assess risk and screen for PU formation in the clinic is concerning, especially in light of the progress being made in other fields of medicine. To develop such technologies, an in-depth understanding of the damage cascade.
resulting in PUs is necessary and is reviewed here in detail from a mechanobiological perspective. The paper describes the sequential and additive nature of the PU damage cascade. Specifically, the damage cascade includes the sequential damage associated with direct deformation, inflammatory response, and ischaemia. The additive nature of these damages highlights the importance of early detection of cell and tissue damage for PUP. Examples of current PUP technologies reviewed here include (i) biocapacitance measurements using a subepidermal moisture scanner, which identifies biophysical changes in tissue properties caused by early inflammation to aid in early detection and (ii) polymeric membrane dressings that prophylactically subdue the activity of nociceptive neurons to mitigate the impact and spread of inflammation. Development of these and other technology-based options to detect and mitigate PU-specific tissue changes caused by exposure to sustained deformations and the resulting inflammation and ischaemia is a timely and feasible endeavour for biomedical engineers and is anticipated to minimize the burden of PUs.


This review was conducted to determine and quantify the efficacy of high-voltage monophasic pulsed current (HVMPC) in the treatment of stage II-IV pressure ulcers (PrUs), identify the details of HVMPC intervention parameters and the superior protocol, and ascertain other potential benefits and the safety of HVMPC intervention. Eleven studies, nine randomized controlled trials (RCTs) and two case series studies, matched the criteria and were included in the systematic review, whereas, only level 1 evidence RCTs were included in the meta-analysis. The percentage of wound surface area reduction per week was 1239%; 95% CI, [1043–1437] for HVMPC plus standard wound care (SWC) and 696%; 95% CI, [556–838] for SWC alone or SWC plus sham HVMPC. The net effect of HVMPC was 54% per week (an increase of 78% greater than SWC alone or SWC plus sham HVMPC). Level 1, 2 and 4 evidence studies have consistently indicated that HVMPC plus SWC were more effective than SWC alone or SWC plus sham HVMPC in treating stage II-IV PrUs. Level 1 evidence studies showed that HVMPC intervention improved the healing of PrUs (reduced wound surface area), and combined with SWC, increased the probability of complete healing and almost eliminated the probability of worsening of healing. HVMPC intervention was shown to be relatively safe, with rare adverse reactions. Highlights • A form of electrical stimulation improved the healing of pressure ulcers • Pressure ulcer healing progressed consistently and steadily • Complete healing of recalcitrant pressure ulcers was promoted.


The present study analyzed the bactericidal effect of methylene blue associated with low-level lasers on Escherichia coli isolated from a pressure ulcer. Microbiological material from a pressure ulcer was isolated using an aseptic swab, and antimicrobial activity was verified using the diffusion disc method. Methylene blue was used at concentrations of 0.001 and 0.005%, and low-level lasers of 670, 830, and 904 nm, with energy densities of 4, 8, 10, and 14 J/cm², were tested on three plates each and combined with methylene blue at each concentration. In addition, three control plates were used, with each concentration and energy density separated without any interventions. The results were analyzed using the paired sample t test to determine the bactericidal effect of the methylene blue and using the ANOVA test to compare the effects of the energy densities and wavelengths among the low-level laser treatment protocols. The results showed bacterial reduction at wavelengths of 830 and 904 nm and more proliferation in wavelengths of 670 nm. In wavelengths of 830 nm, a bacterial reduction was observed in the conditions with 0.001% methylene blue in all energy density utilized, with 0.005% methylene blue in energy density of 10 J/cm² And in a wavelength of 904 nm, all condition showed bacterial reduction with or without methylene blue. We concluded that the low-level lasers of 904 and 830 nm have bactericidal effects and at better energy densities (10 and 14 J/cm²).
Hospital-acquired pressure injuries (HAPI) are a significant cause of morbidity and mortality, and represent a major health concern worldwide. Patients suffering from HAPI report a poor quality of life on several dimensions of health. Moreover, HAPI is reported to lengthen in-hospital stay in the acute setting, posing significant healthcare resource utilisation and costs. Given the clinical and economic burden of HAPI, recent best practice guidelines provide recommendations to reduce the prevalence of pressure injuries. Humber River Hospital (HRH), a large community hospital in Toronto, Canada, has a daily census of approximately 500 patients. The aim of this project was to reduce the prevalence of HAPI within the intensive care unit (ICU) and non-ICU setting at HRH within a 1-year period. Using the International Pressure Injury/Ulcer Prevalence (IPUP) Survey, we established a baseline prevalence of HAPI of 27.6% (n=315) for non-ICU and 30% for ICU (n=33) patients at our institution in 2015. Using the Plan-Do-Study-Act (PDSA) method for quality improvement, we implemented a multifaceted approach aimed at improving equipment, digital documentation and education on risk assessment, prevention and treatment strategies. Over multiple PDSA cycles, our prevalence of HAPI reduced to 16% for non-ICU patients with no changes to the HAPI prevalence in ICU patients in 2016. Sustainability continues with HAPI prevalence currently at 10% in 2017 for non-ICU patients, which outperforms the Canadian prevalence (13.7%) by census size for 2017. However, the prevalence of HAPI in the ICU increased to 45% in 2017 despite multiple quality improvement initiatives, suggesting critically ill patients represent a unique challenge for reducing HAPI for these patients at our institution;
The authors use a machine-learning approach to form a predictive model to identify which patients in a surgical critical care unit were most likely to manifest a hospital-acquired pressure injury (HAPI) They used random forest to assess the data of 6,376 patients during a five-year period Predictor variables were used to forecast two outcome variables The authors conclude that their model is useful to differentiate critically-ill adults who would most benefit from measures to prevent HAPIs
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Hosie, L (2018) "Learning from theatre-acquired pressure ulceration" Wounds UK 14(5): 40-44
Studies suggest that between 5-534% of hospital-acquired pressure ulceration (HAPU) occurs in patients who have experienced prolonged or multiple surgical procedures (Kirkland-Walsh et al, 2015) The reduction of HAPU remains a key quality indicator for the author's Trust, a large teaching hospital based in the UK Between April 2016 and April 2017, two Category 3 pressure ulcers were identified as acquired during the perioperative period In-depth investigations were conducted to identify causal factors for pressure damage formation and areas of learning from the incidents This article summarises the areas of learning identified and the work undertaken by a newly formed Theatres Tissue Viability Steering Group, which was implemented as a result of the incidents
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Objective: To provide a synthesis of the best available, recent primary or secondary research evidence on early preventative activities taken to increase skin health, and reduce the incidence of facility-acquired skin tears and pressure ulcers (PUs) in community, residential and health-care institutions Method: An integrative review focusing on a 10-year period, 2007-2017 A literature search of health databases was carried out, as well as a search of grey literature in relevant skin, wound care and nursing association journals A second search was also conducted focused on literature from policy and guideline development organisations Primary outcomes of interest were reduction in dry skin (xerosis), friable skin, or increases in healthy skin maintenance activities Secondary outcomes of interest were reductions in PU or skin tear occurrences Opinion, non-systematic literature reviews and discussion papers were excluded Results: Of the 4932 references obtained from the searches, a total of 33 articles were included in the review: 27 peer-reviewed journal articles and six articles from the grey literature search No guideline was found that focused on maintaining skin health as a person ages Studies identified the main factors for maintaining skin health as nutrition, hydration and skin care regimen Conclusion: Skin care regimens, including a focus on good nutrition and pH balance, should start immediately on arrival in institutions such as hospitals or residential aged care, and continue throughout the stay
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Aims: To examine the effect of psychological distress in mediating the relationship between the severity of pressure injury and pain intensity in hospitalized adults; Background: Despite the prevalence of pressure injury (previously known as pressure ulcers) in hospitalized adults, the current knowledge of pain associated with pressure injury is limited and findings are inconsistent There is also a lack of understanding of the relationship between psychological distress and pain from pressure injury; Design: Retrospective cross-sectional secondary analysis of data from electronic health records; Methods: The data were retrieved from the third day of admission in the period between 2013 - 2016 through the Integrated Data Repository Electronic health records were reviewed to collect data as needed The mediation effect was tested by using path analysis implemented through Mplus; Results: Path analysis revealed that the severity of pressure injuries and psychological distress have significant direct effects on pain intensity in hospitalized adults However, the relationship between the severity of pressure injury and pain intensity was not significantly mediated by psychological distress; Conclusions: Hospitalized adults who have more severe pressure injury and more treatments for psychological distress experienced greater pain intensity
Healthcare providers must pay attention to treating psychological distress among hospitalized adults to manage pain. Further study is needed to validate these findings and it should incorporate more appropriate measures of psychological distress. The lack of standardized nursing documentation in electronic health records severely limits the usefulness of data from electronic health records for nursing research. This article is protected by copyright. All rights reserved.


