Pressure Injury Current Awareness Service

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New Articles

(2018) "Advisory on pressure injury prevention"  
*Nursing* **48**(10): 19-20

The article discusses the US Joint Commission’s issuance of an advisory in October 2018 on preventing hospital-acquired pressure injuries related to the use of medical devices like feeding tubes, catheters, and orthopedic devices

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*Australian Critical Care* **31**(5): 264-265

*Respiratory Care* **63**(9): 1102-1110

BACKGROUND: The use of noninvasive ventilation masks is known to cause damage to facial skin tissue, which affects both the efficacy of the intervention and the patient’s quality of life. The use of humidification with noninvasive ventilation is a common practice, but its relative role in the development of facial pressure ulcers has not been fully studied.

METHODS: A crossover cohort design was used in this study, with 15 healthy volunteers. Each volunteer randomly received both 10 cm H2O of CPAP with and without humidification through an oronasal mask. Skin integrity was evaluated by measuring transepidermal water loss, skin hydration, and skin pH at the bridge of the nose. Device-skin interface conditions (pressure and microclimate) were recorded at the bridge of the nose and both cheeks. The pro-inflammatory cytokine interleukin-1α was collected from the nose bridge before and after CPAP application by using a skin analysis tape. Nasal symptoms were collected by using a validated 6-point score.

RESULTS: Humidified CPAP significantly increased transepidermal water loss (P < 0.001) and skin humidity (P < 0.02) compared with non-humidified CPAP. There were no significant differences in skin hydration, skin pH, skin temperature, and cytokine expression between both conditions. However, there was a trend of increased median ratios of interleukin-1α concentrations in the humidified CPAP. There was a significant increase in the interface pressure at the bridge of the nose after CPAP application (P < 0.02), with higher interface pressure values at the nose bridge compared with both left (P < 0.002) and right (P < 0.003) cheeks. The participants reported elevated nasal discomfort during non-humidified CPAP.

CONCLUSIONS: These findings indicated that noninvasive ventilation with humidification had a potential disrupting effect on the barrier function of facial skin, associated with changes in skin microclimate and function. Further research is required to establish the cause of mask-related skin damage and to evaluate the effects of mask design, application techniques, and air flow and humidity settings.

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Artico, M, D D’Angelo, et al. (2018) "Pressure Injury Progression and Factors Associated With Different End-Points in a Home Palliative Care Setting: A Retrospective Chart Review Study"  

Context: Patients with advanced illnesses show the highest prevalence for pressure injuries. In the palliative care setting, the ultimate goal is injury healing, but equally important is wound maintenance, wound palliation (wound-related pain and symptom management), and primary and secondary wound prevention.

Objectives: To describe the course of healing for pressure injuries in a home palliative care setting according to different end-points, and to explore patient and caregiver characteristics and specific care activities associated with their achievement.

Methods: Four-year retrospective chart review of 669 patients cared for in a home palliative care service, of those 124 patients (185%) had at least one pressure injury with a survival rate less than or equal to six months.

Results: The proportion of healed pressure injuries was 244%. Of the injuries not healed, 34% were in a maintenance phase, whereas 63% were in a process of deterioration. Body mass index (P = 0.0014), artificial nutrition (P = 0.002), and age <70 years (P = 0.022) emerged as predictive factors of pressure injury complete healing. Artificial nutrition, age, male caregiver (P = 0.034), and spouse (P = 0.036) were factors significantly associated with a more rapid pressure injury healing. Continuous deep sedation was a predictive factor for pressure injury deterioration and significantly associated with a more rapid worsening.

Conclusion: Pressure injury healing is a realistic aim in home palliative care, particularly for injuries not exceeding Stage II occurring at least two weeks before death.
When assessing pressure injuries, our results highlight the need to also pay attention to artificial nutrition, continuous deep sedation, and the caregiver's role and gender

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Objective: To carry out the cultural adaptation of the Pieper-Zulkowski Pressure Ulcer Knowledge Test (PZ-PUKT) for use in Brazil and analyze the internal consistency of the adapted version
Method: This was a methodological study. The PZ-PUKT is a knowledge test consisting of 72 items, divided into: prevention, staging, and wound description. The present study was developed in two phases: (1) translation of the questionnaire from English to Brazilian Portuguese, back-translation, and assessment of equivalence between the original and back-translated version by an expert panel; (2) pre-testing with nurses
Results: The questionnaire showed face and content validity according to the opinions of the experts. Cronbach's alpha for the total test score was higher than 0.7. The adapted version presented satisfactory internal consistency for the studied sample
Conclusion: The adapted version of the instrument for Portuguese can be used in intervention studies as a tool to measure "nursing knowledge about pressure injury/ulcers" as a dependent variable

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Aim: To adapt the Neonatal Skin Risk Assessment Scale to the Spanish context and to test its validity and reliability
Background: Currently, in Spain there are no validated scales to evaluate the risk of pressure ulcers in infants
Method: The research was performed in 10 neonatal units. Overall, we use an observational study design, but divided it into three stages. In the first stage, the transcultural adaptation of the scale and its content validation were performed. In the second stage, the inter-rater/intra-rater agreement and construct validity were evaluated using a cross-sectional design. Finally, in the third stage, a cohort study to analyze pressure ulcers' incidence, diagnostic tests, and cut-off points of the scale was performed.
Results: In the first phase, the content validity index was 0.93. In the second phase (336 neonates), the inter-rater reliability was 0.93, and the inter-rater reliability was 0.97. The construct validity has shown a two-dimensional model that fits better, representing “pressure duration and intensity” and “skin immaturity.” In the third phase (268 neonates), the best values were those presented by the score 17. The receiver operating characteristic curve was 0.84, showing a sensitivity of 91.18%, specificity of 76.50%, positive predictive value of 36.05%, and negative predictive value of 98.35%
Conclusion: The scale has shown evidence of validity and reliability to measure the neonatal risk of pressure ulcers in the Spanish context. Implications for Nursing Management: Pressure ulcers are an adverse event recognized in paediatric units and specifically in neonatal units. The present study was performed in 10 neonatal units. The neonatal skin risk assessment scale is identified to hospitalised neonates requiring prevention measures and their specific risk factors, to provide useful diagnostic information to improve the neonatal skin care into Spanish-speaking countries. The Neonatal Skin Risk Assessment Scale could ensure the efficient and effective allocation of limited preventive resources, support clinical and management decisions, allow risk-adjusted cases in epidemiological studies, facilitate the development of risk assessment protocols and serve as evidence in litigation cases. All these features could facilitate developing best practice in nursing management and improve the quality and safety of neonatal care.

