

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 How influential is the stiffness of the foam dressing on soft tissue loads in negative pressure wound therapy?

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

- Despite the fact that negative pressure wound therapy (NPWT) is now an established adjunctive modality for acute and chronic wounds treatment, little is known about its optimal settings. In addition, there is also a gap in knowledge regarding how optimal settings work in tandem with treatment parameters.
- The authors decided to determine the effectiveness of the stiffness of the foam dressing on soft tissue loads in NPWT by using a three-dimensional open wound computational model. The model includes: viscoelastic skin, adipose and skeletal muscle tissue components used to determine the states of tissue strains and wound stresses when NPWT is used with foam dressings of varying stiffnesses.
- It was found that skin strain state is significantly more sensitive to the pressure level of the NPWT when compared to the stiffness of the foam dressing within a 8.25 to 99 kPa range.
- It was concluded that an adjustment to the pressure level rather than varying the stiffness of the foam dressing, can effectively control the periwound skin strains and stresses that stimulate cell proliferation/migration and angiogenesis and, thereby, healing of the wound.

Gefen A, Orlov A (2021) How influential is the stiffness of the foam dressing on soft tissue loads in negative pressure wound therapy? *Med Eng Phys* 89: 33–41

2 Increasing competence in compression therapy for venous leg ulcers through training and exercise measured by a newly developed score - results of a randomised controlled intervention study

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

- Compression therapy using short-stretch bandages has become the most common treatment option for individuals with venous leg ulcers in the decongestion phase in Germany. A randomised controlled trial was undertaken to decipher whether or not a training regimen can be used to sustainably improve the skills of healthcare professionals.
- A total of 55 nurses participated in the study and were randomly assigned to either the case or control group. The ability level

of the nurses in terms of to properly applying compression bandaging was assessed before and after a training session as well as after 1 and 3 months. Their ability was assessed using a newly developed score (CCB score) based on six control parameters (CPs): padding, starting point, heel inclusion, heart direction, pressure at forefoot (A) and calf base (B1).

- A significant increase was found among the nurses in competence was observed after training. The average CCB score was found to be 2.796 at V0, 4.89 at V1, 4.88 at V2, and 4.66 at V3. The CPs for pressure at A and B1 came in at 42.6% and 43.6%, respectively.
- Training was, therefore, found to improve the ability of nurses to apply compression bandaging, although one-off training was not found to be suitable to improve the ability to apply compression bandaging with a therapy-relevant pressure.

Protz K, Dissemond J, Karbe D et al (2021) Increasing competence in compression therapy for venous leg ulcers through training and exercise measured by a newly developed score-Results of a randomised controlled intervention study. *Wound Repair Regen* doi: 10.1111/wrr.12899. [Online ahead of print]

3 A prospective, randomized, controlled, crossover study comparing three multilayered foam dressings for the management of chronic wounds

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

- The aim of this prospective, randomised, controlled trial was to compare the role of three multilayered foam dressings — Mepilex Border Flex (Mölnlycke Health Care; MxBF), Allevyn Life (Smith & Nephew; AL) and Optifoam Gentle EX (Medline; OGEX) — in the treatment of chronic wounds.
- The study saw the individuals receive one dressing for 2 weeks, followed by a comparator dressing for the next 2 weeks, with wound/periwound characteristics evaluated weekly at dressing change.
- A higher incidence of intact dressings (no strikethrough) was found at day 7 with MxBF (6 out of 17 participants; 35.3%) compared with AL (1 in 18 participants; 5.6%), as well as MxBF (7 of 16 participants; 43.8%) compared with OGEX (2 out of 16 participants; 12.5%; $p < 0.05$).
- No significant differences were found between the groups in terms of a reduction in wound size. In conclusion, MxBF had statistically greater durability than AL/OGEX during week one of treatment.