Background: Immobility and prolonged bed rest often lead to heel pressure ulcers in patients. A point prevalence audit undertaken in the orthopaedic wards of a Singapore tertiary hospital reported that 6 out of 30 patients who were audited had mild to blanching redness on their heels. Aims: The evidence-based project sought to achieve 80% compliance from nurses to perform heel off-loading practice and a 50% reduction in the occurrence of heel pressure ulcers. Methods: The project, lasting two years, was undertaken in two orthopaedic wards and utilized a pre- and post-implementation audit strategy using the Joanna Briggs Institute on-line 'Practical Application of Clinical Evidence System' and 'Getting Research into Practice' programs. Implementation occurred in four phases and involved a sample consisting of 30 adult patients. Results: Nurses’ compliance with performing heel off-loading techniques increased. The post-implementation audit showed 933% compliance of nurses undertaking heel off-loading techniques in the subsequent four follow-up audits. Meanwhile, the compliance with documentation increased from 633% to 867%. The project resulted in more than 50% reduction in stage one heel pressure ulcers. Conclusion: The implementation of heel off-loading techniques significantly reduced the incidences of heel pressure ulcers in orthopaedic wards.


Pressure ulcers are caused by sustained mechanical loading and deformation of the skin and subcutaneous layers between internal stiff anatomical structures and external surfaces or devices. In addition, the skin microclimate (temperature, humidity and airflow next to the skin surface) is an indirect pressure ulcer risk factor. Temperature and humidity affect the structure and function of the skin, increasing or lowering possible damage thresholds for the skin and underlying soft tissues. From a pressure ulcer prevention research perspective, the effects of humidity and temperature next to the skin surface are inextricably linked to concurrent soft tissue deformation. Direct clinical evidence supporting the association between microclimate and pressure ulceration is sparse and of high risk of bias. Currently, it is recommended to keep the skin dry and cool and/or to allow recovery periods between phases of occlusion. The stratum corneum must be prevented from becoming overhydrated or from drying out but exact ranges of an acceptable microclimate are unknown. Therefore, vague terms like 'microclimate management' should be avoided but product and microclimate characteristics should be explicitly stated to allow an informed decision making. Pressure ulcer prevention interventions like repositioning, the use of special support surfaces, cushions, and prophylactic dressings are effective only if they reduce sustained deformations in soft tissues. This mode of action outweighs possible undesirable microclimate properties. As long as uncertainty exists, efforts must be taken to use less occlusive materials as possible. There seems to be individual intrinsic characteristics making patients more vulnerable to microclimate effects. Highlights: An object on the skin surface provides an impedance to convective heat loss; An object on the skin surface provides an impedance to evaporative moisture loss; Microclimate is an effect modifier or an indirect risk factor for pressure ulcer development; Effects of 'microclimate interventions' on pressure ulcer prevention are unclear; The term 'microclimate management' should not be used.