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Background: Pressure ulcers (PU) and deep tissue injuries (DTI), collectively known as pressure injuries, are serious complications causing staggering costs and human suffering with over 200 reported risk factors from many domains. Primary pressure injury prevention seeks to prevent the first incidence, while secondary PU/DTI prevention aims to decrease chronic recurrence. Clinical practice guidelines (CPG) combine evidence-based practice and expert opinion to aid clinicians in the goal of achieving best practices for primary and secondary prevention. The correction of all risk factors can be both overwhelming and impractical to implement in clinical practice. There is a need to develop practical clinical tools to prioritize the multiple recommendations of CPG, but there is limited guidance on how to prioritize based on
individual cases Bioinformatics platforms enable data management to support clinical decision support and user-interface development for complex clinical challenges such as pressure injury prevention care planning; Objective: The central hypothesis of the study is that the individual's risk factor profile can provide the basis for adaptive, personalized care planning for PU prevention based on CPG prioritization The study objective is to develop the Spinal Cord Injury Pressure Ulcer and Deep Tissue Injury (SCIPUD+) Resource to support personalized care planning for primary and secondary PU/DTI prevention; Methods: The study is employing a retrospective electronic health record (EHR) chart review of over 75 factors known to be relevant for pressure injury risk in individuals with a spinal cord injury (SCI) and routinely recorded in the EHR We also perform tissue health assessments of a selected sub-group A systems approach is being used to develop and validate the SCIPUD+ Resource incorporating the many risk factor domains associated with PU/DTI primary and secondary prevention, ranging from the individual's environment to local tissue health Our multiscale approach will leverage the strength of bioinformatics applied to an established national EHR system A comprehensive model is being used to relate the primary outcome of interest (PU/DTI development) with over 75 PU/DTI risk factors using a retrospective chart review of 5000 individuals selected from the study cohort of more than 36,000 persons with SCI A Spinal Cord Injury Pressure Ulcer and Deep Tissue Injury Ontology (SCIPUDO) is being developed to enable robust text-mining for data extraction from free-form notes; Results: The results from this study are pending; Conclusions: PU/DTI remains a highly significant source of morbidity for individuals with SCI Personalized interactive care plans may decrease both initial PU formation and readmission rates for high-risk individuals The project is using established EHR data to build a comprehensive, structured model of environmental, social and clinical pressure injury risk factors The comprehensive SCIPUD+ health care tool will be used to relate the primary outcome of interest (pressure injury development) with covariates including environmental, social, clinical, personal and tissue health profiles as well as possible interactions among some of these covariates The study will result in a validated tool for personalized implementation of CPG recommendations and has great potential to change the standard of care for Pru clinical practice by enabling clinicians to provide personalized application of CPG priorities tailored to the needs of each at-risk individual with SCI; Registered Report Identifier: RR1-102196/10871; ©Kath M Bokie, Guo-Qiang Zhang, Steven K Roggenkamp, Ningzhou Zeng, Jacinta Seton, Shiqiang Tao, Arielle L Bloostein, Jiayang Sun Originally published in JMIR Research Protocols

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Objectives: To evaluate the effectiveness of wheelchair assessment and configuration on pressure injury incidence, mobility, and functioning in a wheelchair Design: Randomized controlled trial with participants individually randomized into intervention and control groups Setting: Nursing home Participants: Nursing home residents aged 60 and older who used wheelchairs and were at risk for pressure injuries (N258) Intervention: Treatment and evaluation, individually configured wheelchair and skin protection cushion; control and evaluation, facility-provided wheelchair and skin protection cushion Measurements: Pressure injury incidence, Nursing Home Life Space Diameter score, Functioning Every Day in a Wheelchair—Capacity (FEW-C) score, and Wheelchair Skills Test (WST) score Results: No differences in pressure injuries (p77) were found Pelvic rotation (odds ratio (OR)015, 95% confidence interval (CI)003–070, p02) and Day 14 WST skill score (OR074, 95% CI060–091, p004) were significant predictors of pressure injuries Significant differences were observed between groups in change in FEW-C independence scores between before randomization and endpoint (p03) and before randomization and 14 days (p04) Conclusion: Participants with individually configured wheelchairs improved more in the safe and effective use of their wheelchairs than residents with facility-provided wheelchairs The outcomes indicated that nursing home residents functioned safely at a higher level in their wheelchairs if their devices were individually configured using a comprehensive wheelchair and seating assessment process There was no difference in the incidence of pressure injuries between the two groups Trial registration: NCT01275313

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Bushby, A (2018) "Feeling the pressure" Wounds International 9(3): 5-5

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Pressure ulcers (PUs) are a common complication after cardiac surgery, with almost one third of patients suffering from PUs during hospitalisation. Because of the burden that PUs exert on both the patients and the health care system, prevention is of utmost importance. The first step in successful prevention, however, includes the identification of the main features that render patients prone to PU development. Cardiac surgery population is not adequately addressed in current clinical trials and studies. Few studies focused specifically on cardiac surgery patients, but the majority included cardiac surgery patients within a heterogeneous population of acute or critical care patients. Therefore, additional research is warranted to understand the unique risk profile of patients undergoing cardiac surgery. Intraoperative risk factors that affect tissue tolerance have not been thoroughly investigated but are likely to play an important role, which might explain the epidemiology of a PU. Further research is also needed to better comprehend the risk of PUs among cardiac surgery patients and to design effective and tailored preventative measures with the help of newer tools for risk assessment; © 2018 Medicalhelplines.com Inc and John Wiley & Sons Ltd


