Pressure Injury Current Awareness Service

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(2019) "Effectiveness of high frequency ultrasound on pressure ulcer: A systematic review protocol of randomized controlled trial: Erratum" Medicine 98(40): e17485-e17485
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Evaluating the healing status of pressure injuries is important to planning medical and nursing care; Purpose: A descriptive, retrospective study was conducted to determine the healing status of pressure injuries among critically ill immobile patients; Methods: Data were obtained via medical record review of all patients admitted to a Turkish university hospital's anesthesiology intensive care unit (ICU) between January 2008 and December 2015 Demographic (age, gender), medical (comorbidities, diagnosis, length of ICU stay), and pressure injury characteristics (number, location, stage, healing status, length, width, exudate amount, tissue type) were evaluated along with Pressure Ulcer Scale for Healing (PUSH) Tool scores Data from all patients >18 years of age with an ICU stay >24 hours who had a pressure injury and whose records were complete were included in the study Data were expressed as number, percentage, and mean and median values Wilcoxon test, Spearman's correlation analysis, and chi-square test were performed as appropriate Pressure injuries were considered healed when the PUSH score equaled zero; Results: The study sample comprised 359 patients (6097 ± 1931 [range 19-95] years, 217 men, median length of stay 25 [range 1-363] days) with 672 pressure injuries Most pressure injuries were located on the coccyx (278 [41.4%]), and 153 (22.8%) healed during ICU stay Older age (r = 0167; P = 002) and length of ICU stay (r = 0238; P = 0001) were significantly correlated with having multiple pressure injuries There was a statistically significant relationship between pressure injury location and stage and healing status (χ² = 28993, P = 0001; and χ² = 60200, P = 001, respectively) The lowest percentage of injuries healed were on the coccyx and were stage 4 and unstageable Overall, the mean first PUSH score was significantly higher than the last assessment score (899 ± 382 to 728 ± 522, respectively; z =-10807; P = 0001); Conclusion: Many immobile ICU patients had multiple pressure injuries, especially patients who were older and who had a longer length of stay Healing scores for pressure injuries were better at discharge or transfer and 22% of injuries were healed Prospective studies comparing all factors that may contribute to pressure injury healing are warranted;
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Amrani, G and A Gefen (2019) "Which endotracheal tube location minimises the device-related pressure ulcer risk: The centre or a corner of the mouth?" International Wound Journal Epub ahead of print
The use of an endotracheal tube (ETT), which is required for any mechanical ventilation procedure, involves an inherent risk for facial skin, lip, and mucosal pressure ulcers The ETT is one of the most common devices associated with medical device-related pressure ulcers (MDRPUs) among surgical and intensive care unit patients In the present work, we investigated, for the first time in the literature, the biomechanical effects of the presence and positioning of an ETT in the mouth on lip, mucosal and surrounding facial skin loads Using two anatomically realistic finite element model variants, two ETT locations were simulated and compared, at the centre versus the corner of the mouth Our study shows that a central location of the ETT inflicted greater lip and mucosal stress values, but a corner location caused a more widespread and diffused lip, mucosal and facial skin stress exposure Accordingly, we cannot recommend a "safer" location for ETTs in the mouth; additional preventative measures such as dedicated dressing materials or special cushioning pads applied prophylactically, should be developed to protect from MDRPUs associated with ETT usage The present modelling framework can be used to study the biomechanical efficacy of such protective technologies, and can therefore aid in the prevention of ETT-caused MDRPUs; © 2019 Medicalhelplinescom Inc and John Wiley & Sons Ltd
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Objective: To identify and update the prevalence and incidence of pressure ulcers (PUs) in several countries, in people with long-term conditions resident in care homes or nursing homes; Methods: We followed the PRISMA guideline for systematic reviews However, due to funding constraints we do not claim this review...
to be systematic but it is a narrative review informed by PRISMA Medline, Embase and CINHAL were searched for observational studies reporting incidence or prevalence data Data reported relevant head-to-toe examination of PUs in residence in care or nursing homes Internal and external validity of the included studies were assessed using the checklist devised by Hoy et al1; Results: Inclusion criteria was met by 17 studies and included in the study Some studies gave a full breakdown by category, some only gave overall figures, and others excluded category I PUs However, within those constraints certain patterns are clear Prevalence rates varied from 34-324% Large differences in prevalence in different countries were not explained by methodological differences While some countries, such as Germany, the Netherlands and the US had robust data, other countries, such as the UK, had none; Conclusion: PUs are a common problem in long-term care However, there are substantial differences between countries and many countries have no published data;

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Background: Friction injuries are postulated to be caused by acute or chronic abrasive/friction forces during sliding, scooting, or slouching behaviors prevalent in individuals with impaired mobility and particularly when transferring and repositioning; Cases: Patient histories for 2 cases were collected for determination of wound etiology Outpatient wound clinic visits including photographic documentation for both cases were reviewed, compared, and contrasted for level of tissue involvement with each wound type/etiology With serial sharp debridement of both wounds, differences were noted in level of tissue involvement/destruction Healing progression and scarring were also different for both wounds; Conclusion: A comparison of 2 cases is presented to compare and contrast level of tissue involvement and destruction in an acute friction injury (top-down) versus a deep tissue injury (bottom-up) The importance of knowing a wound's history is critical for accurate diagnosis and coding;