The purpose of this quality improvement project was to develop an evidence-based protocol designed for pressure injury prevention for neonates and children in a pediatric cardiac care unit located in the Midwestern United States. The ultimate goal of the project was dissemination across all pediatric critical care and acute care inpatient arenas, but the focus of this initial iteration was neonates and children requiring cardiac surgery.
extracorporeal support in the form of extracorporeal membranous oxygenation and ventricular assist devices in the cardiac care unit, or cardiac transplantation A protocol based upon the National Pressure Ulcer Advisory Panel guidelines was developed and implemented in the pediatric cardiac care unit Pediatric patients were monitored for pressure injury development for 6 months following protocol implementation During the 40-month preintervention period, 60 hospital-acquired pressure injuries (HAPIs) were observed, 13 of which higher than stage 3 In the 6-month postintervention period, we observed zero HAPI greater than stage 2 We found that development and use of a standardized pressure injury prevention protocol reduced the incidence, prevalence, and severity of HAPIs among patients in our pediatric cardiac care unit;


Background Hospital-acquired pressure injuries are a costly and largely preventable complication occurring in a variety of acute care settings Patients admitted to the intensive care unit are at greater risk of developing pressure injuries Objective To determine whether the efficiency of scales to measure pressure injury risk increase when a continuously updated 3-day moving average method is used Methods With a retrospective cohort design we recruited 3085 patients treated between June 2011 and February 2015 in the intensive care unit of a tertiary level university hospital The present study included 2777 patients admitted to the Intensive Care Unit of the Hospital Universitario de Canarias, Spain Patients were evaluated daily with two scales to measure pressure injury risk: the Current Risk Assessment Scale for Pressure injury in Intensive Care scale (EVARUCI scale) and the Conscious level-Mobility-Haemodynamics-Oxygenation-Nutrition Index (COMHON) The moving average was used to create a series of three day averages from the complete time-data set The moving average method was used to analyze data points by creating series of averages of three days subsets of the time-data set We calculated the efficiency of the method as the product of positive (PPV) and negative predicted values (NPV) for each scale Results The efficiency using the moving average method was: PPV x NPV 0483 x 0907 0438 (standard deviation 0059), for EVARUCI Scale, and PPV x NPV 0552 x 0806 0445 (standard deviation 0075) for COMHON Index Conclusions The efficiency using the moving average method was higher, than the efficiency of other methods previously reported (0360 ± 0009 on average) The present study provides a useful procedure for nurses in clinical practice to assess whether a particular patient is protected against the appearance of pressure injury The instrument should be used focusing on negative predictive value to indicate protection against pressure injury


This study investigated the association between patient characteristics and the occurrence of pressure injuries for patients at the end of life A retrospective study was conducted using data collected from 2062 patients at the end of life between January 2007 and October 2015 In addition to demographic data and pressure injury risk assessment scale scores, injury history, disease type, and length of hospitalization were revealed as the major independent variables for predicting the occurrence of pressure injuries Both χ tests and t tests were employed for binary variable analysis, and logistic regression was used to conduct multivariate analysis Classification models were formulated through decision tree analysis, backpropagation neural network, and support vector machine algorithms The rules obtained using the decision tree algorithm were analyzed and interpreted The accuracy rate, sensitivity, and specificity of the decision tree, backpropagation neural network, and support vector machine algorithms were 7715%, 7954%, and 7476%; 7812%, 8137%, and 7485%; and 7932%, 8103%, and 7875%, respectively The predictive factors, ranked in order of importance, were history of pressure injuries, without cancer, excretion, activity/mobility, and skin condition/circulation These were the primary shared risk factors among the four models used in this study;

This exploratory, descriptive study aimed to identify and describe the pressure injury preventative interventions prescribed by nurses following the assessment of a patient's pressure injury risk and to compare the prescribed interventions relative to the assessed risk level A total of 200 inpatients in a tertiary Australian hospital were included Patients' charts were audited within 24 hours of admission Data collected included patient characteristics, pressure injury risk assessment score and level, and preventative interventions prescribed Most patients were assessed as not being at risk, with the largest group of at-risk patients assessed as being at high risk Some not-at-risk patients were prescribed interventions intended for those at risk, while prescription rates of preventative interventions recommended for those at any level of risk were variable (6%–64%) Significant associations were found between assessed pressure injury risk and preventative intervention prescription Preventative intervention prescription was inadequate, potentially exposing some patients to pressure injury However, the association between intervention prescription and risk level suggests that nurses are prescribing interventions relative to risk A more structured approach to intervention prescription according to risk level, such as a care bundle, may help to improve nurses' preventative intervention prescription and ensure that all at-risk patients receive appropriate preventative interventions

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Sudden-onset immobilisation generates unexpected external forces over bony prominences and is a potential cause of pressure ulcers Here, we report two cases of deep pressure ulcers in patients with acute monoarthritis as a result of calcium pyrophosphate (CPP) crystal deposition (pseudogout) The patients were women in their 80 who could perform activities of daily living by themselves They developed pressure ulcers while living in their own home Because acute CPP crystal arthritis is known to develop in relatively healthy elderly patients, patients and caregivers do not expect sudden-onset immobilisation In addition, larger joints are preferentially involved in acute CPP crystal arthritis, leading to the inability of patients to change positions themselves Therefore, acute CPP crystal arthritis should be recognised as a potential causal disease for pressure ulcers This case report further highlights a new concept of "disease-specific unexpected external force", which is beneficial for the prevention of pressure ulcers; © 2018 Medicalhelplinescom Inc and John Wiley & Sons Ltd

