Wounds digest

In this section, a brief synopsis is presented of a range of recently published articles that may be of interest to health 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 Infection in burns patients in a referral center in Colombia

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

- Burns are responsible for more than 300,000 deaths across the world per annum and, in these patients, infection is a key cause of morbidity and mortality; the early identification and treatment of infection is, therefore, very important in improving outcomes.
- Clinicians at the University Hospital of Santander, Spain, sought to characterise the infections developed by burn patients at the facility between January and December 2014. Medical information relating to infections, laboratory and pathology reports were obtained.
- A total of 402 patients with burns were included in the study, 234 (58.2%) of which were men and 168 (41.8%) were women, while ages ranged between 6 days and 83 years (median age 12.5 years). Burn areas ranged from 1% to 80% of the total body surface area.
- Cumulative mortality was 1.5% and 27.8% of the patients with burns had one or more infections. These infections were as follows (in order): folliculitis (27.0%), urinary tract infection (19.0%), infection of the burn wound (10.4%), pneumonia (8.6%), central venous catheter (7.4%), bloodstream infection (7.4%) and skin grafts infection (4.3%), with unspecified others accounting for the remaining 15.9%.
- In 88.5% of cases, bacteria were found to be responsible for infection, with fungi accounting for the other 11.5%. Further investigation showed that *P. aeruginosa, A. baumannii, E. coli, S. aureus* and *K. pneumonia* were the most frequently isolated germs. Most of the Gram-negative bacteria were treated with, and sensitive to, amikacin, while Gram-positive bacteria were sensitive to multiple antibiotics.
- With the burns patient at risk of numerous infections, an effective treatment is imperative. The authors of this article inferred the most common causative organisms and their antibiotic resistance, thus enabling a directed, early empiric treatment.

Ramirez-Blanco CE, Ramirez-Rivero CE, Diaz-Martinez LA, Sosa-Avila LM. Infection in burns patients in a referral center in Colombia. *Burns* 2017; S0305-4179(16)30218-2

2 Inter-rater and intra-rater reliability outcomes of a rapid bacteria counting system with pressure ulcer samples

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

- By using technologies to measure bacterial count, clinicians can better combat infection in pressure ulcers (PUs) through evaluating bacterial load.
- The authors sought to evaluate a new, rapid bacteria counting system using a cross-sectional study designed to evaluate the inter-rater and intra-rater reliability of bacterial count using this rapid counting system.
- The methods included taking bacterial swabs from patients with category I or greater PUs, in order to assess inter- and intra-rater reliability. After swabbing, bacterial counts were measured using the rapid bacteria counting system.
- Using 63 and 57 pairs of bacterial counts from 13 patients, inter- and intra-rater reliability were assessed, respectively. Overall intraclass correlation coefficients (95% confidence intervals (CI)) for the bacterial counts were found to be 0.83 [0.73-0.90, $p<0.001$, inter-rater reliability, n=63], and 0.89 [0.82-0.94, $p<0.001$, intra-rater reliability, n=57].
- The authors concluded that there was a high level of reliability for counting bacterial numbers in PU sites and they deduced that more clinicians should use this system for the real-time assessment of wound bacterial bioburden.

Nakagami G, Mori M, Yoshida M et al. Inter-rater and intra-rater reliability outcomes of a rapid bacteria counting system with pressure ulcer samples. *J Wound Care* 2017; 26(Sup 2): S27–S31

3 Hospital-acquired pressure injuries: The significance of the advanced practice registered nurse's role in a community hospital

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

- Hospital-acquired pressure injuries (HAPIs) are of particular concern in acute care. A retrospective comparison design study was designed to examine whether or not the introduction of nurse practitioners (NPs) — as wound care consultants (WCCs) without other interventions — had an impact on the HAPI rates in a community hospital.
- Forty-eight months'-worth of HAPI data (between May 2010-2014) reported on the monthly National Database for Nursing Quality Indicators (NDNQI) survey were abstracted from hospital records, which saw a total of 10,752 patients assessed. These 10,752 patient records were then split into two groups: 24 months before and 24 months after the NP hiring.
- An inverse correlation was discovered between the presence of NPs and number of patients with HAPIs ($r = -0.73$, $p < .01$). This

suggests that the rate of HAPIs was reduced significantly following the introduction of NPs as WCCs.

- The authors believe that the introduction of NPs in their leadership roles was instrumental in reducing HAPI rates — indeed, the odds of a HAPI occurring following the introduction of the WCCs were 20% of the odds prior to their introduction.

