

## 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 Sub-epidermal moisture assessment as an adjunct to visual assessment in the reduction of pressure ulcer incidence

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

- The aim of this study was to determine the effectiveness of sub-epidermal moisture (SEM) assessment technology as an adjunct to visual assessment to reduce pressure ulcer (PU) incidence when used alongside standard PU care pathways.
- Data from wards located within 28 healthcare facilities in the UK, Canada, Belgium, Spain and Ireland were used to test the central premise of the meta-analysis and the number of scanned patients who had one or more category 2 or above PUs during a pre-Pressure Ulcer Reduction Programme (PURP) implementation period between November 2017 and July 2018 was recorded.
- In addition, those scanned patients who were observed to have one or more PUs of Category 2 or above during a post-PURP implementation period between November 2018 and July 2019 was also recorded.
- A synthesised estimate of the overall relative risk (RR) was 0.38 (95% confidence interval 0.26 to 0.56). This translated to a risk of PU in the post-PURP cohort that was around one-third that of the corresponding risk in the pre-PURP cohort.
- The meta-analysis showed strong evidence that PURP implementation was associated with a reduction in the incidence of PUs that were category 2 or above across a range of clinical settings in numerous countries.

Ousey K, Stephenson J, Blackburn J (2022) Sub-epidermal moisture assessment as an adjunct to visual assessment in the reduction of pressure ulcer incidence. *J Wound Care* 31(3): 208–16

### 2 The panniculus carnosus muscle: a missing link in the chronicity of heel pressure ulcers?

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

- The authors sought to examine the panniculus carnosus — a thin cutaneous muscle, traditionally considered non-functioning in humans — and ask whether the panniculus may play a role in the chronicity and reinjury of heel PUs.
- Eight cadavers were dissected to determine whether humans have a panniculus muscle layer at the heel and the influence of the

panniculus layer on pressure ulcers (PUs) was assessed through computational simulations of supine weight bearing. Panniculus regeneration in fluorescent mice was also assessed.

- The results of the study showed that there was a panniculus layer present in all of the cadavers examined. A thin layer of panniculus muscle causes a decrease in the volume of soft tissue experiencing high strain and stress, compared to a heel without a panniculus, simulations showed. In the mouse model, meanwhile, the panniculus fails to regenerate after PU, even though other cutaneous layers had fully regenerated.
- The authors concluded that the panniculus is able to redistribute load around the heel bone, which could allow it to prevent PUs. In addition, the panniculus is highly susceptible to incomplete regeneration after PU.

Nasir NJM, Corrias A, Heemskerck H et al (2022) The panniculus carnosus muscle: a missing link in the chronicity of heel pressure ulcers? *J R Soc Interface* 19(187): 20210631

### 3 What is the impact of skincare bundles on the development of skin tears in older adults? A systematic review

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

- The authors explored the impact of skincare bundles on the development of skin tears in older adults ( $\geq 65$  years) through a systematic search of publications using MEDLINE, CINAHL and Cochrane databases that was conducted in July 2020. The studies were conducted between 2003 and 2015.
- Data were extracted using a pre-designed extraction tool, and a narrative analysis was carried out. The evidence-based librarianship (EBL) checklist examined the methodological quality of the included studies.
- Seventy-one records were returned, with seven satisfying the inclusion criteria. More than half (57%,  $n=4$ ) of these employed a pre-post study design. A total of 155 participants ( $SD = \pm 117.6$ ) were the mean sample size.
- All the included studies identified that there was a direct relationship between the use of skincare bundles and a reduction in skin tear incidence in older people. The EBL scores varied between 65% and 91%. Six of the studies (85.7%) of the studies scored  $\geq 75\%$ , reflecting validity.
- The connection between skincare bundles and a reduction of the number of skin tears in the older population ( $\geq 65$  years) was highlighted in this systematic review. The authors suggested that further research with larger sample sizes and longer study duration

were required to validate these findings.