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Aim To explore the relationship between nurses' visual assessment of early pressure ulceration and assessment using sub epidermal moisture measurement (a measure of skin and tissue water) Materials and methods A descriptive prospective observational study design was employed Following ethical approval and written informed consent, data were collected daily, for four weeks, from at risk patients within an acute care facility in Ireland Data included nurses documented assessment of the patient's skin condition and researcher led sub epidermal moisture measurement, over the sacrum and both heels Results A total of 47 patients were included, 383% (n 18) were male and 615% (n 29) were female, with a mean age of 747 years Nineteen patients (40%) developed 21 Stage 1 pressure ulcers and all of these had sustained elevated sub epidermal moisture (SEM) levels before visual signs of damage became evident indicating 100% sensitivity of SEM readings in predicting pressure ulceration Specificity was 83% with the majority of false positives having insufficient follow-up time Furthermore, a medium correlation between nurses' visual skin assessment (the current gold standard in pressure ulcer detection) and SEM findings (r 47; p 0001)
was identified. The mean number of days for nurses to detect this damage was 55 (±2.5; max 11, min 2), whereas the mean number of days that it took SEM measurement to detect damage was 15 (±14; max 7, min 1). SEM measurement identified early damage, on average, 4 days sooner than nurses' assessment.

Conclusion

Given that pressure ulcers develop from within the deeper tissues, knowing that early pressure ulcer damage is present can facilitate heightening of prevention strategies to avoid extension. This is of importance in clinical practice as the earlier that pressure ulcers can be detected; the earlier interventions can be implemented to prevent further extension, avoiding their associated morbidity and mortality.

Highlights

- Identifying pressure ulcer risk and early detection of pressure damage is a priority.
- 16 people in this study had pressure ulcers, all had elevated SEM readings prior to them being visible.
- A correlation between nurses' visual skin assessment and SEM findings was identified.
- SEM measurement detects early pressure damage 39 days sooner than visual assessment.

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We investigated the accuracy of pressure injury evaluation using tele-devices and examined the concordance between automatically generated recommendations and primary manual recommendations. Caregivers took photos and videos of pressure injuries using smartphones with built-in cameras and uploaded the media to the application. The wound team evaluated the wound using a specially modified version of the Pressure Sore Status Tool. This was compared with the Pressure Sore Status Tool score assessed during the actual examination of the patient. We developed an automatic algorithm for dressing based on the Pressure Sore Status Tool score, checking for consistency between this and the primary manual recommendation. A total of 60 patients diagnosed with pressure injuries were included. The k coefficients indicated substantial agreement for wound size and total score, and excellent for all other items. We found that the overall concordance rates were statistically significant for all items (p < 0.001). For the primary dressing, the k coefficient for the concordance rate of automatic algorithm and manual recommendation was 0.771, while that of teleconsultation system and manual recommendation was 0.971. For the secondary dressing, the figures were 0.798 and 0.989, respectively. All values were statistically significant (p < 0.001).

We presented strong evidence documenting the utilization of a smartphone, patient-driven system, and demonstrated that the measurements obtained were comparable to the ones obtained by a trained, on-site, wound team. Furthermore, we confirmed agreement between automatically generated recommendations and primary manual recommendations.

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We presented strong evidence documenting the utilization of a smartphone, patient-driven system, and demonstrated that the measurements obtained were comparable to the ones obtained by a trained, on-site, wound team. Furthermore, we confirmed agreement between automatically generated recommendations and primary manual recommendations; © 2018 by the Wound Healing Society.

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Introduction Children admitted to hospitals may develop different types of skin injuries (dependence-related skin lesions) caused by pressure, or moisture and/ or friction Most epidemiological studies examine only pressure injury (PI; previously known as pressure ulcers) There is a wide range in the reported values (047% - 43%) for the prevalence of PI in paediatric hospital units Aim To establish the prevalence of PI, moisture-associated skin damage (MASD), and skin tears in paediatric hospital units in Spain Methods A cross-sectional study (epidemiological survey) was conducted by the Spanish Advisory Group on Pressure Ulcers and Chronic Wounds (GNEAUPP) in 2017 All public and private Spanish hospitals were invited to participate The data were collected using a secure online form; hospital and unit characteristics, numbers of children admitted, and numbers of PIs, MASDs, combined lesions, and skin tears were recorded Values for prevalence and the associated 95% confidence intervals (CIs) were calculated Results Seventy-three paediatric units from 23 hospitals completed the survey (total 1,027 patients) The PI prevalence was 331% (95% CI 238% - 459%) By unit type, the PI prevalence was 179% (069% -369%) for general paediatrics wards and 939% (450% - 151%) for paediatric intensive care units All PIs were acquired after admission Most of the PIs (861%) were category 1 or 2, and were located on the head (occipital), nose, or other areas of the face The prevalence of MASD was 156% (096% - 252%); that of combined lesions was 049% (021%-]3%) There were no statistically significant differences between the general wards and intensive care wards The intensive care unit skin tear prevalence was 010% (002% - 055%) Conclusions The prevalence of PI in paediatric hospital units in Spain was low compared with published values for other countries All the PIs were hospital-acquired (ie, they developed after admission) PI prevention likely needs improvement in these units The MASD prevalence was very low; most of the lesions were due to incontinence-associated dermatitis This national survey is the most comprehensive to date on skin injuries in hospitalised children in Spain Acknowledgments This research was funded by the Spanish Advisory Group on Pressure Ulcers and Chronic Wounds (GNEAUPP) and by the research group "Nursing and Innovation in Healthcare" at the University of Jaen The authors thank all the Spanish hospitals that participated in the survey

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Pressure ulcers are a debilitating health problem Assessment of early pressure ulcer damage typically relies on a visual assessment of skin condition and the assignment of scores using paper-based assessment tools It is difficult to obtain reliable and valid risk scores using these methods The identification of biomarkers has the potential for a more accurate understanding of cellular level mechanisms Home use of new technology by at-risk patients and their carers could result in significant reductions in the prevalence of pressure ulcers and the associated morbidities and mortality We propose that technology has an important role in the

