

## Wounds digest

In this section, a brief synopsis is presented of a range of recently published articles that may be of interest to healthcare 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 Bioengineering considerations in the prevention of medical device-related pressure ulcers

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

- Medical device-related pressure ulcers presently represent a significant burden to both healthcare providers and patients. The way that medical devices interact with the skin and underlying soft tissues can result in significant deformations owing to high interface pressures caused by strapping or body weight.
- The authors conducted a review of the latest bioengineering tools being used to assess device related skin and soft tissue damage. In addition, perspectives on how to prevent these chronic wounds were offered, including computer modelling.
- In conclusion, collaboration between academics, industrialists and clinicians was highlighted as the foundation of progress for prevention of medical device-related pressure ulcers. The authors recommended that clinicians report specific medical devices that cause pressure ulcers to the relevant regulatory agencies, in order to identify and improve devices that are not fit for purpose.

Bader DL, Worsley PR, Gefen A (2019) Bioengineering considerations in the prevention of medical device-related pressure ulcers. *Clin Biomech (Bristol, Avon)* 67: 70-77

### 2 A targeted interprofessional educational intervention to address therapeutic adherence of venous leg ulcer persons (TIEIVLU): study protocol for a randomized controlled trial

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

- The recurrence rate associated with venous leg ulcers (VLUs) is high, standing at 70% with a 60% risk of becoming chronic. Signs and symptoms of VLUs are a burden not only on the individuals affected, but also on the healthcare system.
- Leg ulcer prevalence in the general population currently stands at 1%, while treatment costs for leg ulcers are estimated to account for 3% of the overall health expenditure. Current therapeutic approaches to VLUs require an interdisciplinary team of clinicians and it is important that the team provides effective patient education and support; approximately 70% of patients presently have a knowledge deficit in relation to therapeutic measures, while there are difficulties with treatment protocol adherence.

- The authors proposed an evidence-based interprofessional educational intervention in collaboration with an expert panel and then evaluate its feasibility in a pilot study and a randomised controlled trial. Under the study, eligible patients ( $n=20$ ) with leg ulcers are to be randomised, in order to receive either interdisciplinary education and standard care or standard care alone for 12 weeks.
- The authors deigned to develop an evidenced-based educational intervention, as well as explore the feasibility of applying this educational intervention in a realistic care setting in patients with leg ulcers. They concluded that establishing an intervention that improves patient adherence to therapy would be beneficial to patients.

Probst S, Allet L, Depeyre et al (2019) A targeted interprofessional educational intervention to address therapeutic adherence of venous leg ulcer persons (TIEIVLU): study protocol for a randomized controlled trial. *Trials* 20(1): 243

### 3 Peristomal medical adhesive-related skin injury: results of an international consensus meeting

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

- Both stomal and peristomal skin complications (PSCs) are widespread in individuals living with an ostomy — indeed, more than 80% of individuals living with an ostomy will experience a stomal or PSC within 2 years of ostomy surgery.
- Medical adhesive-related skin injuries (MARSIs) are one of the mechanisms linked to PSCs. Peristomal MARSIs are defined as erythema, epidermal stripping or skin tears, bulla, erosion or vesicle, which are observed following adhesive ostomy pouching system removal.
- A working group comprising three clinicians, all of whom had knowledge of peristomal skin health, undertook a scoping review, which revealed a significant lack of evidence relating to peristomal MARSIs epidemiology and management. An international panel of experts in ostomy care and peristomal MARSIs was then assembled to establish consensus-based statements regarding the assessment, prevention, and treatment of peristomal MARSIs.
- This article lays out the scoping review results, as well as the 21 consensus-based statements created, which will be used to guide the assessment, prevention and treatment of peristomal MARSIs, in addition to research priority recommendations.