Al Khaleefa N, Moore Z, Avsar P et al (2022) What is the impact of skincare bundles on the development of skin tears in older adults? A systematic review. *Int J Older People Nurs* e12455

## 4 Wound irrigation using wet gauze may reduce surgical site infection following laparoscopic appendectomy

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

- This aim of this study was to compare the perioperative outcomes of wet gauze and conventional irrigation after patients underwent laparoscopic appendectomy with the ultimate purpose of determining whether or not wet gauze irrigation can help reduce surgical site infection (SSI).
- Three-hundred and eight patients undergoing laparoscopic appendectomy between December 2018 and May 2020 were included in the study. A total of 132 (42.9%) individuals received gauze irrigation (group 1), while 176 patients (57.1%) received conventional irrigation (group 2).
- Pre-operative outcomes and complications, including SSI, were compared after propensity score matching (PSM) to adjust for baseline differences and selection bias and after 1:1 PSM, 92 well-matched individuals in each group were evaluated.
- The rate of severe complications (Clavien-Dindo Classification grades III, IV, and V), operative time and readmission rate was found not to differ between the groups. Superficial/deep SSIs were more frequently experienced in group 2 (8/92 cases) compared to group 1 (1/92 cases;  $P=0.017$ ).
- Wound irrigation using wet gauze after fascia closure was found to have a beneficial impact on reducing post-operative superficial/deep SSI following laparoscopic appendectomy.

Al-Sawat A, Yeon Mun J, Hoon Yoon S, Seung Lee C (2022) Wound irrigation using wet gauze may reduce surgical site infection following laparoscopic appendectomy. *Front Surg* 9: 813738

## 5 Frequency rhythmic electrical modulation system (FREMS) to alleviate painful diabetic peripheral neuropathy: a pilot, randomized controlled trial (The FREMSTOP study)

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

- Frequency Rhythmic Electrical Modulated System (FREMS) is a non-invasive treatment for chronic pain conditions but little is known about its role in treating diabetic peripheral neuropathy (PDPN).
- A randomised controlled trial assessing people with PDPN

who had been inadequately controlled on at least dual neuropathic pain treatments and had been receiving primary and secondary care.

- There were 25 participants in the study and after randomising, 13 received FREMS and usual care, 12 received usual care. Primary outcome was change from baseline in perceived pain (assessed by visual analogue scale) at 12 weeks between groups.
- There were significant improvements in pain management in the FREMS group, assessed by the McGill Pain questionnaire ( $P=0.042$ ) and the Douleur neuropathique-4 questionnaire ( $P=0.042$ ). FREMS group participants had benefits in terms of quality of life, sleep, depression and pain medication use, but none were statistically significant.
- FREMS may be used to treat PDPN that is inadequately controlled on two classes of neuropathic pain medications and linked to improvements in pain severity and perceived impact of treatment.

Crasto W, Altaf Q-A, Selvaraj DR et al (2021) Frequency rhythmic electrical modulation system (FREMS) to alleviate painful diabetic peripheral neuropathy: a pilot, randomized controlled trial (The FREMSTOP study). *Diabet Med* e14710 [Online ahead of print]

## 6 Contribution of peripheral neuropathy to poor bone health in the feet of people with type 2 diabetes mellitus

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

- The authors evaluated the impact of peripheral neuropathy (PN) on bone health in people with type 2 diabetes mellitus (T2DM).
- Patients with T2DM were assessed for PN by vibration perception threshold (VPT), while bone health was measured by calcaneal quantitative ultrasound (QUS) and compared between the two groups. Thirty-four participants (17 in each group) were included and the PN group had significantly lower mean Stiffness Index ( $87 \pm 12$  versus  $101 \pm 16$ ,  $P=0.01$ ), speed of sound ( $1,542 \pm 28$  versus  $1,574 \pm 34$  m/s,  $P<0.01$ ) and a trend towards lower broadband ultrasound attenuation ( $113 \pm 10$  versus  $120 \pm 12$  dB/MHz,  $P=0.07$ ).
- Pedal bone health asymmetry was not found to be a significant feature in those patients with PN. Broadband ultrasound attenuation showed independent negative correlation with diabetes duration. All calcaneal QUS parameters correlated negatively with VPT.
- Poorer bone health (as measured by calcaneal QUS) was found in those with T2DM and PN than those without peripheral neuropathy, independent of age, sex and BMI.

Lasschuit JWJ, Greenfield JR, Tonks KTT (2021) Contribution of peripheral neuropathy to poor bone health in the feet of people with type 2 diabetes mellitus. *Acta Diabetol* 1-8 [Online ahead of print]