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Objective: To verify the effectiveness of the educational intervention through the evaluation of nurses' knowledge about prevention of pressure injury; Method: A quasi-experimental study with a single group, carried out with 95 nurses from a teaching hospital in the interior of Minas Gerais, in August and September 2017 As a teaching strategy, the active methodology and hybrid teaching were used, based on the reference of the Method of the Arch of Charles Maguerez Data were collected from a validated instrument, called the Pieper Knowledge Test, and analyzed by descriptive statistics and Student's t-test with significance level of p <0001; Results: The mean number of correct answers obtained by the nurses was 788% in the pre-test and 888% in the post-test, and the difference was statistically significant (p <0001); Conclusion: The educational intervention developed was effective, since it contributed to the improvement of nurses' knowledge;

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Ernsth Bravell, M (2019) "Higher prevalence of pressure ulcers in people receiving palliative care is not necessarily an indicator of poor care" Evidence-Based Nursing Epub ahead of print

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Background: Pressure injury can cause significant patient physical pain, impact quality of life for individuals and their families, and increase hospital length of stay and healthcare costs. Within the hospital setting, it is considered to be largely preventable and regarded as an adverse event. In this context, prophylactic use of a protective sacral dressing to prevent pressure injury has been investigated by various researchers.

Objectives: Analyse the effectiveness of prophylactic sacral protective dressings to prevent pressure injury.

Design: Systematic review and meta-analysis of randomised controlled trials. Data Sources: Electronic database searches were undertaken in 2018 and 2019. Initial searches identified 557 articles. Following duplicate removal and screening, 49 full text articles were reviewed. Most were excluded, leaving six studies that met the criteria for full review.

Review Methods: Two authors assessed study bias and extracted data, with a third reviewer as arbitrator. A random effects meta-analysis was conducted using sample sizes based on intention-to-treat analysis. Sub-group meta-analyses were conducted of three studies in the intensive care setting and four studies that used the same dressing.

Results: Overall, the six randomised controlled trials were judged to be of moderate quality. Due to visibility of the intervention, blinding was rare. Five studies were described as intention-to-treat; however, two of these presented per-protocol analyses.

All studies compared the intervention plus standard care to standard care. Five studies demonstrated statistically significant reduced pressure injury incidence in the intervention group. All studies were included in the meta-analysis (total n = 1872) and demonstrated homogeneity (I² = 10%). Meta-analysis revealed an overall effect in favour of the intervention [risk ratio (RR) = 0.30, 95% CI 0.17-0.51] with a 95% prediction interval of 0.11-0.80. Sub-group analyses of intensive care studies and those using the same dressing demonstrated positive effects (RR = 0.17, 95% CI 0.06-0.49, I² = 0%, and RR = 0.32, 95% CI 0.13-0.764, I² = 31%; respectively).

Conclusions: The meta-analysis provides moderate evidence of the effectiveness of a prophylactic sacral dressing to prevent pressure injury, with an overall relative risk indicating that the intervention decreases pressure injury risk by 70%. Sub-group analysis of intensive care studies demonstrated a large relative risk reduction of 83% suggesting the dressing may be more effective in this high-risk group. The lower relative risk reduction of 68% found in four studies using the same dressing, in which there was moderate heterogeneity, indicates that further research is needed to clarify dressing choice.

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Introduction: The current study sought to determine the factors predictive of postoperative pressure ulcer development by analyzing extensive multicenter outcomes data from the 2016 American College of Surgeons National Surgical Quality Improvement Program (NSQIP) database. Methods: The 2016 NSQIP Participant Use File and Hip Fracture Procedure Targeted file were used to identify the risk factors for the development of postoperative pressure ulcers after hip fracture surgery in a geriatric cohort. Multivariate regressions were performed to identify preoperative comorbidities and postoperative complications that are risk factors for developing postoperative pressure ulcers. Results: Of 8,871 geriatric hip fracture patients included in the study cohort, 457 (51.5%) developed pressure ulcers. Multivariate regressions identified the following preoperative risk factors for developing a postoperative pressure ulcer: (in order of decreasing relative risk): preoperative sepsis, elevated platelet count, insulin-dependent diabetes, and preexisting pressure ulcer. Multivariate regressions also identified the following postoperative complications as risk factors for developing a postoperative pressure ulcer: postoperative sepsis, postoperative pneumonia, urinary tract infection, and postoperative delirium. Discussion: The identified preoperative factors and postoperative complications should help guide quality improvement programs.