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Pandhare, S P and B Dhudum (2018) "Effectiveness of Ptp Regarding Use of Braden Scale for Pressure Sore on Knowledge and Practices among Staff Nurses Working in Selected Hospitals" International Journal of Nursing Education 10(4): 139-142

Background: Skin care, an elementary element of fundamental care, thinks about the nature and the patient gets in healing facility Quality care pointed averting the limiting pores and skin breakdown and pressure sores has been known together of nursing analysis need Stress lesion may be a normal disadvantage in nursing follow and includes great fees for the sufferers yet with recognize to the medicinal offerings gain' Aims and Objectives: To assess the knowledge & practices of staff nurses regarding Braden scale by pretest To evaluate the effectiveness of Planned teaching programme on knowledge and practices regarding use of Braden scale To find out the association between pre-test knowledge scores with the selected socio-demographic variables Materials and Methods: A Quantitative research approach and one group pre-test post-test research design was used 75 samples were selected as per the criteria with non-probability purposive sampling technique Results and conclusion: Study finding showed, shows, 67% staff nurses were having poor knowledge score (0-5), 133 % have Average knowledge score (6-10), and 60 % have good knowledge score (11-15) and 20 % with Excellent knowledge score Study findings shows that there is a need for in service education for nurse's improvement of knowledge and there should be maintained a safe practice regarding use of Braden scale Every unit should have written protocols and should be reviewed regularly Further study can be done for assessing knowledge together with the practices in large scale

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identification of biomarkers associated with the early development of pressure ulcers. When used at home by at-risk patients, new technology has the potential to replace the expensive and inefficient current approaches used for diagnosis and treatment of early-stage pressure ulcers. The challenge is to develop newer technology-based systems that patients can use at home to detect their own early-stage ulcers and provide their own self-care. Truly innovative technology could also allow the health care practitioner to have remote oversight of the patient's progress in pressure ulcer prevention. This article discusses some of the current issues in pressure ulcer assessment and how technological approaches can solve some of the factors that impede the early identification of pressure ulcers in at-risk people living at home.


Detection of subcutaneous tissue damage before it is visible can trigger early intervention and decrease hospital-acquired pressure ulcer (HAPU) rates. The objective of this two-phase study was to evaluate the clinical utility of the Sub-Epidermal Moisture (SEM) Scanner (Bruin Biometrics (BBI), LLC), a hand-held device that assesses increases in interstitial fluid or subepidermal moisture, indicating early tissue damage. Phase 1: Patients were provided standard-of-care risk assessment and interventions and were scanned with the SEM Scanner, but the resulting SEM scores were not used to determine interventions. This gave a baseline pressure ulcer incidence rate. Phase 2: This phase is the same as Phase 1 except the resulting SEM scores were used in conjunction with risk assessment scores to determine appropriate interventions and care planning. In Phase 1, 12 of the 89 subjects or 135% developed visible pressure ulcers—4 Stage I’s, 6 Stage II’s, 1 Stage III, and 1 deep tissue injury. In Phase 2, 2 of the 195 subjects or 10% developed visible pressure ulcers—1 Stage I and 1 Stage II. Patients in Phase 2 were more incontinent, less mobile, and had longer lengths of stay than those in Phase 1. Use of the Scanner resulted in a 93% decrease in HAPU. No deep injuries developed in Phase 2.


Background: Heel pressure injuries (HPIs) are the second most common type of pressure ulcers. Despite their frequency, however, HPIs are poorly understood and remain difficult to treat. Aim: To describe the rationale behind the need for a structured evidence-based approach to assessing and treating HPIs in adult, paediatric, and diabetic populations. Methods: Several clinical questions were identified and incorporated into six domains to provide a framework for defining evidence-based recommendations for HPI assessment and treatment. This framework focuses on three populations: adults, paediatric patients, and patients with diabetes. Conclusion: This article describes strategies, rationales, and efforts needed to generate a series of evidence-based recommendations in our six identified domains and three patient populations. The Italian Nurses' Association for Wound Care (AISLeC) has organized a Consensus Conference on the assessment and management of HPIs to present these results and recommendations in November 2018.

Saeed, A, N Narayan, et al (2018) "A propeller SGAP flap raised from a previous gluteus maximus myocutaneous flap to reconstruct a recurrent type IV sacral pressure ulcer" Microsurgery Epub ahead of print


Aim: The primary goal of this study was to estimate the prevalence of pressure ulcers in the paediatric population cared for in primary health care materials. The data of this epidemiological study were extracted from the...
Sustained pressure, shear forces, and friction, as well as elevated humidity/moisture, are decisive physical factors in the development of pressure injuries (PIs) To date, further research is needed in order to understand the influence of humidity and moisture on the COF of skin against different types of medical textiles The aim of this work was to investigate the effects of moisture caused by sweat, urine, or saline on the resulting COF of skin against different textiles used in the medical setting in the context of PI prevention For that purpose, we performed physical measurements of static COFs of porcine skin followed by finite element (FE) computational modelling in order to illustrate the effect of increased COF at the skin on the resulting strains and stresses deep within the soft tissues of the buttocks The COF of dry skin obtained for the 3 textiles varied between 059 (adult diaper) and 091 (polyurethane dressing) In addition, the COF increased with the added moisture in all of the tested cases The results of the FE simulations further showed that increased COF results in elevated strain energy density and shear strain values in the