LeBlanc K, Whiteley I, McNichol L et al (2019) Peristomal medical adhesive-related skin injury: results of an international consensus meeting. *J Wound Ostomy Continence Nurs* doi: 10.1097/WON.0000000000000513. [Epub ahead of print]

## 4 The W.A.I.O.T. definition of high-grade and low-grade peri-prosthetic joint infection

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

- The specific definition of peri-prosthetic joint infection (PJI) has implications for the diagnostic pathway and treatment decisions of this infection. There have been at least five different definitions of PJI put forward over the past decade and the authors highlighted the limitations of these definitions.
- As a result, the World Association against Infection in Orthopedics and Trauma (W.A.I.O.T.) has proposed an alternative solution, which is based on three considerations: firstly, the relative ability of each diagnostic test or procedure to Rule OUT and/or to Rule IN a PJI; secondly, the clinical presentation; and thirdly, the distinction between pre/intra-operative findings and post-operative confirmation.
- A positive Rule IN test (namely, a test with a specificity > 90%) scores +1, as opposed to a negative Rule OUT test (a test with a sensitivity > 90%), which scores -1, according to the WAIOT definition. When a patient has been the recipient of a minimum of two Rule IN and two Rule OUT tests, the balance between positive and negative tests allows to identify five specific conditions. These are: high-grade PJI (score ≥ 1), low-grade PJI (≥0), biofilm-related implant malfunction, contamination and no infection (all scoring < 0).
- This new definition enables the clinician to make a selection from a range of tests, considering medical, logistical and economic issues. Post-operative histological and microbiological analyses were highlighted as key procedures to confirm or to exclude the diagnosis of PJI. The newly proposed WAIOT definition will be tested through a large-scale, multicentre clinical validation trial.

Romano CL, Khawashki HA, Benzakour T et al (2019) The W.A.I.O.T. definition of high-grade and low-grade peri-prosthetic joint infection. *J Clin Med* 8(5): pii: E650. doi: 10.3390/jcm8050650.

## 5 An observational study of temperature and thermal images of surgical wounds for detecting delayed wound healing within four days after surgery

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

- At present, the nursing assessment of surgical wounds within the initial 4 days after surgery is commonly based on both visual and physical examinations. Should signs, such as redness or exudate, not be exhibited within 4 days after surgery, then surgical wounds with delayed healing may be not detected.
- The authors undertook an observational study to clarify the infrared thermal patterns and temperature readings of surgical wound surfaces for detecting delayed wound healing within 4 days, post-surgery. A prospective observational design with

reference to the Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) Statement was used by the authors to examine the temperatures of surgical wounds in their normal settings.

- For this study, 60 participants that were admitted to the colorectal surgical ward for enterostoma closure between January 2013 and November 2013 were included, based on convenience sampling. The infected wounds encountered revealed a statistically significantly lower temperature than the non-infected wounds.
- It was concluded that delayed wound healing can be detected within the first 4 days, post-surgery, enabling early intervention before discharge.

Siah CR, Childs C, Chia CK, Cheng KFK (2019) An observational study of temperature and thermal images of surgical wounds for detecting delayed wound healing within four days after surgery. *J Clin Nurs* 28(11-12):2285-2295

## 6 Skin hydration level as a predictor for diabetic wound healing: a retrospective study

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

- A common disorder in patients with diabetes, xerosis, is defined as abnormal skin dryness and scaling. Due to the skin cracking, the possibility of bacterial entry increases, thus raising vulnerability to ulceration and infection. The authors deemed that maintaining adequate skin hydration may be vital for diabetic wound healing.
- This retrospective study set out to determine and compare the effect of the skin hydration level on diabetic wound healing with the tissue oxygenation level — the latter is recognised as the most reliable factor in predicting diabetic wound healing.
- This study included 263 people with diabetes with forefoot ulcers and skin hydration and transcutaneous oxygen pressure (TcPO<sub>2</sub>) data was collected before and after percutaneous transluminal angioplasty (PTA). Skin hydration and tissue oxygenation were deemed 'poor', 'moderate' or 'acceptable', while wound healing outcomes were 'healed without amputation', 'minor amputation' or 'major amputation'. Wound healing outcomes were also compared for skin hydration at baseline, TcPO<sub>2</sub> at baseline, skin hydration post-PTA and TcPO<sub>2</sub> post-PTA. Each of these four parameters displayed statistically significant correlations with wound healing outcomes.
- Skin hydration level may prove to be a useful predictor for diabetic wound healing. Skin hydration level before recanalisation was found to be superior to TcPO<sub>2</sub> for predicting wound healing.

Lee TY, Kim KB, Han SK et al (2019) Skin hydration level as a predictor for diabetic wound healing: a retrospective study. *Plast Reconstr Surg* doi: 10.1097/PRS.0000000000005474. [Epub ahead of print]