PURPOSE: The aim of this study was to describe experience, training, educational needs and preferences, and perceptions of pressure injury (PI) prevention education of wound care providers in the Veterans Health Administration (VHA) of the Department of Veterans Affairs (VA) as an indicator of effectiveness of the mandated VHA PI Prevention Program. SUBJECTS AND SETTING: A convenience sample of national VHA wound care providers practicing in VHA facilities was compiled from members of special interest groups and committees and by referrals from known wound care specialists and clinicians (N = 1726). The response rate was 24% (n = 410). DESIGN: Cross-sectional, descriptive study. METHODS: A 42-item online cross-sectional survey was administered via a blast-email of the survey link to the sample. The survey link was active for 1 month (March 3-31, 2014). The survey queried demographic data, PI experience and education, and their perceptions and preferences for PI education. Quantitative responses underwent descriptive analyses, and responses to open-ended questions were analyzed by content analysis. RESULTS: The majority of the 415 respondents completed most of the questionnaire (n = 310, 74%). Half were board-certified providers with a mean wound care experience of 142 years (standard deviation 98 years). Preference for type of wound training ranged from 17% for online gaming to 82% for face-to-face training. Training provided by facilities was perceived to be inadequate for wound care by 60% (n = 175) and inadequate for PI care by 49% (n = 142). CONCLUSIONS: The 2 greatest areas of need in PI care identified by wound care providers were education and documentation. These same issues were identified as problematic by an audit of PI prevention and management at 47 VHA facilities that was conducted by the VA Office of Inspector General

Davies, P (2018) "Preventing the development of heel pressure ulcers" Nursing Standard (Royal College Of Nursing (Great Britain): 1987) 33(7): 69-76

The heel is a common site for pressure ulcer development, particularly in people who are supine or semi-recumbent because of immobility. There is little protective subcutaneous tissue and no muscle or fascia within the heel, which means that it is vulnerable to pressure, friction and shear forces. Heel pressure ulceration remains a clinical challenge for nurses and the wider healthcare team, as well as a cause of pain and physical debilitation for the patient. This article examines the risk factors for heel pressure ulceration, and details patient assessment and specific measures that can be undertaken to prevent the development of heel pressure ulcers; © 2018 RCN Publishing Company Ltd All rights reserved Not to be copied, transmitted or recorded in any way, in whole or part, without prior permission of the publishers

Background: Our objective was to describe changes in pressure injury (PI) rates in pediatric hospitals after implementation of an active surveillance and prevention bundle and to assess the impact of bundle elements; Methods: The Children's Hospitals Solutions for Patient Safety (SPS) Network is a learning collaborative working together to eliminate harm to hospitalized children SPS used a 3-pronged approach to prevent pressure injuries: (1) active surveillance, (2) implementing and measuring compliance with the prevention bundle, and (3) deploying a wound ostomy team Among hospitals participating since 2011 (phase 1), we used negative binomial analyses to assess change in PI rates Only phase 1 hospitals had a baseline period before any prevention bundle intervention Among all hospitals participating in 2013 (phases 1 and 2), we used funnel charts to assess the association between reliable bundle implementation and PI rates; Results: Among the 33 hospitals that participated in SPS from 2011 to 2013 (phase 1), the rate of stage 3 pressure injuries declined from 006 to 003 per 1,000 patient-days (P < 0001) Stage 4 pressure injuries declined from 001 to 0004 per 1,000 patient-days (P 002) Among all 78 hospitals in phases 1 and 2, the cohort that adopted each bundle element, measured compliance, and achieved 80% prevention bundle compliance had significantly lower PI rates compared with all hospitals; Conclusions: SPS hospitals saw a significant reduction in stage 3 and 4 PIs over a 2-year period Reliable implementation of each element of a prevention bundle was associated with lower PI rates;

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OBJECTIVE: To evaluate the effectiveness of a transcutaneous electric nerve stimulation (TENS) device typically used for pain suppression (analgiesia) during pressure injury (PI) healing, peripheral vascu larization, and secondary pain in older adults with chronic PIs and cognitive impairment DESIGN AND SETTING: This pilot clinical trial followed patients from 6 nursing homes PATIENTS AND INTERVENTION: Twenty-two patients with PIs in the distal third of their lower limbs (7 men, 15 women) were included in this study The control group completed standard wound care (SWC), whereas the experimental group received SWC and TENS A total of 20 sessions were conducted for each group over 2 months, 3 times a week MAIN OUTCOME MEASURE: PI area, PI healing rate, blood flow, skin temperature, oxygen saturation, and level of pain at baseline and posttreatment MAIN RESULTS: Significant improvements were achieved in PI area (mean difference, 092; 95% confidence interval [CI], 015-167; P 024), healing rate (3; 95% CI, 1-499; P 009), skin temperature (182; 95% CI, 035-328; P 021), and pain (144; 95% CI, 049-239; P 008) in the experimental group, whereas none of the variables revealed a significant change in the control group CONCLUSIONS: The effect of local and spinal TENS combined with the SWC for PI produced a significant improvement in size, healing, skin temperature, and pain levels;

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During the inflammatory process triggered by localised events of cell death at the onset of a pressure ulcer/injury, the volume of blood plasma fluids escaping from the vasculature will build up gradually, eventually forming oedema However, this process begins microscopically and progresses over time, as the immune system is recruited to deliver a sufficient number of immune cells to the damaged tissue site The gradual accumulation of fluids changes the biocapacitance physical property of the affected tissue, making it progressively less resistant to electrical fields, which in physics terms means that the relative permittivity (dielectric constant) of the tissue increases towards that of water This initial fluid content change is, hence, a biomarker that can be employed for early detection of a pressure injury (PI) The SEM Scanner utilises the above biophysical process for diagnosing the onset of a PI, by detecting the small increase in extracellular fluid contents very soon after death of the first cells This article describes the clinical incentive, physical principles and technological concepts of the SEM Scanner, which is now in clinical use in Europe, in view of the strong need to introduce high-technology to wound care, which has been, traditionally, a low-tech field of medicine In this context, there is a necessity to gradually introduce technologies to support the traditional examination process known as visual skin assessment (VSA) The currently-used VSA essentially documents macroscopic damage that has already occurred, instead of identifying the damage early enough to allow the body to self-repair the injury while it is still microscopic and reversible The SEM Scanner, which is based on solid physiological foundations, is the first to offer a modern technological
adjunct to VSA and clinical judgment, which further adds ability to detect an evolving injury under intact skin and at a much earlier stage than when the injury already presents itself on the skin.