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The authors aimed to assess the factors that impair cell proliferation in the granulation tissue of pressure ulcers using immunohistochemistry for the cell proliferation marker Ki-67 This was a single center, cross-sectional study The study included 86 patients with stage III or IV pressure ulcers Two granulation tissue biopsy specimens were obtained from 86 patients. The specimens were used for histological examination, Ki-67 immunohistochemistry, and bacterial count assessment The bacterial count was assessed as the Ki-67 index Pearson's product-moment correlation coefficient (r) was used to assess the relationship between the Ki-67 index and other variables, including age, body mass index, bacterial count (Log10 CFU/g), serum albumin level, hemoglobin level, white blood cell count, and C-reactive protein level The Mann-Whitney U test was used to compare the mean Ki-67 index according to gender, diabetes, smoking status, and wound culture. Univariate and multivariate linear regression analyses were used to assess the association between the Ki-67 index and other parameters. The Mann-Whitney U test revealed that the bacteria-positive group had a lower Ki-67 index (p < 0045). Bacterial count demonstrated a significant negative correlation with the Ki-67 index (r = -0.325, p < 0002). Multivariate linear regression analysis showed that bacterial count was a significant predictor of the Ki-67 index. The adjusted β-coefficient was -134 (95% confidence interval, −201 to −066, p < 0001). Among the isolated bacteria, Corynebacterium spp and Staphylococcus aureus were significantly associated with a low Ki-67 index, but Pseudomonas aeruginosa was not. These results suggest a negative relationship between bacterial count and cell proliferation in pressure ulcer granulation tissue, as indicated by the Ki-67 index. Granulation tissue formation in pressure ulcers may be accelerated if high bacterial load is treated appropriately.

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Scanlan, J (1886) "On Decubitus Acutus (Acute Bed-Sore), with an Unusual Case" Glasgow Medical Journal 26(4): 269-274

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Sustained pressure, shear forces, and friction, as well as elevated humidity/moisture, are decisive physical factors in the development of pressure injuries (PIs). To date, further research is needed in order to understand the influence of humidity and moisture on the COF (coefficient of friction) of skin against different types of medical textiles. The aim of this work was to investigate the effects of moisture caused by sweat, urine, or saline on the resulting COF of skin against different textiles used in the medical setting in the context of PI prevention. For that purpose, we performed physical measurements of static COFs of porcine skin followed by finite element (FE) computational modelling in order to illustrate the effect of increased COF at the skin on the resulting strains and stresses deep within the soft tissues of the buttocks. The COF of dry skin obtained for the 3 textiles varied between 0.59 (adult diaper) and 0.91 (polyurethane dressing). In addition, the COF increased with the added moisture in all of the tested cases. The results of the FE simulations further showed that increased COF results in elevated strain energy density and shear strain values in the
Background and Aims: Decubitus ulcer (DU) is one of the commonly observed health problems among home care patients. With an aging population, the incidence and prevalence of wound problems is on the rise. Bedsores (also known as pressure ulcers or decubitus ulcers) are painful, take months to heal, and, for many patients, never do, leading to other health problems. The condition has become so acute that treating bedsores is now a significant burden on the healthcare system. An estimated 25 million pressure ulcers are treated in US hospitals each year, adding US$11 billion annually to health care costs.

Objective: To utilize the theoretical frameworks of implementation science to implement pressure injury (PI) prevention best practices in spinal cord injury (SCI) rehabilitation; Design: Quality Improvement SETTING: Six Canadian SCI rehabilitation centers PARTICIPANTS: Inpatients admitted 2011-2015 INTERVENTIONS: The SCI Knowledge Mobilization Network (SCI KMN) selected and implemented two PI prevention best practices at six Canadian SCI rehabilitation centers: (1) completing a comprehensive PI risk assessment comprised of a structured risk assessment instrument followed by an individualized, interprofessional risk factor determination and prevention plan; and (2) providing structured and individualized PI prevention patient education Active Implementation Frameworks provided a systematic approach to best practice implementation; Outcome Measures: Implementation indicators (completion rates) and patient outcomes (PI incidence; patient education survey); Results: Following implementation, risk assessment completion rates improved from 46% to 82% (p<0.005) Between initial (2012-13) and full (2014-15) implementation stages, completion rates improved for both interprofessional risk factor determination (67% to 96%) and prevention plans (67% to 94%) Documentation of patient education also increased to 86% (71% pre-implementation) The incidence of PIs at rehabilitation admission was 22%, with 14% of individuals developing new PIs during rehabilitation. The overall PI prevalence was 30% Considering only PIs of stage 2 or greater, prevalence was 21% and incidence 7%. There were no statistically significant differences in PI incidence between pre- and post-implementation Patient education surveys indicated that PI education improved patients' knowledge of prevention strategies; Conclusions: Active Implementation Frameworks supported successful implementation of PI prevention best practices across the six participating SCI KMN sites. Achieving a reduction in PI incidence will require additional measures, and there is an ongoing need to strengthen the evidence base underpinning PI prevention guidelines; Copyright © 2018 Published by Elsevier Inc.

With an aging population, the incidence and prevalence of wound problems is on the rise. Bedsores (also known as pressure ulcers or decubitus ulcers) are painful, take months to heal, and, for many patients, never do, leading to other health problems. The condition has become so acute that treating bedsores is now a significant burden on the healthcare system. An estimated 25 million pressure ulcers are treated in US hospitals each year, adding US$11 billion annually to health care costs.

