

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 Australian nursing students' knowledge and attitudes towards pressure injury prevention: a cross-sectional study

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

- The study's aim was to determine the level of student nurses' pressure injury prevention evidence-based guidelines knowledge and attitudes across five Australian states (New South Wales, Queensland, Tasmania, Victoria and Western Australia).
- Underpinning the study was the knowledge that pressure injuries continue to pose many problems both to patients and in terms of costs in many healthcare settings, while appreciating that the role of nurses in the prevention of such wounds is crucial.
- Due to the fact that pressure injuries pose such a problem in a range of healthcare settings, the authors decided to conduct a multi-centred, cross-sectional study, which employed paper-based questionnaires that were distributed to undergraduate nursing students enrolled in a total of seven campuses within five aforementioned Australian states.
- Data were then collected using both the Pressure Ulcer Knowledge Assessment Instrument and Attitude Toward Pressure Ulcer Prevention Instrument to effectively measure the student nurses' knowledge and attitudes concerning pressure injury prevention.
- Although high attitude scores were found (78%), the students scored relatively low in terms of their pressure injury prevention knowledge (51%). The questionnaire determined that, specifically, there were knowledge gaps around preventative strategies related to pressure and shear.
- In conclusion, there is a need to establish a comprehensive strategy targeting knowledge of pressure injury prevention and management in student nurses in Australia, promoting sufficient experience working in clinical units.

Usher K, Woods C, Brown J et al (2018) Australian nursing students' knowledge and attitudes towards pressure injury prevention: a cross-sectional study. *Int J Nurs* 81: 14–20

2 Early laser intervention to reduce scar formation: a systematic review

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

- Although there has been evidence in the literature in recent years of the use of laser treatment for wound healing and minimising scar formation, as yet there has been a lack of systematic reviews linking clinical trials. The authors aimed to conduct a systematic review and

evaluation of clinical evidence regarding early laser intervention in the reduction of scar formation with the laser treatment being instigated less than 3 months after a wound occurred.

- A PubMed search was conducted in June 2017. The search of titles, abstracts and articles were then organised through specific inclusion and exclusion criteria. A Cochrane Collaborations risk-of-bias assessment guideline was devised by two independent authors and was used to evaluate methodological quality.
- A total of 25 articles were deemed to be sufficient on meeting inclusion criteria. Twenty-two were controlled studies and 17 of these centred on comparisons between laser treatment and untreated control scars. Laser devices found in the search studies included: pulsed-dye laser (PDL) laser, potassium-titanyl-phosphat (KTP) laser, fractional Erbium:Glass 1540 nm/1550 nm, fractional/full-ablation erbium-doped-yttrium-aluminium-garnet (Er:YAG) laser, and fractional CO₂-laser.
- Of the 25 studies, 18 of these saw laser treatment initiated between two and four times at 2–8-week intervals, while the other seven studies saw laser treatment used just once. Meanwhile, follow up times ranged from between 1–12 months.
- In conclusion, the literature review showed that treatment with lasers benefitted wounds and scars in all studies, but significant improvements in scar improvement were only found in three of four studies focusing on the inflammation phase, six of 16 studies in the proliferation phase, and two in five studies in the remodelling phase.

Karmisholt K, Haerskjold A, Karlsmark T et al (2018) Early laser intervention to reduce scar formation: a systematic review. *J Eur Acad Dermatol Venereol* doi: 10.1111/jdv.14856. [Epub ahead of print]

3 Role of plasma growth factor in the healing of chronic ulcers of the lower legs and foot due to ischaemia in diabetic patients

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

- The aim of this study was to establish the role of plasma growth factor in regards to healing ischaemic diabetic foot ulcers, following previous angioplasty of lower leg and foot blood vessels as this treatment has been found to be responsible for the proliferation of smooth muscle cells and fibroblasts, thus decreasing treatment times.
- A total of 50 individuals with ischaemic diabetic foot that had been complicated by lower leg ulcers in which an angioplasty had been performed of the stenotic arteries in the distal lower leg and foot were included in the study group.
- Once surgical debridement had been initiated, patients then had dressings applied to their ulcers comprising platelet-rich plasma, and then a hydrocolloid dressing was applied. Dressings were changed after

10 days, with the procedure repeated after 20 and 30 days. In the control group, 50 patients had their wounds treated with hydrocolloid dressings following surgical debridement.

- All wounds encountered in the study group healed after 3 months of combined treatment, while only the smallest wounds in the control group reached full healing. In conclusion, healing time shortened following a treatment of ischaemic diabetic foot syndrome with platelet-rich plasma dressings after an endovascular procedures to re-establish blood flow to the vessels.