Pressure ulcers (PUs) are detected by visual skin assessment (VSA). Evidence suggests ultrasound (US) and subepidermal moisture (SEM) scanner technology can measure tissue damage before it is visible; Purpose: A pilot study was conducted to evaluate consistency between SEM and US examinations of suspected deep tissue injury (sDTI); Method: Using an observational, prospective cohort study design, patients >55 years of age were recruited VSA, SEM, and US assessments were performed daily for a minimum of 3 and maximum of 10 consecutive days following enrollment US results were considered indicative of sDTI if hypoechoic lesions were present; SEM readings were considered abnormal when ∆ ≥06 was noted for at least 2 consecutive days; Boolean analysis was utilized to systematically determine consistency between US and SEM where sDTI was the clinical judgment; Results: Among the 15 participants (10 women, mean age 74 ± 10 years), there was consistent agreement between SEM and US when sDTIs existed. For 1 patient who developed a heel sDTI during the study, SEM readings were abnormal 2 days before VSA indicated tissue damage and 3 days before the appearance of a hypoechoic lesion in the US; Conclusion: US and SEM results were similar, and in an evolving sDTI case, SEM detected a lesion earlier than US.

Girgis, B and J A Duarte (2018) "High Voltage Monophasic Pulsed Current (HVMPC) for stage II-IV pressure ulcer healing: A systematic review and meta-analysis" Journal Of Tissue Viability

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; Copyright © 2018 Tissue Viability Society Published by Elsevier Ltd All rights reserved


Despite various therapy options, the prophylactic and symptomatic treatment of recurrent ulcerations in the diabetic foot are still challenging. We report the application of a free vascularized medial femoral condyle flap to prevent the recurrence of pressure ulcer in a patient with diabetic foot syndrome. Our patient had type 2 diabetes and presented with pressure ulcers and osteomyelitis of metatarsal heads 2 and 3 after a great toe amputation. We chose to use a medial femoral condyle flap as a damper in the area of the metatarsal heads because of the relatively young age and good vascularity of our patient. We shaped the graft like a ski to distribute the pressure and prevent perforation of the plantar skin. Good results were achieved for wound healing, pain reduction, and improvement of gait. No pressure ulceration had recurred after a 3-year follow-up period. The versatility of the osteomyocutaneous graft from the medial femoral condyle is an important reconstructive tool for addressing major surgical problems. We present the first use of a medial femoral condyle flap in the treatment of a pressure ulcer in a diabetic foot. In selected patients, our method
could prevent premature and extended amputations, thereby providing good improvement in patients' quality of life

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Abstract: Aim and objectives: To provide basic information on the preventive care for pressure ulcer (PU) by analysing PU-related characteristics and identifying PU predictors Background: The incidence of PUs in hospitals is increasing, and continuous PU management is required The occurrence of PU was an important standard for hospital certification There is a need to identify predictors of PUs for proper management of PUs Design: This is a descriptive study that analyses the electronic medical records of a university hospital Methods: Of all older adult inpatients aged over 65 years admitted to the hospital (from January 1, 2011–December 31, 2015), 34,287 were included in this study To identify the PU predictors, a logistic regression analysis was performed using IBM SPSS Statistics 24 Results: Predictors influencing PU were gender (OR 136, 95% CI 103–105), age, (OR 104, 95% CI 103–105), admission method (OR 039, 95% CI 032–046), consciousness status (OR 377, 95% CI 183–777) and Braden Scale score (OR 007, 95% CI 069–072) Among the predictors, consciousness is the most important variable Patients who are drowsy were 377 times more likely to develop PU than those who are alert Conclusions: To prevent and manage PU, the level of consciousness of older adult patients who are hospitalised should be assessed, and appropriate interventions should be provided Relevance to clinical practice: Pressure ulcer-specific interventions should be provided systematically by healthcare providers to those with altered consciousness beginning at hospital admission

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Objectives To evaluate the relation between wheelchair breakdowns, their immediate consequences, and secondary health complications after spinal cord injury "Immediate consequences" occur when part of a wheelchair breaks and leaves an individual stranded or injured, or causes him or her to miss medical appointments, work, or school Design Survey, cross-sectional Setting Spinal Cord Injury Model Systems Centers Participants Full-time wheelchair users (N771) with SCI from 9 Spinal Cord Injury Model Systems Centers, with data collected between 2011 and 2016 Interventions Not applicable Main Outcome Measures Incidence of self-reported wheelchair breakdowns within the past 6 months that did or did not result in immediate consequences (ie, injury, being stranded, missing a medical appointment, or an inability to attend school/work); self-perceived health status scale; pain severity numerical rating scale; rehospitalizations; and self-reported pressure injury development within the past 12 months Results A total of 610 participants with complete data sets were included in the analyses When compared to those who reported no breakdowns, participants who reported 1 or more immediate consequences had worse secondary complications: higher self-perceived health status and pain scores (partial −η2009=012, P <05), and higher odds of rehospitalization (odds ratio: 186, P <05) and pressure injury development (odds ratio: 173, P <05) Secondary health complications were not different in those who reported no immediate consequences compared to those who reported no breakdown Conclusions Wheelchair breakdowns that resulted in injury, being stranded, missing medical appointments, and/or an inability to attend work/school appear to have far-reaching impacts on health and secondary injury Preventing wheelchair breakdowns, through either better maintenance or manufacturing, may be a means of decreasing secondary disability

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Rationale: Sciatic neuropathy has various causes; however, cases in which a pressure ulcer led to sciatic neuropathy have not been reported to date Patient Concerns: A 33-year-old woman with no pre-existing mobility problems visited our department with the chief complaint of an extensive pressure ulcer and necrosis in her right buttock She had a medical history of being bedridden for 2 days while in a coma due
to a drug overdose 2 months previously Physical examination revealed loss of sensation and foot drop in the right foot; Diagnosis: Physical examination, magnetic resonance imaging, and nerve conduction studies were conducted; the patient was diagnosed with a common peroneal branch injury of the right sciatic nerve; Interventions: The necrotic tissue was debrided and sciatic nerve decompression was performed, followed by frequent dressing changes In addition, psychiatric treatment and physical therapy were performed simultaneously; Outcomes: The pressure ulcer decreased in size and healed to some extent with granulation tissue However, gait disorders, accompanied by symptoms of sciatic neuropathy, continued The patient was transferred to the department of gastroenterology for the treatment of toxic hepatitis, which occurred during her inpatient treatment; Lessons: Physicians should be aware that sciatic neuropathy may occur during the treatment of patients with a pressure ulcer who exhibit no symptoms of paraplegia or quadriplegia To prevent neuropathy, aggressive treatment of the pressure ulcer is necessary;


