

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 is to provide an overview, rather than a detailed critique, of the papers selected.

THE EFFECT OF POLYHEXANIDE, OCTENIDINE DIHYDROCHLORIDE, AND TEA TREE OIL AS TOPICAL ANTISEPTIC AGENTS ON IN VIVO MICROCIRCULATION OF THE HUMAN SKIN: A NONINVASIVE QUANTITATIVE ANALYSIS

Rothenberger J, Krauss S, Tschumi C et al (2016)
Wounds 28(10): 341–6

This study examines the effect of topical antiseptics on the microcirculation of intact human skin. The authors accept that antiseptics are efficacious in reducing bacterial burden in chronic wounds but wanted to establish if and how much they interfere in wound healing. Perfusion dynamics of 20 healthy volunteer's hands were assessed before, and 10 minutes after, they were immersed in antiseptic solutions (octenidine dihydrochloride, polyhexanide, tea tree oil, and saline solution). A non-invasive diagnostic device, which combined a laser light to determine blood flow, as well as white light to determine haemoglobin oxygenation and the relative amount of haemoglobin. Tea tree oil and polyhexanide caused a significant increase in blood flow +19% and +12.4% respectively compared to the negative control (-25.6%) and octenidine showed a nonsignificant trend towards an increase in blood flow (+7.2%). There were alterations in the values of haemoglobin oxygenation and the relative amount of hemoglobin, but these were not significant. The study team conclude as perfusion is crucial for wound healing, that it might be advantageous if antiseptic agents increase blood flow. This information can potentially be used to clinician's advantage in ischaemic wounds. The team acknowledge limitations of the study in relation to immersion time, and that readings were taken prior to and after immersion at set time frames. The temperature of the solution was controlled and the whole digit was immersed. It is not common practice in wound care to completely immerse

the wound and surrounding skin in solution for 5 minutes. Usually the wound itself is swabbed with fluid or soaked. