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 Hospital-acquired pressure injuries in children with congenital heart disease: prevalence and associated factors

Readability	✔	✔	✔	✔	
Relevance to daily practice	✔	✔	✔	✔	✔
Novelty factor	✔	✔	✔		

- The authors sought to investigate the factors associated with hospital-acquired pressure injuries among paediatric patients with congenital heart disease, be they prevalence, location or clinical. Secondary analysis of the data retrieved from a multicentre (eight acute care academic paediatric hospitals) prospective cohort study of paediatric pressure injury risk was carried out. These patients were appraised for as many as eight observations during a 4-week period, in order to identify Braden QD risk and pressure injury development.
- A total of 279 paediatric cardiac patients provided 919 observations (the median was two per patient) and 38 hospital-acquired pressure injuries occurred in 27 patients (9.7%) with most of these (28/38 [74%]) relating to medical devices. The other 26% of hospital-acquired pressure injuries were immobility-related (10/38), located primarily on the buttock, sacrum or coccyx.
- The factors most associated with the development of pressure injuries following multivariable analyses, were being non-Hispanic white (odds ratio, 3.54; 95% CI, 2.15-5.84), encountering operating room time greater than 4 hours (odds ratio, 2.91; 95% CI, 1.13-7.49), having oxygen saturation levels less than 85% (odds ratio, 2.65; 95% CI, 1.01-6.96), and also having worse Braden QD scores (odds ratio, 1.25 per 1 point increase; 95% CI, 1.17-1.34).
- This study of paediatric patients with congenital heart disease showed a hospital-acquired pressure injury prevalence of 9.7% with approximately 75% of injuries related to medical devices. The study results can be used to influence practice and target interventions to decrease the risk of pressure injuries in this vulnerable population.

Kulik LA, Hasbani NR, Stellar JJ et al (2019) Hospital-acquired pressure injuries in children with congenital heart disease: prevalence and associated factors. *Pediatr Crit Care Med* doi: 10.1097/PCC.0000000000002077. [Epub ahead of print]

2 New clinically relevant method to evaluate the life span of prophylactic sacral dressings

Readability	✔	✔	✔	✔	
Relevance to daily practice	✔	✔	✔	✔	
Novelty factor	✔	✔	✔		

- An innovative method was established by the authors to simulate the loading, friction-inducing shear, and moisture transpiration present in a typical hospitalisation where a prophylactic sacral dressing is applied, owing to the fact that no method currently exists to measure either the lifespan or performance of dressings used in prevention.
- The structural and mechanical changes that occur in the properties of a prophylactic dressing based on conditions of use when no wound exudate is present were examined in this article. Single-use dressings were tested using the method created by the authors to evaluate their ability to protect patients from pressure injuries during 5 to 7 days of use. The physical, structural and mechanical changes in prophylactic dressings were assessed over time.
- The method used by the authors provides guidance for clinicians on dressing use and replacement intervals, while bioengineers will benefit from important empirical data for computer modelling of dressing performance. The authors hope to initiate a discussion regarding industry-wide standards for testing dressings in a bid to improve patient care.

Burton JN, Fredrickson AG, Capunay C et al (2019) New clinically relevant method to evaluate the life span of prophylactic sacral dressings. *Adv Skin Wound Care* 32(7S Suppl 1): S14–S20

3 Effects of a surfactant-based gel on acute and chronic paediatric wounds: a panel discussion and case series

Readability	✔	✔	✔	✔	
Relevance to daily practice	✔	✔	✔	✔	
Novelty factor	✔	✔	✔		

- A closed panel meeting was held on November 20, 2018, to discuss the use of a surfactant-based gel (PluroGel, Medline Industries) in paediatric wound care, following the International Society for Paediatric Wound Care conference.
- The panel shared their experiences, thoughts, experimental data and clinical results, identifying the gap in the market for a product that can gently cleanse paediatric wounds, promote healing and remove devitalised tissue, without causing discomfort or skin reactions.
- Plurogel has been found to assist healing by hydrating the wound, regulating exudate and debriding non-viable tissue. No adverse effects on proliferating cells were observed by the authors. The product was also found, via *in vitro* data, to remove biofilm, as well as potentially promote healing through the process of cell salvage.
- The panel discussed their experiences of using Plurogel with paediatric patients, aiming to establish a consensus on the indications for its use and application in the paediatric population.