Objectives: This study was conducted to measure the effectiveness of interventions in decreasing the rates of pressure ulcer in a general hospital setting Methods: Sixteen units in a general hospitals in Iran participated in this stepped-wedge, cluster randomized controlled trial during a 45-week study period This trial has a one-sided crossover design from control to intervention The units were randomly assigned fulfilling entry criteria After the approval by the governing board of hospital, the manipulative intervention, in addition to usual care, was implemented on patients with a Braden criterion of 14 or less The primary outcome was ulcer specification (grade and location of ulcer), and the secondary outcome was the length of hospital stay Results: A total of 18,900 patients were admitted during the 45-week study period in the study units, of whom approximately 20% (3846 patients) were identified as high risk according to the items of Braden scale criteria during the admission assessment by nurses The highest rate of PUs (80%) was in grade 2, and 16% of patients had grade 3 and 4 PUs The ulcers of the skin overlying the sacrum and hip areas were the most common sites in the patients under study The rates of PU in the control, training, and intervention phases were 549 (472–634), 568 (382–815), and 462 (387–547), respectively, per 1000 patient-days Conclusions: The multifaceted intervention proposed by the present study has succeeded in reducing rate of pressure ulcer Multifaceted programs based on training are appropriate ways to provide essential information to patients and their caregivers, which result in improvement of their participation in therapeutic process We recommend hospitals to use these findings as a quality improvement plan for decreasing the rate of pressure ulcer


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 as less occlusive materials as possible There seems to be individual intrinsic characteristics making patients more vulnerable to microclimate effects; Copyright © 2018 Elsevier Ltd All rights reserved

Study design: Retrospective observational cohort study
Objectives: To describe outcomes, risk factors for complications, and relapse rates associated with the multimodal treatment approach for deep pressure ulcers (PUs) grade IV for the ischium, trochanter major, and sacral regions of patients with traumatic and non-traumatic spinal cord injury (SCI)

Setting: The settings comprised two spinal cord units within a maximum care hospital

The treatment of all patients followed the modified interdisciplinary "Basler treatment concept"

Methods: We included all individuals with SCI with a first occurrence of PU grade IV in the buttock area between August 2008 and December 2012 inclusive, with a maximum follow-up of 3 years

Descriptive, univariate, and bivariate analyses were undertaken, as were group comparisons

Results: In 47 patients aged 18-87 years (mean age: 51 years) a total of 63 fasciocutaneous and myocutaneous flaps were performed

Wound healing was complete after a mean of 34 days (SD 21)

Postoperative mobilisation in a wheelchair was performed after a mean of 46 days (SD 24)

Delayed healing was reported in 18 patients (38%), and revision surgery was necessary in five patients (11%) ASIA impairment scale (AIS) A (p 001), and male gender (p 001) were identified as risk factors for delayed wound healing and prolonged inpatient stay

Treatment-associated pneumonia occurred in four cases (11% of all patients, 25% of patients with tetraplegia)

Patients were discharged when the time spent sitting in a wheelchair was 2 x 2 h per day; this occurred after a mean of 100 days (SD 36)

PU recurrence was observed in six cases (18%)

Conclusions: Our multimodal treatment concept was found to have complication rates comparable to those in the literature; additionally, this approach might be associated with lower recurrence rates with respect to the literature

To reduce high rates of pneumonia occurrence among patients with tetraplegia, preventive measures need to be established Further evidence of the efficiency of this complex treatment approach for PU in individuals with SCI is needed

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Considering that the critical patient is more susceptible to the development of pressure lesions, this study aims to analyze the incidence of pressure lesion in critical patients, and to identify the preventive measures instituted

A cross-sectional study was carried out based on the analysis of 198 medical records of patients admitted in the two intensive care units of a university hospital in southern Brazil between July and December 2015

Data were collected from April to May 2016, using an instrument drawn up by the authors

Subsequently, the data were double-digitized in Epi Info® and analyzed by the Statistical Package for the Social Sciences® program

There is a prevalence of male patients (60%), white race (73%), mean age 575 years-old and the incidence of pressure injury was 394%

The most recorded preventive measures (979%) were: skin inspection, change of decubitus in every two hours, bedside elevation up to 30°, and use of cushions

There was no association between preventive measures and development of pressure injury

The study showed a high incidence of pressure injury and identified measures for prevention, allowing a reflection on the actions prescribed by the nurse to reduce such events, to promote the health of patients and to improve the quality of nursing care

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Introduction: The objective of the study is to analyse complications associated with surgery for pelvic pressure ulcers in terms of their frequency, nature and rate of surgical revisions

The secondary aims are to analyse the rate of recurrence, length of stay and time to healing, and to determine factors associated with complications and recurrence;

Methods: It is a single-centre, retrospective cohort study with a 10-year follow-up setting in Nantes University Hospital, France, a specialist centre for spinal cord injury (SCI)

All patients who were admitted to the Neurological Physical Medicine and Rehabilitation (PMR) department for surgery (flap coverage) for pelvic pressure ulcers between 1st of January 2004 and 30th September 2014 were included

The main outcome measures were the rate of complications, rate of recurrence, length of stay and time to healing, as well as factors associated with complications and recurrence;

Results: One hundred and sixty-six patients underwent 252 flap procedures in 239 operations

The majority of patients had SCI (783%)

The ulcer sites were mainly ischial (67%), sacral (20%) and trochanteric (12%)

Gluteus maximus was used most often (753% of flaps) (ischial and sacral ulcers), followed by tensor fascia lata
The occurrence and management of Pressure Ulcers remain a major issue for patients with reduced mobility and neurosensory loss despite significant improvement in the prevention methods. These injuries are caused by biological cascades leading from a given mechanical loading state in tissues to irreversible tissue damage. Estimating the internal mechanical conditions within loaded soft tissues has the potential of improving the management and prevention of PU. Several Finite Element models of the buttock have therefore been proposed based on either MRI or CT-Scan data. However, because of the limited availability of MRI or CT-Scan systems and of the long segmentation time, all studies in the literature include the data of only one individual. Yet the inter-individual variability can’t be overlooked when dealing with patient-specific estimation of internal tissue loading. As an alternative, this contribution focuses on the combined use of low-dose blipanar X-ray images, B-mode ultrasound images and optical scanner acquisitions in a non-weight-bearing sitting posture for the fast generation of patient-specific FE models of the buttock. Model calibration was performed based on Ischial Tuberosity sagging. Model evaluation was performed by comparing the simulated contact pressure with experimental observations on a population of 6 healthy subjects. Analysis of the models confirmed the high inter-individual variability of soft tissue response (maximum Green Lagrange shear strains of 213 ± 101% in the muscle). This methodology opens the way for investigating inter-individual factors influencing the soft tissue response during sitting and for providing tools to assess PU risk.