Alvarez OM, Granick MS, Reyzelman A, Serena T (2021) A prospective, randomized, controlled, crossover study comparing three multilayered

foam dressings for the management of chronic wounds. *J Comp Eff Res* doi: 10.2217/cer-2020-0268. [Online ahead of print]

4 A state-of-the-art review of factors that predict mortality among traumatic injury patients following a road traffic crash

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

- Millions of people die each year across the globe as result of traffic related injuries. The aim of this review was to identify the literature-identified factors associated with mortality for trauma patients following road traffic crashes.
- The authors undertook a systematic search of the PubMed/MEDLINE, EMBASE, CINAHL, Web of Science, and Cochrane Library databases with the objective to find all articles published between 2000 and 2020. Of the 8,257 studies found, 4,507 were eligible remained for title, abstract and full text screening after duplicates were removed. The evidence level of the selected studies was then assessed using The National Health and Medical Research Council (NHMRC) guideline.
- Eighty primary research studies that examined mortality risk factors following a road traffic crash were included in this study. Five categories were then identified in these studies. These were: demographic factors; behavioural factors; crash characteristics; environmental and timing factors; and injury severity and pre-injury/condition.
- A large number of factors were found to be associated with an increased mortality risk following diverse types of traffic crashes. Strengthening understanding of these diverse factors can help improve injury and mortality.

Alharbi RJ, Lewis V, Miller C (2021) A state-of-the-art review of factors that predict mortality among traumatic injury patients following a road traffic crash. *Australas Emerg Care* S2588-994X(21)00005-1. doi: 10.1016/j.auec.2021.01.005. [Online ahead of print]

5 Risk factors for leg ulceration in people who inject drugs: a cross-sectional study

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

- The authors set out to assess the risk factors for leg ulceration among a hard-to-reach population, namely, people who inject drugs (PWID), with the aim to improve prevention and care in this hard-to-reach population.
- Damage to skin and veins as a result of drug injection is on the increase. Given that an estimated 4.8 million people inject drugs globally, this is a large problem. In the UK, leg ulceration is a

chronic condition that has a prevalence of 15% among PWID, in contrast to 1% in the general population.

- Glasgow has the highest rate of problematic drug use in Scotland (approximately 13,900 individuals). The reasons for high prevalence of leg ulceration among PWID are currently unknown, however. This study set out to address this gap in the literature.
- A total of 200 current and former PWIDs in Glasgow were recruited for the study. Skin problems, leg ulceration and injecting habits were measured following STROBE guidelines. It was then determined whether or not demographics and injecting habits predicted leg ulceration, using logistic regression modelling.
- For those who injected in the groin and the leg, the likelihood of leg ulceration was increased. Furthermore, injection in the groin and leg were also associated with having a deep-vein thrombosis.
- In conclusion, clinicians should advise PWID of the increased risk of leg ulceration and DVT when injecting, as well as dissuading the practice.

Coull AF, Kyle RG, Hanson CL, Watterson A (2021) Risk factors for leg ulceration in people who inject drugs: a cross-sectional study. *J Clin Nurs* doi: 10.1111/jocn.15716. [Online ahead of print]

6 Systematic review and meta-analysis of the efficacy of Unna boot in the treatment of venous leg ulcers

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

- The effectiveness of the Unna boot when used in the treatment of venous leg ulcers (VLUs) was assessed through a systematic review. The authors conducted a literature search of studies published between August 2019 and February 2020 using the PubMed, PubMed/PMC, BVS/BIREME, CINAHL, Web of Science, MEDLINE, Embase, Cochrane, ProQuest, BDTD, CAPES Thesis and Dissertation, OPEN THESIS, Centre for Reviews and Dissemination and SciELO databases.
- Eligible studies were judged to be primary studies, controlled clinical trials, quasi-experimental studies or observational studies (cross-sectional studies or cohort studies).
- These were whittled down to eight articles, while six articles were included in the meta-analysis. The results suggested there was a moderate degree of evidence that there is no significant difference in the healing rates of VLUs when using the Unna boot.

Paranhos T, Souza Bosco Paiva C, Cassia Israel Cardoso F et al (2021) Systematic review and meta-analysis of the efficacy of Unna boot in the treatment of venous leg ulcers. *Wound Repair Regen* doi: 10.1111/wrr.12903. [Online ahead of print]