Irvin C, Sediak E, Walton C et al. Hospital-acquired pressure injuries: The significance of the advanced practice registered nurse's role in a community hospital. *J Am Assoc Nurse Pract* 2017; doi 10.1002/2327-6924.12440. [Epub ahead of print]

4 Prevention of tracheostomy-related hospital-acquired pressure ulcers

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

- The researchers set out to ascertain whether or not the standardisation of perioperative tracheostomy care procedures in an operating room reduced the incidence of hospital-acquired tracheostomy-related pressure ulcers.
- Any patient over the age of 18 undergoing the placement of a tracheostomy tube between July 1, 2014, and June 30, 2015, was treated under the same standardised care bundle, which adopted the following four steps: the placement of a hydrocolloid dressing underneath the tracheostomy flange in the postoperative period; the removal of plate sutures within seven days of the tracheostomy procedure; the placement of a polyurethane foam dressing after suture removal; and the neutral positioning of the head.
- A retrospective analysis was undertaken one year after the care bundle had been put in place with the percentage of tracheostomy patients who developed pressure ulcers compared to the pre-intervention period.
- There was a decrease of tracheostomy-related pressure ulcers from 20 out of 183 tracheostomies (10.93%) prior to use of the protocol to 2 out of 155 tracheostomies (1.29%). With a P value of 0.0003, chi-square analysis showed a significant difference between the two groups.
- With a significant reduction in the incidence of hospital-acquired tracheostomy-related pressure ulcers reported, the authors posited that the standardised posttracheostomy care bundle established at the institution level may result in the improved care of patients with tracheostomies, reducing pressure ulcer incidence.

O'Toole TR, Jacobs N, Hondorp B et al. Prevention of Tracheostomy-Related Hospital-Acquired Pressure Ulcers. *Otolaryngol Head Neck Surg* 2017; doi: 10.1177/0194599816689584. [Epub ahead of print]

5 Gunshot wounds resulting in hospitalization in the United States: 2004-2013

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

- Gunshot wound deaths in the US are higher than in all high-income countries, but there has been a dearth of studies in this area, according to the authors.
- An observational study of patients hospitalised for gunshot wound deaths was undertaken, using the National (Nationwide) Inpatient Sample (NIS) 2004 -2013. Certain specific details were observed related to mortality after admission, including sex, race, age, intent, severity of injury and weapon type.
- Approximately 30,000 people in the US are hospitalised for gunshot wounds per year, with 2,500 dying in hospital. Of this total, men are nine times more likely to be hospitalised as women, but are less likely to die. Twice as many black people are hospitalised as non-hispanic whites and 63% of gunshot wounds are as a result of an assault, which 'overwhelmingly' involve black people. Handguns are the most common weapon used to create the wound and these weapons have the highest mortality rate (8.4%).
- In conclusion, federally-funded research is required in order to develop effective interventions into the fact that hospitalisations resulting from assaults on young black males, as well as suicides among older non-hispanic white males, have both been a constant over the past decade.

Jun YJ, Shin D, Choi WJ et al. A Mobile Application for Wound Assessment and Treatment: Findings of a User Trial. *Int J Low Extrem Wounds* 2016; pii: 1534734616678522. [Epub ahead of print]

6 Re-organizing inpatient care saves legs in patients with diabetic foot infections

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

- The effects of a re-organisation of inpatient care for patients with diabetic foot infection (DFI) was evaluated in a retrospective cohort study, as was the establishment of a specialised multidisciplinary wound department at an academic tertiary hospital.
- The study comprised 272 patients treated for diabetic foot infections in 2006-2007 (group 1, n=124) and 2013-2014 (group 2, n=148). This was due to the fact that inpatient care of all chronic wounds was centralised at a single wound department with a multidisciplinary team in 2012.
- The incidence of hospitalised patients with a DFI rose 19% during the study period. Following the re-organisation, the below-the-knee amputation rate was significantly cut (25.8% vs. 9.5%, $p<0.001$). The median time from admission to surgical intervention decreased by 3 days to 2 days, and hospital stay was also reduced.
- Benefits associated with treating DFIs in a specialised wound department using a collaboration between different disciplines were highlighted in this study

Laakso M, Honkasalo M, Kiiski J et al. Re-organizing inpatient care saves legs in patients with diabetic foot infections. *Diabetes Res Clin Pract* 2017; 125: 39–46 [Epub ahead of print]