Mahoney, K (2018) "Evaluating the use of the Dermisplus® Prevent pad to prevent pressure damage among patients at risk of pressure ulceration" Wounds UK 14(4): 84-88

While pressure and shear can be reduced through the use of appropriate patient support surfaces; gel pads and wound dressing materials may also be used to protect skin and soft tissues from mechanical loading. This case series reports recent experience in the use of one soft polymer gel pad (Dermisplus® Prevent, Frontier Medical, UK) to reduce the risk of pressure damage. The patients who took part in the case series...
were at risk of developing pressure related damage to the skin either based on their Waterlow score or on the nurses’ clinical judgement Four patients participated in the evaluation and are presented as case studies Overall the product was well tolerated by all 4 patients There was a marked improvement in pain scores in 3 out of 4 patients with the final patient having neuropathy and so did not experience any pain In the two patients with erythema this was reduced in both cases Dermisplus® Prevent was washable and durable and did not disintegrate or show any signs of deterioration during the two-week evaluation The product was well accepted by the patients all of which said they would use the product

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Nazarko, L (2018) "Pressure ulcer or moisture lesion? How to tell the difference" British Journal of Healthcare Assistants 12(9): 422-428

Nursing staff caring for patients in hospital and in the community normally receive education and training in how to assess skin for pressure ulcer risk Staff are taught how to reduce risks, to document any pressure ulcers and how to treat pressure ulcers Many people, however, are at risk of moisture damage due to incontinence, excessive perspiration, wound and stoma exudate Moisture damage can cause pain and discomfort, delay hospital discharge and impact on quality of life, yet few staff receive formal education on this subject This article aims to enable readers to understand the difference between moisture damage and pressure damage when inspecting skin It aims to enable staff to provide effective care and treatment

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Summary Background Pressure injuries (PI) are a significant clinical problem across all healthcare facilities, associated with poor patient outcomes, increased length of stay and healthcare costs Whilst it is known that underweight (Body Mass Index (BMI) < 185 kg/m2) and malnourished individuals have an increased risk of developing PI, few studies have investigated the effects of obesity (BMI ≥ 30 kg/m2) and morbid obesity (BMI ≥ 40 kg/m2) on PI prevalence This study aimed to determine whether PI prevalence was associated with levels of obesity; the complex association between morbidity, malnutrition and PI prevalence in hospital inpatients was also explored Methods Data collected from annual Queensland Patient Safety Bedside Audits conducted between 2010 and 2015 was used to examine the outcomes of interest (n = 2479) Bivariate tests were used to explore relationships between age, gender, BMI, malnutrition and PI prevalence Regression analysis explored associations between BMI, malnutrition and PI, adjusting for potential confounders Results Overall PI prevalence was 69% and was significantly higher in the underweight and morbidly obese groups (underweight 127%, healthy weight 78%, overweight 57%, obese 48%, morbidly obese 12%; p < 0.001) In addition to BMI, malnutrition and age were significantly associated with PI prevalence After adjusting for confounders, morbidly obese inpatients had over three times the odds of developing a PI compared to healthy weight inpatients (OR 3.478, 95% CI 1.657–7.303; p < 0.001) Morbidly obese inpatients who were also malnourished had eleven-fold greater odds of developing a PI compared to the morbidly obese well-nourished in logistic regression analysis (OR 11.143, 95% CI 2.279–5.4481, p < 0.003) Conclusions Morbid obesity is a significant and independent risk factor for PI development However, the clustering of nutritional risk factors (morbid obesity and malnutrition) substantially increases this risk Therefore, routine and formal assessment of both BMI and malnutrition status are important to enable the identification of patients at high risk of PI

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Background Pressure injuries contribute significantly to patient morbidity and healthcare costs Critically ill patients are a high risk group for pressure injury development and may suffer from skin failure secondary to hypoperfusion The aim of this study was to report hospital acquired pressure injury incidence in intensive care and non-intensive care patients; and assess the clinical characteristics and outcomes of ICU patients reported as having a hospital acquired pressure injury to better understand patient factors associated with their development in comparison to ward patients Methods The setting for this study was a 630 bed, government funded, tertiary referral teaching hospital A secondary data analysis was undertaken on all patients with a recorded PI on the hospital’s critical incident reporting systems and admitted patient data collection between July 2006 to March 2015 Results There were a total of 5280 reports in 3860 patients; 726 reports were intensive care patients and 4554 were non-intensive care patients, with severe hospital
acquired PI reported in 22 intensive care patients and 54 non-intensive care patients. Pressure injury incidence increased in intensive care patients and decreased in non-intensive care patients over the study period. There were statistically significant differences in the anatomical location of severe hospital acquired pressure injuries between these groups (p < 0.008). Conclusion: Intensive care patients have greater than 10-fold higher hospital acquired pressure injury incidence rates compared to other hospitalised patients. The predisposition of critically ill patients leaves them susceptible to pressure injury development despite implementation of pressure injury prevention strategies. Skin failure appears to be a significant phenomenon in critically ill patients and is associated with the use of vasoactive agents and support systems such as extra corporeal membrane oxygenation and mechanical ventilation.