Milek T, Baranowski K, Zydlewski et al (2017) Role of plasma growth factor in the healing of chronic ulcers of the lower legs and foot due to ischaemia in diabetic patients. *Postepy Dermatol Alergol* 34(6): 601–6

4 Proactive and early aggressive wound management: a shift in strategy developed by a consensus panel examining the current science, prevention, and management of acute and chronic wounds

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

- Chronic wounds are described as not progressing through the four stages of healing in a normal manner. A consensus panel assembled to create a set of key principles relating to the basic science of chronic wound pathophysiology with a focus on biofilms and metalloproteinases and their impact on wound healing in order to educate clinicians. In addition, the consensus panel attempted to establish a systematic strategy for preventing and healing acute and chronic wounds.
- The panel created an algorithm that focuses on proactive management and early aggressive management of wounds, representing a strategy shift. This strategy enables adjunct therapies to be used pre-emptively on acute wounds with an emphasis on decreasing wound duration, as well as chronicity risk.
- It was determined that early aggressive wound management should be carried out to break the pathophysiology cycle of existing chronic wounds, thus propelling them towards wound healing. The panel also recommended that bioburden can be reduced through debridement, while collagen dressings should be used to balance protease activity ahead of using advanced modalities.
- The panel's early aggressive wound management strategy is, therefore, endorsed in patients at a high risk of experiencing a chronic wound and it was established that these wound care experts use the strategy in their own practice.

Bohn GA, Schultz GS, Liden BA et al (2017) Proactive and Early Aggressive Wound Management: A Shift in Strategy Developed by a Consensus Panel Examining the Current Science, Prevention, and Management of Acute and Chronic Wounds. *Wounds* 29(11): S37–S42

5 Micrografting chronic lower extremity ulcers with mechanically disaggregated skin using a micrograft preparation system

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

- A new standardised micrograft preparation system called the Rigenera system operates by automated mechanical disaggregation of small tissue samples, with only the smallest cells extracted. This study retrospectively evaluated patients with chronic ulceration treated with a micrograft preparation method.
- Fifteen patients with chronic ulcers partook in the study (11 females and four males with a mean age of 72.2±8.41 (mean±standard deviation) with specimens collected with a 3mm diameter biopsy punch and then immediately dissociated by the Rigenera System. The obtained suspension was then placed on an equine collagen scaffold.
- Seven patients' ulcers were associated with diabetes, three diabetic patients were post-traumatic, one patient had vasculitis and the other four patients had venous leg ulcers. The median estimated area of the ulcers was 43.96cm², while the median main diameter was 5.0cm. By the second week, wound reduction was 37.33%±19.35%, at week eight, 60% (n=9) of ulcers were healed and by week 16, 86.7% (n=13) of wounds were healed.
- The approach was praised by the authors for its simplicity, as well as the quality of scarring, the minimal invasiveness of the specimen collection, combining to lead to the conclusion that micrograft preparation is a useful tool for use on large or complex wounds.

Miranda R, Farina E, Farina MA (2018) Micrografting chronic lower extremity ulcers with mechanically disaggregated skin using a micrograft preparation system. *J Wound Care* 27(2) 60–5

6 Venous leg ulcer management in clinical practice in the UK: costs and outcomes

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

- Patterns of care and yearly levels of healthcare resources for the management of venous leg ulcers in clinical practice in the National Health Service (NHS) in the UK were examined in this study.
- A retrospective cohort analysis was conducted of 505 patient records in The Health Improvement Network (THIN) Database in the NHS. These patients were mainly managed in the community. The variables quantified were patient characteristics, wound-related health outcomes and healthcare resource use, with the total cost of patient management in the NHS estimated at 2015/2016 prices.
- A total of 53% of all venous leg ulcers fully healed within a 12-month period with mean healing time put at 3 months. It was found that 13% of these patients never received compression with 78% of these patients having healed wounds. Of the remaining 87% who did receive compression, 52% of wounds healed. Over the course of 12 months, the estimated cost of treating a venous leg ulcer was £7,600.
- Only 22% of patients had an ankle brachial pressure index documented in their patient records and up to 30% of the venous leg ulcers may have been clinically infected at presentation. The costs associated with managing an unhealed venous leg ulcer was found to be 4.5 times higher than managing a healed venous leg ulcer (£13,500 compared with £3,000, respectively).
- The study can be used to inform NHS policy and budgetary decisions, shedding light on key aspects of the management of venous leg ulcers in clinical practice.

Guest JF, Fuller GW, Vowden P (2018) Venous leg ulcer management in clinical practice in the UK: costs and outcomes. *Int Wound J* 15(1): 29–37