

A research roundup of recent papers relevant to wound care

This section brings together information found online and published in other journals about wound healing research. The aim of this roundup is to provide an overview, rather than a detailed summary and critique of the papers selected.

THE EFFECT OF DIRECTED MEDICAL PLAY ON YOUNG CHILDREN'S PAIN AND DISTRESS DURING BURN WOUND CARE

Moore E, Bennett K, Dietrich M, Wells N (2015) *Journal of Pediatric Health Care* 29(3): 265–73

This article describes the effect of directed play when used to reduce children's pain and distress during treatment at a burn clinic. The children were split into two groups: the first group received directed medical play with a child life specialist and the second received standard preparation with the clinic nurse to prepare for their first dressing change. Twenty-one girls and boys took part (12 in the play group and 9 in the standard group) in the study. Not surprisingly, the children in the medical play group experienced less distress during their dressing change. The standard care group reported a 2-point increase in pain during the procedure compared to baseline, whereas children who participated in medical play reported a 1-point increase using the FLACC pain assessment scale. Interestingly, parental anxiety was similar for both groups but satisfaction with the care received was higher in the parents who observed their child experience medical play. The difference between the groups was not statistically significant; the authors suggest that this is due to the small sample size and recommend further multi-centre study with a larger sample.

Implications for Practice

The results of this study, while not statistically significant, are clinically relevant to all healthcare professionals working with children or any patient who is undergoing a potentially painful procedure such as debridement or difficult dressing change. Strategies such as the one studied should be considered to prepare children and other patients, in order to reduce pain and improve the experience for both patients and care givers.



CHRONIC WOUND REPAIR AND HEALING IN OLDER ADULTS: CURRENT STATUS AND FUTURE RESEARCH

Gould L, Abadir P, Brem H, Carter M et al (2015) *Wound Repair and Regeneration* 23(1): 1–13

This article discusses the challenges associated with the increasing incidence of chronic wounds in older adults and their profound impact on quality of life. The authors suggest that, while it is accepted that wound healing slows with age, age-associated changes in relation to chronic wound healing are poorly understood. Gould et al argue that current *in vitro* and *in vivo* studies (with animal models) are limited as the results translate poorly to human wounds. Furthermore, they suggest that age and multi-morbidity leads to their exclusion from clinical trials; as such, the efficacy of current treatments is largely hypothesised by translating the data derived from studies on younger, less frail subjects.

Implications for Practice

The authors summarise a workshop in conjunction with the National Institute on Aging and the Wound Healing Society, used to identify key research questions. It is hoped that this will be used by the multidisciplinary team to guide future study of age-associated changes in chronic wound healing. The authors provide a well-rounded argument for the development of a formal woundcare specialty to promote consensus and drive not just a unified approach to research but also encourage standard approaches to care, improving patient outcomes and helping front line caregiver education. While North American in origin, the themes of the article have clear resonance to the models of care in the UK and we must also strive for a unified approach that improves patient outcomes and experience.



THE ROLE OF BIOMEDICAL SENSORS IN WOUND HEALING

Salvo P, Dini V, Di Francesco F, Romanelli M (2015) *Wound Medicine* 8: 15–8

This review article explores the current and future role of the use of biomechanical sensors in wound healing. These sensors allow wound healing to be continuously monitored, thus allowing for individualised treatment plans and improving patients' life conditions. Data interpretation could be used to direct treatment and address any defects detected. The paper also explores the role of interactive dressings that can be worn with minimal impact to patients. The authors suggest that incorporated sensors could be used to provide clinicians with invaluable data. The monitoring of normal wound healing, from the initial inflammatory phase, through proliferation and into maturation, would allow for early detection of any deviation from the norm. The paper also outlines current research into other potential markers of chronicity such as MMPs, wound infection, pH, temperature and transepidermal water loss.

Implications for Practice

While there is an increasing interest in sensor technology, application to practice is some years off in mainstream care. Perhaps not so in research but it is clear that early bench data must be tested for relevance *in vivo*. The biology of wound healing is complex and interrelated; as such it is difficult to know which sensor would be the most beneficial in terms of predicting chronicity. Furthermore, it is hard to comprehend as a nonscientist whether any of the individual sensor technology could be combined to monitor multiple pathways in parallel, as comprehensive sequential data collection would prevent the need for multiple tests. In order to make this technology relevant and cost-effective, the interpretation of data and subsequent actions would need to be simple and intuitive to the end user.



This article discusses the use of wound diagnostics to predict the 'healability' of a wound so that clinicians may direct more advanced, potentially aggressive or costly treatments earlier in order to increase efficacy and improve patient outcomes. In particular it looks to see if there are measureable targets that can be used to guide the treatment of diabetic foot ulcers, and whether DNA-based diagnostics for identifying bacteria and drug resistance in wound colonisation have a place in reducing the impact of wound infection. The authors also review the evidence and value of pH level monitoring in chronic wounds, the role of matrix metalloproteinases, the relevance of skin perfusion results and local blood flow measurement in predicting wound healing/chronicity. In addition, exploring the use of biochemical receptors, which could potentially be used to determine the efficacy of debridement techniques and potentially monitor clinician skill and frequency. The authors suggest the use of digital wound analysis based on colour segmentation; their focus is on improving interrater reliability between clinicians, as they argue that the subjective nature of human interpretation of what is seen often leads to unnecessary variations in practice, as clinicians often see and describe the same wound differently.

Implications for Practice

This paper reports state-of-the art medical practice that if used every time by every clinician would doubtless improve patient outcomes. The inherent problems with rolling out access to such technologies is not discussed in terms of finance or the need for education and training. Surely the difficulty is not just in learning how to use these techniques, but also in matching intervention to patient/wound in order to both optimise patient outcomes and balance expenditure, thereby maximising cost-effectiveness in times of spending austerity.



THE QUEST FOR TISSUE REPAIR'S HOLY GRAIL: THE PROMISE OF WOUND DIAGNOSTICS OR JUST ANOTHER FISHING EXPEDITION?

Armstrong D, Lew E, Hurwitz B, Wild T (2015) *Wound Medicine* 8: 1-5