PURPOSE: The sacrum is the most common location of pressure injuries (PIs) in bedridden patients. The purpose of this study was to measure the effect of specific pressure preventive devices on sacral skeletal muscle, subcutaneous fat, and skin tissue deformations. SUBJECTS AND SETTING: The sample comprised 3 healthy adults residing in a community setting in Tel Aviv, Israel. DESIGN: Descriptive, comparative design. METHODS: Tissue thickness changes of 3 healthy adults were measured using magnetic resonance imaging (MRI) in weightbearing sacral skin, subcutaneous fat, and muscle. Changes in tissue thickness were compared under the following conditions: (1) lying supine on a rigid surface (unpadded MRI table), (2) lying on a standard foam mattress, (3) lying on a mattress after application of a prophylactic multilayer dressing, and (4) lying on a standard foam mattress with a prophylactic multilayer dressing and a positioning system. One-way analysis of variance and post hoc Tukey-Kramer multiple pairwise comparisons were used to compare outcomes. RESULTS: The mattress, the prophylactic multilayer dressing, and the turning and positioning device when applied together resulted in significantly lower deformation levels of each of the soft tissue layers (i.e., skin, subcutaneous fat, and muscle separately) as well as of the total soft tissue bulk, with respect to the rigid MRI table (P < 0.05). CONCLUSION: Study findings suggest that a combination of preventive interventions may reduce the risk of developing a sacral PI.


Objectives: The aim of this paper is to determine the incidence and most incident pressure ulcers (PU) category. Establish the main clinical characteristics of these PU. Determine whether there is adequate documentation of PU and of the measures used to prevent them; Method: Observational descriptive and retrospective study during 2014 at Intensive Care Unit (ICU)-University Hospital of Araba Study sample, all patients suffering from PU at the time of the study by accidental sampling. Computerised records regarding risk assessment, clinical assessment and pressure sore treatment, provided by the 'Metavision' computer programme and descriptive statistics using SPSS version 220. Approval from the Ethics Committee for Clinical Research of the University Hospital of Araba was obtained; Results: The incidence of patients suffering from PU during 2014 was 678%. The most common locations for PU were the sacral region and the heels: the most incident pressure ulcers category was grade II, followed by grade I. Out of the 98 PU treated in our patients, 43 occurred outside the ICU and 55 in the unit itself. The lack of records, in all the variables described about PU, was 1910%; Conclusions: The incidence of pressure ulcers was lower than in the current literature. The most frequent category, location and clinical characteristics are comparable to previous studies. There is a high rate of failing to record the characteristics of the PU declared Good PU prevention measures and recording were carried out. Publicado por Elsevier España, SLU.


We 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 biopsies were collected from the ulcer bed.
specimens were obtained from 86 patients The specimens were used for histological examination, Ki-67 immunohistochemistry, and bacterial count assessment The percentage of Ki-67-stained cells was considered 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 quantitative 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 sex, 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 = 0.045) Bacterial count demonstrated a significant negative correlation with the Ki-67 index (r = -0.325, p = 0.002) Multivariate linear regression analysis showed that bacterial count was a significant predictor of the Ki-67 index The adjusted β-coefficient was -1.34 (95% confidence interval, -2.01 -- 0.66, p < 0.001) 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 This article is protected by copyright All rights reserved; © 2018 by the Wound Healing Society


Objective: To describe differences in in-seat behavior observed between individuals with a spinal cord injury (SCI) and without a history of recurrent pressure injuries

Design: Cross-sectional cohort study

Setting: General community

Participants: Twenty-nine adults more than 2 years post SCI, who used a wheelchair as their primary mobility device and had the ability to independently perform weight shift maneuvers

Interventions: Not applicable

Main Outcome Measures: Daily time in wheelchair, number of transfers, and frequency of pressure reliefs (full unloading), weight shifts (30% load reduction), and in-seat movements (transient center of pressure movements or unloading)

Results: The median participant spent 103 hours in his wheelchair and performed 16 transfers to or from the wheelchair daily Pressure reliefs were performed less than once every 3 hours in both groups Weight shifts were performed significantly more often by the No PrI Group (median (interquartile range) 25 (10-36) per hour) than the PrI Group (10 (4-19), p = 0.037 and effect size r = 0.39) In-seat movements were performed 465 (287-767) times per hour by the No PrI group and 396 (243-497) times per hour for the PrI group (p = 0.032, effect size r = 0.17)

Conclusion: Weight shifts that can be produced by functional activities and that partially unload the buttocks should be considered as an important addition to individuals' PrI prevention regimen


Aim: To estimate the incidence of pressure injury and its predictors including nursing workload in critical patients

Background: There is controversy about the influence of the nursing workload on the occurrence of pressure injury in intensive care units