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Haba, D and T Arakawa (2019) "Chronological changes in rat heel skin following depressurization of pressure ulcer-like dermal lesions" Acta Histochemica Epub ahead of print: 151459-151459
In our previous study, we proposed an animal model in which pressure ulcer-like dermal lesions can be produced by denervation of the sciatic nerve and application of a pressure load to rat heel skin. In the present study, we divided these animals into non-treated and pressure loading groups, and initiated hindlimb unloading (depressurization) by tail suspension at 1, 3, 5, 7, and 14 days after inflicting lesions (1-14d pressurization groups). Chronological changes in heel lesions were examined morphologically in all treatment groups after 1, 3, 7, 14, 28, and 40 days. Open dermal lesions were formed by 14 days in the loading group and numerous macrophages were present. In the 14d pressurization group, numerous macrophages were still distributed in and around lesions and Vascular endothelial cell growth factor (VEGF) expression was strongly detected by 3 days, but a thin germinal layer began to appear and CD68-positive macrophages and VEGF immunoreactions decreased gradually by 7 days later. By 14 days after depressurization, the germinal layer was repaired, and macrophages and immunoreactions of VEGF were similar to those of non-treated skin. These chronological changes were similar to those in human pressure ulcers, but from 5d after depressurization, different chronological changes were observed. Specifically, epidermis was thickened and macrophages were hardly detected at 5 days in the loading group, but the epidermis disappeared by 1 day in the 5d pressurization group. Subsequently, numerous macrophages aggregated and VEGF expression was increased by 3 days, and the remaining healing process was similar to that in the 14d pressurization group. Even when unloading was performed during the early stages (5d pressurization group), the epidermis disappeared and macrophages were then distributed before repair of the lesion was observed. These results suggest that earlier migration of macrophages to skin lesions might be associated with rapid wound healing. Copyright © 2019 Elsevier GmbH All rights reserved

High-pressure injection injuries are one of several orthopedic injuries that require urgent evaluation and treatment. Notoriously, these injuries appear to be benign puncture wounds at initial presentation. However, the zone of injury can extend subcutaneously from the tip of the finger to the mediastinum and have catastrophic effects on the affected extremity. Although relatively rare, high-pressure injection injury is well-described in the current literature, with the first case report dating back to 1937. Patients often present for evaluation at trauma centers, but this is not exclusive. This article provides an overview of the injury and the current literature on management and prognostic factors. Copyright © 2019, StatPearls Publishing LLC

Background: Pressure ulcer incidence in high risk settings such as intensive care is high. There is emerging evidence that the application of dressings to pressure ulcer predilection areas (sacrum and heels) improves prevention strategies. Objectives: To determine if preventive dressings, applied to sacrum and heels of high risk patients in intensive care units in addition to standard prevention reduces the incidence of pressure ulcers; Methods: Between June 2015 and July 2018, a randomized, controlled, two arm, superiority pragmatic study was performed with a concealed 1:1 allocation to the intervention and control group. Patients assigned to the intervention group had dressings applied to sacrum and heels; Results: In total, n = 7575 patients were screened for eligibility, n = 475 patients were included and allocated to both groups. Finally, n = 212 patients in the intervention and n = 210 in the control groups were analyzed. Mean age was 63.5 years and the majority was male (65%). The cumulative pressure ulcer incidence category II and above was 28% in the intervention, and 105% in the control group (p < 0.001). Compared to the control group, the relative risk in the intervention group was 0.26 (95% CI 0.11 to 0.62) and the absolute risk reduction was 0.08 (95% CI 0.03 to 0.13); Conclusion: Results indicate that the application of dressings in addition to standard prevention in high risk intensive care unit patients is effective in preventing pressure ulcers at the heels and sacrum; © 2019 British Association of Dermatologists

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The purpose of this quality improvement point-prevalence project conducted in 2017 was to describe the structure, process, and outcome indicators for pressure injury (PI) prevention and care in 37 Austrian hospitals with 208 wards and 2955 patients, with an average age of 66 years Structural indicators such as PI guideline availability were measured on hospital and ward levels On the process level, patients were assessed to determine whether PI interventions such as mobilization or use of moisturizer/barrier cream were implemented On the outcome level, data on the presence of hospital-acquired PIs based on skin inspection were collected These data were collected using the Austrian version of the National Prevalence Measurement of Care Problems, a standardized survey Structural level results showed PI protocols or guidelines were available in 757% of the participating institutions Staff education such as refresher courses was seldom available on the ward level (466%) Process-level results indicated the most commonly applied intervention in both patients at risk of or had a PI was the use of skin-protectant moisture barrier creams (631% and 852%, respectively) Patients with PIs also frequently received interventions focusing on the heels (729%) and mobilization (692%) With regard to the outcome level, the overall and hospital-acquired PI prevalence rates were 36% and 13%, respectively We recommend focusing on staff, patient and family education including the prevention and treatment of hydration and nutritional deficits, an uncommonly used intervention in Austria based on these data, to improve the quality of PI prevention and care in the hospital setting;
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Objective: to investigate the incidence of pressure injury in cancer patients of an intensive care unit; Method: A longitudinal study with 105 patients admitted to an oncological intensive care unit The incidence rate was calculated as the number of events per 100 patient-days Cumulative incidence was calculated both globally and according to selected characteristics, and submitted to hypothesis tests; Results: incidence rate per 100 patient-days was 132, and global cumulative incidence was 295% A higher incidence was observed in patients with chronic diseases who had at least one episode of diarrhea, received enteral nutrition, and took vasoactive or sedative drugs for a prolonged period of time Regarding type of tumour and antineoplastic treatments, no differences in incidence were observed; Conclusion: A high cumulative global incidence of pressure lesion was reported in cancer patients admitted to the intensive care unit, although tumour characteristics and antineoplastic treatments did not affect incidence;
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Background: Few studies exist to guide the management of patients with stage 4 pressure ulcers with possible underlying osteomyelitis We hypothesized that infectious disease (ID) physicians would vary widely in their approach to such patients; Methods: The Emerging Infections Network distributed a 10-question electronic survey in 2018 to 1332 adult ID physicians in different practice settings to determine their approach to such patients; Results: Of the 558 respondents (response rate: 42%), 17% had managed no such patient in the past year Of the remaining 464 respondents, 60% usually felt confident in diagnosing osteomyelitis; the strongest clinical indicator of osteomyelitis reported was palpable or visible bone at the ulcer base Approaches to diagnosing osteomyelitis in patients with visible and palpable bone varied: 41% of respondents would assume osteomyelitis, 27% would attempt pressure off-loading first, and 22% would perform diagnostic testing immediately Preferred tests for osteomyelitis were bone biopsy (for culture and histopathology) and magnetic resonance imaging Respondents differed widely on favored route(s) (intravenous, oral, or both) and duration of antimicrobial therapy but would treat longer in the absence, vs presence, of full surgical debridement (P < 001) Overall, 62% of respondents opined that osteomyelitis
under stage 4 pressure ulcers is usually or almost always treated excessively, and most (59%) suggested multiple topics for future research; Conclusions: Regarding osteomyelitis underlying stage 4 pressure ulcers, ID physicians reported widely divergent diagnostic and treatment approaches Most of the reported practice is not supported by the available evidence, which is quite limited and of low quality; Published by Oxford University Press on behalf of Infectious Diseases Society of America 2019


Background: Chronic wounds including pressure ulcers represent a significant burden to patients and healthcare providers Increasingly patients are required to self-manage their care but patient adherence to prevention strategies is a significant clinical challenge It is important to increase understanding of the factors affecting patients' ability and willingness to follow pressure ulcer prevention interventions; Objectives: To investigate from a patient perspective the factors affecting adherence to pressure ulcer prevention strategies; Design: Integrative literature review; Data Sources: A systematic search of electronic databases (Athens, Pub Med, Web of Science, Science Direct, AMED, CINAHL, Cochrane Library, PsychInfo, Google Scholar, Delphis) was initially conducted in May 2017 (repeated August 2018); Review Methods: The methodological quality was assessed using the Critical Appraisal Skills Programme (CASP) principles The Noticing, Collecting, Thinking (NCT) model of qualitative data analysis was used to identify key themes; Results: A total of twelve studies met the inclusion criteria and were included in the review The majority of studies were qualitative and three key themes were identified: (i) individual/daily lifestyle considerations, (ii) patient involvement in the decision-making process, and (iii) pain and/or discomfort; Conclusion: There is limited research that focuses on the patient view of factors affecting adherence to prevention measures, particularly in community settings Individual and daily lifestyle considerations and involvement in decision-making around pressure ulcer care are important aspects from the patient perspective Further research is necessary to explore which factors affect patient adherence in order to improve clinical practice and support patient involvement in preventative strategies; Copyright © 2019 Elsevier Ltd All rights reserved


Aim: Pressure injuries as an indicator measuring the quality of nursing care and patient safety is a major health care problem worldwide The aim of this study was to assess the knowledge, attitude and behaviour of nurses in preventing pressure injuries; Design: Descriptive cross-sectional study; Methods: This descriptive cross-sectional study enrolled 214 registered nurses in Iran Patient satisfaction was assessed using piaker pressure ulcer knowledge test, attitude towards pressure ulcer tool and behaviour of pressure ulcer questionnaire Data analysed by SPSSv24 applying descriptive and inferential statistics; Results: The mean scores of knowledge, attitude and behaviour of nurses on the prevention of pressure injury were 2724 (SD 523), 3855 (SD 643) and 5124 (SD 754), respectively There was a correlation between knowledge, attitude and behaviour with the history of pressure injury training Also, there was a significant relationship between knowledge with educational level and attitude with work experience Knowledge, attitude and behaviour of nurses were in moderate level Necessary measures to overcome problems such as the availability of pressure reducing equipments, motivating the nurses, eliminating the shortage of nurses and empowering nurses by holding practical workshops are important in providing patients safety; © 2019 The Authors Nursing Open published by John Wiley & Sons Ltd
[This corrects the article DOI: 10.1038/s41394-019-0173-0]; © The Author(s) 2019
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Study design: Retrospective chart analyses as part of a quality improvement project; Objectives: To demonstrate treatment of pressure injury (PI) in patients with spinal cord injuries (SCI) and analyse costs using the "modified Basel Decubitus Concept"; Setting: Inpatient setting of a specialised acute care and rehabilitation clinic for SCI; Methods: Complex treatment courses of four patients with chronic SCI and PI stage III or IV were described and costs were recorded The total healthcare services' costs per patient and different profession's involvement were analysed in relation to patient characteristics, treatment phases and milestones demonstrated; Results: The treatment of PI stage III and IV in patients with SCI included input from plastic surgery, rehabilitation medicine, nursing and other involved professions Recommended interventions were chosen according to the "modified Basel Decubitus Concept" The cost course of PI treatment in patients with SCI depicted the multimodal treatment concept, including three clinically and financially relevant milestones (debridement, flap surgery and mobilisation to wheelchair) as well as the highest costs in the functionally highly dependent patient Acute care and rehabilitation overlapped with different intensities during the whole treatment process; Conclusion: Multimodal treatment concepts connecting acute and rehabilitation care were applied in these complex health conditions Cost-explication models including treatment phases and milestones helped to understand resources more easily and integrate aspects of process-based management and quality of care Scientific evidence is needed to create a recommended quality standard in line with adequate financing of this health condition; © The Author(s) 2019
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Objective: The main aim of this systematic review was to establish the prevalence of pressure ulcers (PU) within published studies from Europe; Method: Using systematic review methodology, quantitative design studies which explored prevalence data and/or the epidemiology of PUs in Europe were considered The primary outcome was PU prevalence The search, conducted in April 2019, using Cochrane, Medline, Embase, CINAHL, PubMed, Scopus and Web of Science databases, returned 3065 records, of which 79 met the inclusion criteria Data were extracted using a pre-designed extraction tool, and validity analysis was undertaken using the Evidence-Based Librarianship (EBL) Critical Appraisal Checklist; Results: We included 79 articles in this review Across the studies, the median prevalence was 108% (standard deviation: 7%; range: 46-272%) The highest PU prevalence reported was from the Netherlands (272%; n17,494 participants), and the lowest was reported from Finland (46%; n629 participants) Almost 324% (n151,195) of the PUs were category I and the most common site for PUs was the sacrum; Conclusion: The prevalence data is consistently high These data indicate the continued need for further resource allocation into PU prevention and management;
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Objective: Preventing pressure ulcers is an essential part of patient care and it is important to be aware of the best way to prevent it Hence, the present study aims to look for the demographics, clinical characteristics, and risk factors in patients with and without pressure ulcer among elderly patients Methods: A retrospective longitudinal study was conducted in elderly (above 65 years) patients from a period of October 2014 to October 2015 in the medical ward under acute Geriatric care at Hamad General Hospital in Qatar Results: Overall, a total of 90 patients were included with an average age of 79± 113 years of which 45 patients developed pressure ulcer There was male (644%) preponderance in the study population Most common comorbidity was hypertension (778%) Anemia correction (91%), high protein diet supplementation (15 g/kg
For optimal wound bed preparation, wound debridement is essential to eliminate bacterial biofilms. However, it is challenging for clinicians to determine whether the biofilm is completely removed. A newly developed biofilm detection method based on wound blotting technology may be useful. Thus, we aimed to investigate the effect of biofilm elimination on wound area decrease in pressure ulcers, as confirmed using the wound blotting method. In this retrospective observational study, we enrolled patients with pressure ulcers who underwent sharp debridement with pre- and post-debridement wound blotting. Biofilm was detected on the nitrocellulose membrane using ruthenium red or alcian blue staining. Patients were included if the test was positive for biofilm before wound debridement. Percent decrease in wound area after 1 week was calculated as an outcome measure. We classified the wounds into a biofilm-eliminated group and a biofilm-remaining group based on the post-debridement wound blotting result. Sixteen wound blotting samples from nine pressure ulcers were collected. The percent decrease in wound area was significantly higher in the biofilm-eliminated group (median: 144%, interquartile range: 46%-201%) than in the biofilm-remaining group (median: -145%, interquartile range: -253%-96%; P = 0.040). The presence of remaining biofilms was an independent predictor for reduced percent decrease in wound area (coefficient -2284, P = 0.040). Biofilm-based wound care guided by wound blotting is a promising measure to help clinicians eliminate bacterial bioburden more effectively for wound area reduction; © 2019 Medicaleshelplinescom Inc and John Wiley & Sons Ltd.

Background: Pressure ulcers (PUs) are complications of serious acute/chronic illness. Specialist mattresses used for prevention lack high quality effectiveness evidence. We aimed to compare clinical and cost-effectiveness of 2 mattress types: Multicentre, Phase III, open, prospective, parallel group, randomised controlled trial in 42 UK secondary/community in-patient facilities. 2029 high risk (acute illness, bedfast/chairfast and/or Category 1 PU/pain at PU site) adult in-patients were randomised (1:1, allocation concealment, minimisation with random element) factors including: centre, PU status, facility and consent type. Interventions were alternating pressure mattresses (APMs) or high specification foam (HSF) for maximum treatment phase 60 days. Primary outcome was time to development of new PU Category ≥ 2 from randomisation to 30 day post-treatment follow-up in intention-to-treat population. Trial registration: ISRCTN 01151335; Findings: Between August 2013 and November 2016, we randomised 2029 patients (1016 APMs: 1013 HSF); who developed 160(79%) PUs. There was insufficient evidence of a difference between groups for time to new PU Category ≥ 2 Fine and Gray Model Hazard Ratio HR 0.76, 95%CI(0.56-1.04); exact P = 0.00890; absolute difference 2%). There was a statistically significant difference in the treatment phase time to event sensitivity analysis, Fine and Gray model HR 0.66, 95%CI, 0.46-0.93; exact P = 0.00176; 26% absolute difference) Economic analyses indicate that APM are cost-effective. There were no safety concerns; Interpretation: In high risk (acute illness, bedfast/chairfast/Category 1 PU/ pain on a PU site) in-patients, we found insufficient evidence of a difference in time to PU development at 30-day final follow-up, which may be related to a low event rate affecting trial power. APMs conferred a small treatment phase benefit. Patient preference, low PU incidence and small group differences suggests the need for improved targeting of APMs with decision making informed by patient preference/comfort/rehabilitation needs and the presence of potentially modifiable risk factors such as being completely immobile, nutritional deficits, lacking capacity and/or altered skin/Category1 PU; © 2019 Published by Elsevier Ltd.

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Background: Patients with spinal cord injury (SCI) tend to develop pressure ulcers (PrUs) because of prolonged immobility. This study assessed the efficacy of vacuum assisted closure for healing of PrUs in individuals with SCI.

Methods: In a systematic review, CINAHL, PubMed, Cochrane Clinical Trials, DARE, MEDLINE, Scopus, Embase, Science Direct, Psychnfo and Spinal Cord Journal were searched in March 2019. The search combined related terms for pressure ulcer, spinal cord injury, and vacuum assisted closure. Each database was searched from its inception with no restrictions on year of publication.

Results: The search yielded 7 studies for inclusion in a qualitative analysis. The studies included a variety of methodologies, specifically 2 randomized controlled trials, 2 assessor-blinded crossover and retrospective cohort study, 1 prospective non-randomized trial, 1 randomized case study and 1 case report. The meta-analysis was unsuccessful. Only descriptive results mean±SD were reported as well as time to heal and time to discharge after admission.

Conclusion: The studies that we included in our qualitative synthesis showed that vacuum assisted closure promoted the healing of PrUs in individuals with SCI.

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It remains unclear whether electrical currents can affect biological factors that determine chronic wound healing in humans; Purpose: The aim of this study was to determine whether anodal and cathodal high-voltage monophasic pulsed currents (HVMPC) provided to the area of a pressure injury (PI) change the blood level of cytokines (interleukin [IL]-1β, IL-10, and tumor necrosis factor [TNF]-α) and growth factors (insulin-like growth factor [IGF]-1 and transforming growth factor [TGF]-β1) in patients with neurological injuries and whether the level of circulatory cytokines and growth factors correlates with PI healing progression;

Methods: This study was part of a randomized clinical trial on the effects of HVMPC on PI healing. All patients with neurological injuries (spinal cord injury, ischemic stroke, and blunt trauma to the head) and a stage 2, stage 3, or stage 4 PI of at least 4 weeks' duration hospitalized in one rehabilitation center were eligible to participate if older than 18 years of age and willing to consent to donating blood samples.

Exclusion criteria included local contraindications to electrical stimulation (cancer, electronic implants, osteomyelitis, tunneling, necrotic wounds). PIs requiring surgical intervention, patients with poorly controlled diabetes mellitus (HbA1C > 7%), critical wound infection, and/or allergies to standard wound dressings. Exclusion criteria also included local contraindications to electrical stimulation.

Participants were randomly assigned to 1 of 3 groups: anodal (AG) or cathodal (CG) HVMPC treatment (154 μs; 100 Hz; 360 μC/sec; 1 V) with a placebo (PG, sham) applied for 50 minutes a day, 5 days per week, for 8 weeks. TNF-α, IL-1β, IL-10, TGF-β1, and IGF-1 levels in blood serum were assessed using the immunoenzyme method (ELISA) and by chemiluminescence, respectively, at baseline and week 4. Wound surface area measurements were obtained at baseline and week 4 and analyzed using a digitizer connected to a personal computer.

Statistical analyses were performed using the maximum-likelihood chi-squared test, the analysis of variance Kruskal-Wallis test, the Kruskal-Wallis post-hoc test, and Spearman's rank order correlation; the level of significance was set at P ≤05;

Results: Among the 43 participants, 15 were randomized to AG (mean age 5387 ± 1330 years), 13 to CG (mean age 5108 ± 2043 years), and 15 to PG treatment (mean age 5120 ± 1447 years). Most PIs were located in the sacral region (12, 7442%) and were stage 3 (11, 6744%). Wound surface area baseline size ranged from 100 cm2 to 5804 cm2. At baseline, none of the variables were significantly different.

After 4 weeks, the concentration of IL-10 decreased in all groups (AG: 98%, CG: 3854%, PG: 2742%), but the decrease was smaller in the AG than CG group (P 0046). The ratio of pro-inflammatory IL-10 to anti-inflammatory TNF-α increased 2729% in the AG and decreased 2679% in the CG and 1856% in the PG groups. Differences between AG and CG and AG and PG were significant (AG compared to CG, P 0009; AG compared to PG, P 0054). Other percentage changes in cytokine and growth factor concentration were not statistically significant between groups in the AG, the decrease of TNF-α and IL-1β concentrations correlated positively with the decrease of PI size (P <05);

Conclusion: Anodal HVMPC elevates IL-10/TNF-α in blood serum. The decrease of TNF-α
α and IL-1β concentrations in blood serum correlates with a decrease of PI wound area. More research is needed to determine whether the changes induced by anodal HVMPC improve PI healing and to determine whether and how different electrical currents affect the activity of biological agents responsible for specific wound healing phases, both within wounds and in patients' blood. In clinical practice, anodal HVMPC should be used to increase the ratio of anti-inflammatory IL-10 to pro-inflammatory TNF-α, which may promote healing.

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Aims and Objectives: To assess nurses' knowledge on pressure ulcer (PU) prevention and treatment in Jordan, and the frequency of and factors influencing nurses' implementation of PU prevention and treatment interventions; Background: Highly educated and experienced nurses can provide effective PU care; however, previous studies highlighted poor knowledge and implementation of PU care; Design: A correlational study examining nurses' knowledge of PU prevention and frequency of PU preventive actions in Jordanian hospitals; Methods: Participants were 377 nurses and 318 patients from 11 hospitals. Data were collected to quantify the frequency of nurses' implementation of pressure ulcer prevention and treatment interventions for patients suffering from PUs and/or at risk of PU development using a self-reported cross-sectional survey and prospective 8-h observation; Results: For observed PU prevention while type of hospital and number of beds in units were significant it is not known without further work if this is replicable. For observed PU treatment, linear regression analysis revealed significant negative beta values for more than 50 beds in clinical unit (β = -2.49); Conclusion: The study addressed new factors, facilitating the provision of prevention and treatment strategies to PU development, including type of clinical institution and number of beds in clinical unit; Relevance To Clinical Practice: There is a need to develop training programmes to improve insufficient nurses' knowledge and, thus, clinical practices on PU prevention and treatment. These programmes would assist both junior and senior nurses and other key stakeholders (e.g. hospital managers, policy-makers, and educators) to improve the performance of PU services, thus, minimising patient suffering; Copyright © 2019 Published by Elsevier Ltd

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Seo, Y and Y S Roh (2019) "Effects of pressure ulcer prevention training among nurses in long-term care hospitals" Nurse Education Today 84: 104225-104225

Background: Nurses caring for elderly patients with a high risk of pressure ulcer at long-term care hospitals require the necessary knowledge, behaviors, and attitudes regarding preventing pressure ulcers; Objectives: To identify the effects of pressure ulcer prevention training on nurses' knowledge, behaviors, and attitudes regarding pressure ulcer prevention; Design: A comparison group pretest-posttest design; Settings: Long-term care hospitals in a metropolitan area of the Republic of Korea; Participants: Participants were conveniently assigned to team-based learning (n 30) or lecture-based learning (n 30) groups; Methods: We examined pre-post differences in the scores for pressure ulcer prevention knowledge, behaviors, and attitudes in each group using the paired t-test. Additionally, pre-post difference scores were compared between the two groups using the independent samples t-test; Results: Both groups exhibited significant increases in scores for pressure ulcer prevention knowledge, behaviors, and attitudes after the intervention as compared before it. However, we found no significant differences in the pre-post difference scores for any of the variables between the two groups; Conclusions: Pressure ulcer prevention training, regardless of whether it utilizes team-based or lecture-based learning, is useful for enhancing nurses' pressure ulcer prevention knowledge, behaviors, and attitudes. Further study is needed to verify the longitudinal effects of pressure ulcer prevention training on nurses' actual performance and the incidence of pressure ulcers among patients; Copyright © 2019 Elsevier Ltd All rights reserved

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Background: Pressure ulcer (PU) is an injury to skin or underlying tissue as a result of pressure or pressure with shear stress. We classify PUs by the level of tissue injury: stage I-IV, unstageable, suspected deep tissue injury. This quality project was aimed to reduce the incidence of PUs > stage II in the cardiothoracic intensive care unit; Methods: We reviewed PUs > stage II from March 2010 to December 2017
Interventions included: PU bundle (April 2010, revised January 2013); multidisciplinary huddles for PUs > stage II (October 2011); multidisciplinary weekly skin rounds (March 2010, revised August 2012); unit specific workgroup (October 2012); caregiver input form (December 2012) The PU bundle included diaper barrier cream, pulse oximeter probe rotation, turning schedule, pressure reduction surfaces, heel pressure release, head of the bed elevation: Results: Between 2010 and 2014, PUs decreased from 157 events per 1,000 patient days to a new baseline of 29 events per 1,000 patient days We have sustained this rate for 3 years PUs related to immobility decreased from 35 in 2010-2011 to 4 in 2016-2017 PU related to medical devices decreased from 34 in 2010-2011 to 15 in 2016-2017 Conclusions: Institution of PU bundle, multidisciplinary weekly skin rounds, and huddles for PUs > stage II reduced PUs related to immobility, allowed for earlier identification of stage II PUs and reduced stage III PUs Challenges remain in reducing PUs related to medical devices Importantly, we sustained this improvement over the past 3 years; Copyright © 2019 the Author(s) Published by Wolters Kluwer Health, Inc


Pressure injuries (PIs) have now become a common complication of the elderly patients Some studies have observed that pressure injuries may increase mortality, but this area of evidence has not been evaluated and summarised The aim of this study was to compare the mortality of patients with pressure injuries and those without pressure injuries A meta-analysis of observational studies was performed PubMed, Cochrane Library, Embase, and Web of Science were searched up to April 2019 Studies about mortality among the elderly patients with and without pressure injuries were included Methodological quality was assessed by the Newcastle-Ottawa Scale (NOS) The fixed effect or random effect model was determined by the test of heterogeneity The subgroup analysis was performed based on the pressure injuries stages, the region, and the type of study design The meta-regression analysis was performed to investigate the relationship between the mortality and patients' enrolled year, average age, the incidence of pressure injuries, and gender ratio The sensitivity analysis was used to explore the impact of an individual study by excluding one at a time The hazard ratio (HR) and 95% confidence intervals (CIs) in terms of the comparison of two groups were extracted for meta-analysis A survival curve between two groups by individual patient-level was drew Eight studies with 5523 elderly patients were included in the analysis Follow-up periods for the included studies ranged from about 0.5 to 3 years The elderly patients who complicated with pressure injuries had a higher risk of death The pooled HR was 178 (95% CI 146-216) A funnel plot showed no publication bias Further subgroup analysis showed that HR values for the patient stage 3 to 4 pressure injuries (HR:241; 95% CI:108-537) were higher than stage 1-4 and 2-4 pressure injuries (HR: 166; 95% CI: 135-205; HR: 174; 95% CI: 116-260) The meta-regression analysis found that patients' enrolled year, average age, the incidence of pressure injuries, and gender ratio were not the sources of heterogeneity Sensitivity analyses showed that the outcomes of the study did not change after removing the Onder's article The survival curve at the individual patient-level also indicated that patients complicated with pressure injuries significantly increased the risk of death (HR: 1958; 95% CI: 179-214) in elderly patients Our meta-analysis indicated that patients complicated with pressure injuries are estimated to have a two times higher risk on mortality compared with patients without pressure injuries during the 3 years follow-up period Particular attention should be given to the elderly patients who are at higher risk for mortality; © 2019 Medicalhelplinescom Inc and John Wiley & Sons Ltd


Study design: A quantitative, descriptive study using a cross-sectional survey; Objectives: To describe the pressure ulcer knowledge, beliefs and practices amongst persons with SCI, who received rehabilitation at a Cape Town rehabilitation centre; Setting: A rehabilitation centre for clients with physical disabilities in Cape
Town, South Africa; Methods: A quantitative, descriptive study, that employed consecutive sampling, was done. Participants included inpatients (n=30), outpatients (n=33) and peer supporters (n=8). Data were collected during April and March 2015 with a questionnaire developed through collating existing questionnaires and adapting it for the study context. This rendered a knowledge score and data on beliefs and practices. The Fisher's exact test was used for comparative analysis (p < 0.05); Results: The mean combined knowledge score was 42.7%. The majority of participants (88.7%) believed pressure ulcers to be serious and 45% thought they were likely to develop a PU. They believed daily skin checks (80.3%), weight shifting (86%) and limiting sitting time (80.3%) could prevent PU development. Study participants indicated that they did not regularly follow guideline recommended practices like regular pressure relief (51%) (36 participants) or daily skin inspection (38%) (27 participants) and 37% (26 participants) reported being current smokers; Conclusion: Participants showed a lack of knowledge, which might have affected their pressure ulcer prevention practices negatively. The study findings can be used to assist with the development of a contextually relevant training programme on pressure care; © The Author(s), under exclusive licence to International Spinal Cord Society 2019


The assessment of patients' risk for developing pressure ulcers is a routine and fundamental nursing process undertaken to prevent avoidable harm to patients in all care settings. Many risk assessment tools are currently used in clinical practice, however no individual tool is recommended by advisory bodies such as the National Institute for Health and Care Excellence or the European Pressure Ulcer Advisory Panel. The evidence base on the value of structured risk assessment tools in reducing the incidence or severity of pressure ulcers is poor. This purpose of this article is to provide a clinimetric analysis of the recently developed Pressure Ulcer Risk Primary or Secondary Evaluation Tool (PURPOSE-T) and identify areas for future research to improve the utility of structured risk assessment in identifying patients at risk of developing pressure ulcers;


The primary objective was to study pressure ulcer (PU) category II-IV (including suspected deep tissue injury and unstageable PUs) cumulative incidence and PU incidence density, in a 30-day observation period, associated with the use of the CuroCell SAM PRO powered reactive air support surface in nursing home residents at risk for PU development. Secondary objectives were to study (a) PU category I cumulative incidence and PU incidence density and (b) user (caregivers and residents) experiences and perceptions of comfort associated with the use of the support surface under study. A multicentre cohort study was set up in 37 care units of 12 Belgian nursing homes. The sample consisted of 191 residents at risk of PU development (Braden score ≤ 17). The cumulative PU incidence was 47% (n=9). The PU incidence density was 17/1000 observation days (9 PU/5370 days). The experience and perceptions of comfort analysis revealed that the CuroCell SAM PRO powered reactive air support surface was comfortable for daily use. The mode of action and the quietness of the pump function had a positive impact on sleep quality. Patient comfort and sleep quality are essential criteria in the selection of a support surface; © 2019 Medicalhelplines.com Inc and John Wiley & Sons Ltd
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
https://search.ahrq.gov/search?q=%22pressure+ulcer*%22+or+%22pressure+injur*%22


Cochrane Wounds Group
https://wounds.cochrane.org/news/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 & Wound Care (Tables of Contents only)
Eplasty (formerly Journal of Burns & Wounds) (full text)
EWMA Journal (full text)
International Wound Journal (Tables of Contents only)
Journal of the American College of Clinical Wound Specialists (full text)
Journal of Tissue Viability (full text)
Journal of Wound Care (full text)
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 Management and Prevention (Table of Contents only)
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
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
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