Background and Aims: Decubitus ulcer (DU) is one of the commonly observed health problems among home care patients. As well as deteriorating social, physical, and psychological conditions of the patients, it is a cause of severe economic loss due to long-term bed occupancy and high care costs. This study aimed to examine the factors which affect the development of decubitus ulcer among home care patients and provide extensive data to the literature. Patients and Methods: This study was conducted with home care patients aged over 40 years old who were registered at Etimesgut Ankara Sehit Salt Erturk State Hospital. Following the face-to-face interviews with the patients at home, the scores of Subjective Global Assessment (SGA), Mini Nutritional Assessment (MNA), Daily Life Activities (DLA), and Geriatric Depression Scale (GDS) were recorded. Development of DU was monitored through routine examinations in the home care patients. It was encountered how SGA, MNA, DLA, and GDS functioned in predicting the
Most of the pressure ulcers (PUs) that developed in the intensive care unit (ICU) of a medical device-related While use of a dermal pad was recommended as part of its pressure ulcer prevention strategy, staff were concerned that it tended to tear or split while in use An alternative gel pad (Dermisplus®, Prevent, Frontier Medical), that was cost-effective and appeared to be more robust, was identified A 4-week non-comparative audit involving 37 patients was therefore undertaken to investigate the effect of this alternative gel pad on PU incidence in the ICU With the exception of the change in the gel pad used, there was no difference to the overall PU prevention strategy No new PUs developed during the audit period with the new gel pad, although there was also no reduction in incidence compared with the


Pressure ulcers are skin lesions caused by the excessive compression of soft tissues between bones and hard surfaces that may increase treatment risks and costs Manual techniques to evaluate the area of the affected region include the use of adhesive labels and rulers in direct contact with the ulcer In this article, a semi-automatic method is proposed to estimate the lesion area through computerized techniques in different color spaces using filters and morphological operators Experiments with a set of 110 images of pressure ulcers resulted in a statistically significant increase in effectiveness, when compared with other published results, reaching 908% of precision, 816% of sensitivity, and 813% of accuracy


Background: Ultrasonography may have potential as an effective diagnostic tool for deep tissue injury (DTI) in tissues overlaying bony prominences that are vulnerable when under sustained loading in sitting Methods: Three cases of DTI in the fat and muscle layers overlaying the ischial tuberosity of the pelvis in 3 persons with spinal cord injury (SCI) with different medical histories and abnormal tissue signs are described Conclusion: There is a need for prospective studies using a reliable standardized ultrasonography protocol to diagnose DTI and to follow its natural history to determine its association with the development of pressure injuries


Most of the pressure ulcers (PUs) that developed in the intensive care unit (ICU) of an acute trust were medical device related While use of a dermal pad was recommended as part of its pressure ulcer prevention strategy, staff were concerned that it tended to tear or split while in use An alternative gel pad (Dermisplus®, Prevent, Frontier Medical), that was cost-effective and appeared to be more robust, was identified A 4-week non-comparative audit involving 37 patients was therefore undertaken to investigate the effect of this alternative gel pad on PU incidence in the ICU With the exception of the change in the gel pad used, there was no difference to the overall PU prevention strategy No new PUs developed during the audit period with the new gel pad, although there was also no reduction in incidence compared with the

Granulation tissue formation is required for the healing of deep pressure ulcers. The wound healing process is often delayed at the stage of granulation tissue formation. The pathogenesis of pressure ulcers showing granulation tissue may vary; however, no terminology has been defined to describe existing ulcers. Thus, we previously defined terminology for granulation tissue to describe individual ulcers. Based on these terms, we retrospectively evaluated the findings of deep pressure ulcers. In particular, we focused on polypoid granular tissue, a unique morphological feature. Polypoid granulation tissues were frequently observed in pressure ulcers over the sacrum compared with those over the foot. Chronological observation of a few cases indicated that external forces from specific directions during the healing process caused the development of polypoid granulation tissue. In addition, most pressure ulcers showing polypoid granulation tissue exhibited a trench-like appearance in individual wounds. Based on these observations, polypoid granulation tissue may generate from specific external forces, which lead to wound deformity.

Morphological findings in an individual wound may be useful to predict the mechanical factors on existing pressure ulcers. Highlights: • We previously defined terminology for granulation tissue to describe ulcers. • Polypoid granulation tissue was defined as isolated granulation tissue. • Polypoid granulation tissue was characteristically found in sacral pressure ulcers. • Polypoid granulation tissue exhibited a trench-like appearance. • Morphological findings in wounds may predict mechanical factors on existing ulcers.


Preventing, identifying, and treating deep tissue injury (DTI) remains a challenge. Purpose: The purpose of the current research was to describe the characteristics of DTIs and patient/care variables that may affect their development and outcomes at the time of hospital discharge. Methods: A retrospective, descriptive, single-site cohort study of electronic medical records was conducted between October 1, 2010, and September 30, 2012, to identify common demographic, intrinsic (eg, mobility status, medical comorbidities, and incontinence), extrinsic (ie, surgical and procedural events, medical devices, head-of-bed elevation), and care and treatment factors related to outcomes of hospital-acquired DTIs; additional data points related to DTI development or descriptive of the sample (Braden Scale scores and subscale scores, hospital length of stay [LOS], intensive care unit [ICU] LOS, days from admission to DTI, time in the operating room, serum albumin levels, support surfaces/specialty beds, and DTI locations) also were retrieved. DTI healing outcomes, grouped by resolved, partial-thickness/stable, and full-thickness/unstageable, and 30 main patient/treatment variables were analyzed using Kruskal-Wallis, chi-squared, and Fischer exact tests. Results: One hundred, seventy-nine (179) DTIs occurred in 141 adult patients (132 in men, 47 in women; mean patient age 64 [range 19-94]) Of those patients, 110 had a history of peripheral vascular disease and 122 had hypertension. Sixty-nine (69) DTIs were documented in patients who died within 1 year of occurrence. Most common DTI sites were the coccyx (47 [26%]) and heel (42 [23%]); 41 (22%) were device-related. Median hospital LOS was 23 (range 4-258) days and median ICU LOS was 12 (range 1-173) days; 40 DTIs were identified before surgery and 120 after a diagnostic or therapeutic procedure. Data for DTI outcome groups at hospital discharge included 28 resolved, 131 partial-thickness/stable, and 20 full-thickness/unstageable; factors significantly different between outcome groups included mechanical ventilation (15/42/12; P 01), use of a feeding tube (15/46/12; P 02), anemia (14/30/9; P 005), history of cerebrovascular accident (12/27/7; P 03), hospital LOS (67/18/375; P <001), ICU LOS (23/10/12; P 03), time-to-event (135/8/9; P 001), vasopressor use after DTI (13/31/11; P 003), low-air-loss surface (10/9/3; P 005), and device-related (14/24/4; P 002). Conclusion: DTI risk factors mirrored those of other PUs, but progression to full-thickness injury was not inevitable. Early and frequent assessment and timely intervention may help prevent DTI progression.
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Pressure ulcers occur due to sustained mechanical loading. Deep tissue injury is a severe type of pressure ulcer, which is believed to originate in subcutaneous tissues adjacent to bony prominences. In previous experimental-numerical studies, the relationship between internal tissue state and damage development was investigated using a 2D analysis. However, recent studies suggest that a local analysis is not sufficient. In the present study, we developed a method to create animal-specific 3D finite element models of an indentation test on the tibialis anterior muscle of rats based on MRI data. A detailed description on how the animal-specific models are created is given. Furthermore, two indenter geometries are compared and the influence of errors in determining the indenter orientation on the resulting internal strain distribution in a defined volume of tissue was investigated. We conclude that with a spherically-shaped indenter, errors in estimating the indenter orientation do not unduly influence the results of the simulation;
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The article announces that tissue viability nurse consultant Julie Tyrer has won an award for her profession from the magazine, noting her role in a campaign to prevent heel pressure ulcers in patients
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Websites