Kirsner RS, Amaya R, Bass K et al (2019) Effects of a surfactant-based gel on

acute and chronic paediatric wounds: a panel discussion and case series. *J Wound Care* 28(6): 398–408

4 Education in people with venous leg ulcers based on a brochure about compression therapy: a quasi-randomised controlled trial

Readability	✔	✔	✔	✔	
Relevance to daily practice	✔	✔	✔	✔	
Novelty factor	✔	✔	✔	✔	

- The authors highlight that there is growing evidence that brochures are an effective way to provide support for patients, in terms of satisfaction, adherence and empowerment. This study was designed to produce reliable data on the extent to which patients with venous leg ulcers (VLUs) may benefit from information provided in brochure form.
- This evaluation took place between October 2018 and March 2019, including 136 patients with VLUs and related compression therapy. These patients were randomly allocated into a case group and a control group (68 patients in each group). A brochure was provided to the patients in the case group related to venous disease and compression therapy, while the brochure was not shown to the control group, and they were all required to fill out a questionnaire after reading the brochure.
- Questions on the questionnaire related to topics such as basic VLU knowledge with compression therapy and aspects of self-care. In almost every aspect of the questionnaire, the case group patients were better informed about their condition, compression therapy, and how they could support the measures adequately.
- In conclusion, the results of the study are suggestive of the fact that patients with VLUs may benefit from a brochure explaining their disease and compression therapy, which should improve understanding and, therefore, ultimately strengthen their empowerment and adherence.

Protz K, Dissemond J, Seifert M et al (2019) Education in people with venous leg ulcers based on a brochure about compression therapy: a quasi-randomised controlled trial. *Int Wound J* doi: 10.1111/iwj.13172. [Epub ahead of print]

5 Necrotising fasciitis or pyoderma gangrenosum: a fatal dilemma

Readability	✔	✔	✔	✔	
Relevance to daily practice	✔	✔	✔	✔	
Novelty factor	✔	✔	✔	✔	✔

- This study sought to emphasise the importance of diagnosing necrotising fasciitis and pyoderma gangrenosum, with the former mostly a polymicrobial, severe soft tissue infection, which rapidly progresses, penetrating through the subcutaneous tissue to the fascial planes and the muscles, while the latter is a rare, rapidly progressive, autoinflammatory ulcerative skin and soft tissue condition.
- Standard features do exist between the two clinical presentations, although clinicians should be aware of different symptoms between the two, in order to decrease the mortality rate. Between January 2008 and October 2018, 45 patients with necrotising fasciitis and pyoderma gangrenosum were included in the study. These patients were evaluated retrospectively for a range of factors, such as sex, age localisation, onset of symptoms and diagnosis, predisposing factors, laboratory findings and mortality rate.
- Of these 45 patients, 14 patients had pyoderma gangrenosum, while 31 patients had necrotising fasciitis. The Laboratory Risk Indicator for Necrotizing Fasciitis (LRINEC) scores of the necrotising fasciitis patients were compared with those of the pyoderma gangrenosum patients. The mean value of the LRINEC score was 4.53 for the pyoderma gangrenosum patients and 6.06 for the necrotising fasciitis patients. The study underlined the importance of differential diagnosis and rapid treatment to lower the mortality rate, due to the two conditions being difficult to distinguish.

Demirdover C, Geyik A, Vayyada H (2019) Necrotising fasciitis or pyoderma gangrenosum: a fatal dilemma. *Int Wound J* doi: 10.1111/iwj.13196. [Epub ahead of print]

6 Hypertension contributes to neuropathy in patients with type 1 diabetes

Readability	✔	✔	✔		
Relevance to daily practice	✔	✔	✔		
Novelty factor	✔	✔	✔		

- Foot ulceration and amputation are both potential offshoots of diabetic peripheral neuropathy (DPN). This study set out to determine whether or not hypertension contributes to DPN in patients with type one diabetes.
- A comprehensive assessment of DPN was undertaken by the researchers in 70 subjects with type one diabetes and 78 controls. Whereas hypertension was found to be present in 40 of the 70 subjects with type one diabetes, it was discovered in 20 of 78 controls.
- The authors associated hypertension in the people with type one diabetes with abnormal nerve conduction parameters (P=0.03-<0.001), increased vibration perception threshold (P=0.01) and decreased corneal nerve fibre density and length (P=0.02). Once the findings were adjusted for confounding factors, tibial compound motor action potential and nerve conduction velocity were the only factors associated with hypertension (P=0.03) and systolic blood pressure (P<0.01-<0.0001).
- The authors concluded that hypertension is associated with impaired nerve conduction in individuals with type one diabetes. The study supports previous small trials that showed ACE inhibitors improving nerve conduction.

Ponirakis G, Petropoulos IN, Alam U et al (2019) Hypertension contributes to neuropathy in patients with type 1 diabetes. *Am J Hypertens* doi: 10.1093/ajh/hpz058. [Epub ahead of print]