

## Wounds digest

In this section, a brief synopsis is presented of a range of recently published articles that may be of interest to health professionals working in the wound care setting. The aim of this round-up is to provide an overview, rather than a detailed summary and critique, of the research papers selected. Full references are provided should you wish to look at any of the papers in more detail.

### 1 Predictors of pressure ulcer incidence following traumatic spinal cord injury: a secondary analysis of a prospective longitudinal study

Readability	✓	✓	✓	✓	
Relevance to daily practice	✓	✓	✓	✓	
Novelty factor	✓	✓	✓	✓	

- The authors undertook a secondary analysis of data from a prospective cohort study to determine both the medical and demographic factors that are linked to pressure ulcer development in the acute care setting, outpatient and inpatient rehabilitation sites at a university medical centre in the United States following acute spinal cord injury.
- A total of 104 people with acute traumatic spinal cord injury were recruited for the study with 1–3 days of hospital admission and the incidence of pressure ulcers was recorded by the authors.
- Of these 104 adults, 39 individuals went on to develop at least one pressure ulcer during their hospital stay. There was found to be a significant link between pressure ulcer incidence and patients having pneumonia and mechanical ventilation, as well as higher injury severity. Furthermore, the odds of experiencing a first pressure ulcer in participants with ASIA A were found to be 4.5 times greater than those with ASIA B, and 4.6 times greater than those with ASIA C.
- In conclusion, individuals with high-injury severity following traumatic spinal cord injury were found to be at a higher risk of developing a pressure ulcer(s) and pneumonia was also linked to an increased risk of pressure ulcer formation.

Brienza D, Krishnan S, Karg P et al (2017) Predictors of pressure ulcer incidence following traumatic spinal cord injury: a secondary analysis of a prospective longitudinal study. *Spinal Cord* doi: 10.1038/sc.2017.96. [Epub ahead of print]

### 2 Placing the patient at the centre of chronic wound care: A qualitative evidence synthesis

Readability	✓	✓	✓	✓	
Relevance to daily practice	✓	✓	✓	✓	✓
Novelty factor	✓	✓	✓		

- A qualitative study was undertaken by the authors in order to assess antimicrobial wound dressings. Patients' experiences of living with chronic wounds were evaluated to pave the way for improvements for clinical practice.
- The databases searched in the qualitative evidence synthesis were MEDLINE (Ovid), MEDLINE in Process (Ovid), EMBASE (Ovid),

CINAHL (EBSCOHost) and PsychInfo (EBSCOHost). Only English language publications were searched and the time period examined was 1990–2014.

- Twenty studies that met the inclusion criteria were found to confirm the social, psychological and physical impact on the individual of a chronic wound. Specific issues highlighted in the study were lack of sleep, restrictions to everyday life, which affected wellbeing and can ultimately lead to depression and anxiety, as well as inadequately controlled pain. Also integral to treatment are dressings and dressing changes.
- The study found that the effective management of pain, in conjunction with an acknowledgement that acute and chronic pain can have a profound effect on individuals, is key to supporting people living with chronic wounds. Treatment should focus on holistic care, rather than being purely healing focused.

Fearn N, Heller-Murphy S, Kelly J, Harbour J (2017) Placing the patient at the centre of chronic wound care: A qualitative evidence synthesis. *J Tissue Viability*. pii: S0965-206X(16)30077-8. doi: 10.1016/j.jtv.2017.09.002. [Epub ahead of print]

### 3 Evaluation of osteopontin expression in chronic wounds: a potential prognostic and therapeutic biomarker

Readability	✓	✓	✓		
Relevance to daily practice	✓	✓	✓		
Novelty factor	✓	✓	✓	✓	

- Osteopontin (OPN) is a powerful chemokine that employs inflammatory cells, such as neutrophils, Langerhans cells and macrophages, but its function in chronic wounds is not currently known due to lack of research. This study looked at the expression levels of OPN in chronic wounds to determine whether or not they contributed to prolonged inflammation seen in chronic ulcers.
- Archived biopsies of chronic wounds across numerous aetiologies were examined in this retrospective study, with immunohistochemical staining, as well as blind analysis of OPN expression, conducted.
- In total, the biopsies of 22 ulcers were assessed; five venous leg ulcers, five diabetic foot ulcers, five pyoderma gangrenosum, four squamous cell carcinoma ulcers and three calciphylaxis ulcers. All of these ulcers had high levels of OPN.
- OPN expression was found to be significantly increased in the chronic wounds assessed, which suggests that this could be a determining factor in increased inflammation.

Chimento S, Billero V, Cavallin L et al (2017) Evaluation of osteopontin expression in chronic wounds: a potential prognostic and therapeutic biomarker. *J Wound Care* 26(Sup9): S4-S8

## 4 Predictors of intraoperative pressure injury in patients undergoing major hepatobiliary surgery

Readability	✓	✓	✓	✓	
Relevance to daily practice	✓	✓	✓		
Novelty factor	✓	✓	✓	✓	

- The authors set out to identify the risk factors associated with pressure injury (PI) development in the patient group experiencing major hepatobiliary surgery and requiring general anaesthesia.
- The medical records of 803 patients who underwent hepatobiliary surgery between October 2015 and October 2016 at a 3,400-bed military academic medical centre in China were assessed for the study.
- Potential risk factors associated with PI that were collected included: comorbid conditions, demographic variables preoperative Braden Scale for Pressure Sore Risk score, surgery type and time, hypotensive episodes, blood loss and body temperature, among others. It was any pressure injury occurring in a 48-hour period after surgery that was recorded by the authors, along with the category of the PI.
- In terms of PI prevalence in this patient group, a total of 19.8% experienced a PI in the immediate postoperative period, 4.9% on the first day after surgery and 4.1% on the second day post-surgery. Pancreaticoduodenectomy surgery (odds ratio [OR]: 3.957, 95% confidence interval [CI]: 2.145-7.302,  $P < .001$ ), open surgery (OR: 2.917, 95% CI: 1.558-5.463,  $P = .001$ ), surgical time (with a cut-off point at 197 minutes for increased risk of PI developing OR: 1.004, 95% CI: 1.002-1.006,  $P = .001$ ), as well as intraoperative hypotensive episodes (OR: 1.022, 95% CI: 1.005-1.039,  $P = .010$ ) were all found to be associated with an increased chance of a PI developing.
- Prolonged surgical time, open surgery, and intraoperative hypotension were all discovered to be linked to an increased likelihood of developing a PI among patients undergoing major hepatobiliary surgery. Improved skin care and the maintenance of haemodynamic stability may be viable factors in reducing PI development risk in patients who have undertaken major hepatobiliary.

Chen Y1, He L, Qu W, Zhang C (2017) Predictors of Intraoperative Pressure Injury in Patients Undergoing Major Hepatobiliary Surgery. *J Wound Ostomy Continence Nurs* 44(5): 445-9

## 5 Pressure injuries in people with darker skin tones: A Literature Review

Readability	✓	✓	✓	✓	
Relevance to daily practice	✓	✓	✓	✓	
Novelty factor	✓	✓	✓	✓	

- This literature review was aimed at discovering the extent to the current research in to people with dark skin tones and pressure injuries (PIs). The authors acknowledged that although there is a wealth of research on PI development, there was not so much on how ethnicity or race impacts

prevalence of PIs.

- The databases searched in this study were PubMed, Cumulative Index for Nursing and Allied Health Literature, Cochrane and British Nursing Index between 1990 and 2016. In addition, national and international guidelines were also studied, as well as reference lists, in order to collate relevant studies.
- Eleven relevant articles were found following the literature review. The gist from these articles was that individuals with darker skin tones were more likely to develop a higher stage/ category pressure injury than those without. The reasons for this, however, were not apparent.
- The review underlined the fact that there is presently a lack of both evidence and guidance regarding the management of PIs in people with darker skin tones and there needs to be greater consideration of skin tone variances as opposed to ethnicity when deliberating on skin assessment.

Oozageer Gunowa N, Hutchinson M, Brooke J, Jackson D (2017) Pressure injuries in people with darker skin tones: A Literature Review. *J Clin Nurs* doi: 10.1111/jocn.14062. [Epub ahead of print]

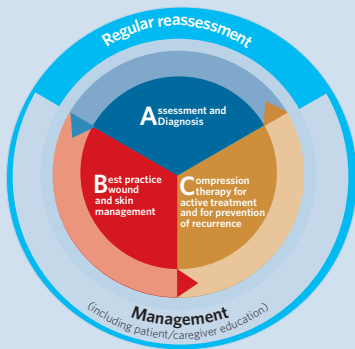
## 6 Characteristics predicting the outcome in individuals with diabetic foot ulcerations

Readability	✓	✓	✓		
Relevance to daily practice	✓	✓	✓	✓	✓
Novelty factor	✓	✓			

- The aim of this prospective, observational study was to identify factors associated with diabetic foot ulcer (DFU) outcomes in people living with diabetes in Malta.
- A total of 99 people who presented with a new DFU were followed up every 4 weeks until ulcer resolution or up to 1 year.
- At study close, 77% of DFUs had healed/resolved completely and 23% had required amputation. No participant characteristics were significantly associated with DFU healing; however, lower HbA<sub>1c</sub> was associated with reduced time to healing ( $P=0.09$ ).
- The six-factor logistic regression model explained 48% of the variance in outcomes and identified three significant baseline factors: ulcer stage ( $P=0.03$ ), presence of biofilm ( $P=0.02$ ) and ulcer depth ( $P=0.03$ ). The presence of slough, necrosis and eschar at baseline increased the odds of amputation by 704% compared with the granulating and epithelialising stage.
- For every 1mm increase in ulcer depth at baseline, the odds of amputation increased by 17.6%. The presence of biofilm at baseline increased the odds of amputation by 199%. These results are broadly in line with previous studies.
- The findings are important in that these are simple risk factors that can easily be measured and identified during routine clinical assessment. The authors recommend that early treatment should be initiated in order to address them accordingly.

Vella L, Formosa C (2017) Characteristics predicting the outcome in individuals with diabetic foot ulcerations. *J Am Podiatr Med Assoc* 107(3): 180-91

# SIMPLIFYING VENOUS LEG ULCER MANAGEMENT



**A<sup>a</sup>**  
Assessment  
and Diagnosis



**B<sup>b</sup>**  
Best practice  
wound and  
skin management

**C<sup>c</sup>**  
Compression  
therapy

New recommendations on the management of leg ulcers using an ABC model to clarify when and how compression therapy should be used