Methods: A retrospective cohort of 766 patients in nine intensive care units of two university hospitals was studied The nursing workload was measured using the Nursing Activities Score The predictors were identified by logistic regression; Results: The pressure injury incidence was 187% The odds ratio of the development of pressure injury, increased 35 times in mechanical ventilation (p < 0.001), 78 times in palliative care (p = 0.004), 23 times in the 60-84 years old group (p = 0.005); it also increased 10% for each day of hospitalization (p = 0.001), and 15% for each registered point of the Nursing Activities Score (p = 0.016); Conclusion: Existing risks for the development of pressure injury have been confirmed and nursing workload identified as a new predictor Much still needs to be done in the area of prevention, especially in groups at risk; Implications For Nursing Management: Increasing nursing resources in the intensive care unit may assist in reducing the pressure injury rate; © 2018 John Wiley & Sons Ltd
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Objective: to describe the recommendations on human and material resources directed at the prevention of pressure ulcers  
Method: a bibliographic, descriptive, integrative review type study, with a search for articles in the MEDLINE, BDENF, LILACS and SCOPUS databases, in the period of November 2017 The descriptors "pressure ulcer", "health resources", "Human resources" and "Nursing", crossed with the Boolean marker "and" in Portuguese, English and Spanish in the last five years  
Results: only two articles published by Brazilian nurses were selected  
Conclusion: in view of the description of the recommendations on material resources directed to the prevention of pressure ulcers, specific recommendations and instruments were not identified to evaluate the adequate quantity of human and material resources from the perspective of pressure ulcer prevention, a fact that points out a gap in knowledge and demonstrates the need to design and implement technologies  
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Objective: To identify the risk and incidence of pressure injuries in bedridden pediatric patients to determine the most prevalent risk factors and preventive measures and to define the sociodemographic, clinical, and therapeutic profiles in this group;  
Methods: Prospective cohort study performed between March 2015 and March 2016 in the intensive care unit and the pediatric ward of a public teaching hospital  
The study included 85 pediatric patients (45 intensive care unit and 40 pediatric ward patients);  
Main Outcome Measure: Patients' Braden Q Scale score was assessed at 48-hour intervals until discharge from the aforementioned units, discharge from the hospital, and/or death;  
Main Results: Researchers observed that 933% of intensive care unit patients and 875% of pediatric ward patients were categorized as high-risk patients, and 12 patients presented with 24 pressure injuries with an incidence of 141% and a mean of 4 days before pressure injury occurrence;  
Patients with pressure injuries in the cohort averaged a hospital length of stay of 77 days Of these, the mean age was 41 years and most were female, receiving enteral nutrition, and had diagnoses related to neurological and respiratory diseases;  
Vasopressor use had a statistically significant association (P < 0.05) with the development of pressure injuries;  
The primary risk factor identified on the Braden Q Scale for the development pressure injury was a "mobility and activity" deficit;  
Conclusions: Most patients (hospitalized in either unit) were at high risk of developing pressure injuries No specific preventive guidelines were in place in this hospital prior to this study; therefore, the authors aimed to develop a protocol for the prevention and reduction of pressure injuries in pediatric patients;  
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Pressure injuries have a negative effect on well-being and the cost of treatment places a significant burden on the health care system; Research has, however, tended to extrapolate or estimate the cost of pressure injuries resulting in uncertainty regarding the true cost of this condition;  
The aim of this prospective observational study was to quantify the cost of pressure injury treatment in the Australian residential aged care setting;  
An electronic health care record audit and observation of usual pressure injury treatment was undertaken with a sample of 20 participants who had 23 pressure injuries;  
The actual treatment cost, an evidence-based practice model cost, and a projected treatment cost were calculated;  
The overall cost of pressure injury treatment was AU$98,489.22;  
The average daily cost by pressure injury stage was AU$264.2 for a Stage 1 pressure injury, AU$371.7 for a Stage 2 pressure injury, AU$3001 for a Stage 3 pressure injury, and AU$1022 for an Unstageable pressure injury;  
The projected cost of treatment was AU$104,510.41; At 42 days this cost extended to AU$116,552.79;  
This study has quantified the cost of pressure injury treatment in..."
a residential aged care setting. The study may inform future efforts to accurately calculate the cost of PIs and the effectiveness of strategies to reduce the economic burden of this condition; © 2018 Medicalhelplines.com Inc and John Wiley & Sons Ltd

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Pressure injuries have a high incidence in elderly and critically ill patients, and can endanger lives in severe cases. The key to reducing the incidence of pressure injuries is to find an objective, noninvasive, automatic and consistent scientific method for assessing pressure injuries. To serve this need, we conducted a clinical study to investigate the potential of using transcutaneous oxygen tension (TcPO2) and transcutaneous carbon dioxide tension (TcPCO2) for assessing pressure injuries. From the results of the study we found that first, the values of TcPO2 and TcPCO2 are sensitive to the change of pressure imposed on the measured region and to the risk status of a pressure injury when a pressure is imposed. Second, the magnitude of change in TcPO2 and TcPCO2 is higher in patients with a high risk of a pressure injury compared with those who have a low risk. Third, TcPO2 and TcPCO2 are both significantly correlated with the Braden score, the widely used score for assessing the risk of a pressure injury. Therefore, TcPO2 and TcPCO2 have a potential to be an effective and convenient scientific tool for assessing the risk of pressure injuries.

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Factors associated with infections after spinal cord surgery were not fully understood. This study aimed to evaluate whether preoperative pressure ulcers were a risk factor of infections after spinal cord operation. A 1:1 matched follow-up study was performed in a tertiary referral center in southwest China between 2010 and 2015. Risk ratios (RRs) and 95% confidence intervals (CIs) were calculated using unconditional logistic regression analysis. A total of 334 patients with spinal cord surgery were recruited (167 patients with preoperative pressure ulcers and 167 patients without preoperative pressure ulcers). Participants previously exposed to pressure ulcers had an elevated risk of infections post spinal cord operation including surgical site infection (RR: 23, 95% CI: 11, 47), pneumonia (RR: 24, 95% CI: 11, 53), urinary tract infection (RR: 28, 95% CI: 11, 73), any kinds of postoperative infections (RR: 34, 95% CI: 21, 56) and 30-day postoperative hospitalization for infections (RR: 26, 95% CI: 11, 60). The associations between preoperative pressure ulcers in stage III to IV and postoperative infections were also pronounced, but towards null in stage I to II. The study showed an increased risk of infections after spinal cord surgery in patients with preoperative pressure ulcers, indicative of an urgent need for monitoring postoperative infections and medical treatment for patients with pressure sores.

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Purpose: In this study, we aim to investigate the relationship between patient-controlled analgesia (PCA) and the incidence of pressure ulcer in postcesarean section mothers; Design: A retrospective analysis was performed among consecutive cesarean section mothers in 2016; Methods: Univariate and multivariate logistic regression was used to analyze the relationship between PCA and postcesarean section pressure ulcers; Findings: One thousand nine hundred eighteen cesarean section mothers were included in the study. Forty-five mothers (23%; 95% confidence interval [CI], 17%-31%) developed stage I pressure ulcer. The pressure ulcers were cured in 2 to 5 days. Eighty percent (1,535) of mothers received PCA after cesarean section surgery. Pressure ulcer incidence was significantly higher in the PCA group compared with non-PCA groups (29% vs 0%), Fisher's exact P < 0.001). Patient-controlled intravenous analgesia and patient-controlled epidural analgesia showed the same pressure ulcer risk (32% vs 26%, χ² 0581, P 446). After multivariate analysis by logistic regression, the adjusted odds ratio of PCA for pressure ulcer risk was 33632, with a 95% CI of 25061 to 45134; Conclusions: Our results showed PCA was an independent risk factor for pressure ulcer in postcesarean section mothers although the pressure ulcers were all rated as stage I and can be cured in 2 to 5 days, we still recommended some pressure ulcer prevention strategy.
should be used for these mothers; Copyright © 2017 American Society of PeriAnesthesia Nurses Published by Elsevier Inc All rights reserved


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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 assessment 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.npuap.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)

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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


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