“Risk Assessment and Prevention of Pressure Ulcers: a clinical practice guideline from the American College of Physicians” (2015)
http://annals.org/article.aspx?articleid=2173505


NICE Guideline: “Pressure ulcers: prevention and management of pressure ulcers” (April 2014)
http://www.nice.org.uk/guidance/CG179


The Trans Tasman Dietetic Wound Care Group, Evidence based practice guidelines for the nutritional management of adults with pressure injuries (2011)

Registered Nurses’ Association of Ontario - Risk asessment and prevention of pressure ulcers (2011 revised)

National Guideline Clearinghouse – predefined search
http://guideline.gov/search/search.aspx?term=%22pressure+ulcer*%22+or+%22pressure+injur*%22

European Pressure Ulcer Advisory Panel guidelines
http://www.epuap.org/guidelines/

“Pressure Ulcers Basics : education package” / Victoria. Department of Human Services

Cochrane Wounds Group
http://wounds.cochrane.org/our-reviews

The Cochrane Wounds Group was established in 1995 with the aim of using evidence from trials to conduct systematic reviews to establish the effectiveness of interventions for the prevention and treatment of wounds, and interventions for the prevention and treatment of wound complications.

National Pressure Ulcer Advisory Panel
http://www.npup.org/
**e-Journals**

- **Advances in Skin and Wound Care** (Tables of Contents only)
- **Eplasty (formerly Journal of Burns & Wounds)** (full text)
- **EWMA Journal** (full text)
- **International Wound Journal** (full text with 12-month delay)
- **Journal of the American College of Clinical Wound Specialists** (full text)
- **Journal of Tissue Viability** (full text)
- **Journal of Wound Care** (full text)
- **Ostomy Wound Management** (full text – internet access required)
- **World Council of Enterostomal Therapists Journal** (full text 2010 onwards)
- **World Wide Wounds: the premier online resource for dressing materials and practical wound management information** (full text)
  
  The mission of *World Wide Wounds* is to be the premier online resource for peer-reviewed information on dressing materials providing practical guidance on all aspects of wound management to health professionals worldwide.
- **Wound Care Advisor** (full text 2014 onwards)
- **Wound Practice & Research** (full text)
- **Wound Repair & Regeneration** (full text with 12-month delay)
- **Wounds International** (full text 2012 onwards)
- **Wounds UK Journal** (full text 2011 onwards)

**e-Books**

- **Acute and chronic wounds** 5th ed, 2016
- **Australian Standards for wound management** 2nd ed. 2010
- **Fast facts for wound care nursing : practical wound management in a nutshell** 2011
- **Nutrition and wound healing** 2007
- **Wound management: principles and practice** 3rd. ed., 2012
## Queensland Health Libraries and Contact Numbers

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<thead>
<tr>
<th>Library Name</th>
<th>Phone Number</th>
<th>Email Address</th>
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<tbody>
<tr>
<td>Cairns Hospital Library &amp; Knowledge Centre</td>
<td>4226-6679</td>
<td><a href="mailto:cairns_library@health.qld.gov.au">cairns_library@health.qld.gov.au</a></td>
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<tr>
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<td><a href="mailto:bayside-lib@health.qld.gov.au">bayside-lib@health.qld.gov.au</a></td>
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<tr>
<td>Community and Oral Health Directorate Library</td>
<td>3274 9159</td>
<td><a href="mailto:COH-Library@health.qld.gov.au">COH-Library@health.qld.gov.au</a></td>
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<tr>
<td>Forensic and Scientific Services, Information &amp; Research Services</td>
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<td><a href="mailto:FSS_IRS@health.qld.gov.au">FSS_IRS@health.qld.gov.au</a></td>
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<td>Sunshine Coast Health Institute (SCHI) Library</td>
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<tr>
<td>Queensland Centre for Perinatal and Infant Mental Health</td>
<td>3266 3100</td>
<td><a href="mailto:qcpimhlibrary@health.qld.gov.au">qcpimhlibrary@health.qld.gov.au</a></td>
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### University of Queensland Libraries

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<td>3365 5353</td>
<td>hhsliblibrary.uq.edu.au</td>
</tr>
<tr>
<td>UQ/Mater McAuley Library</td>
<td>3163 1689</td>
<td><a href="mailto:matlib@library.uq.edu.au">matlib@library.uq.edu.au</a></td>
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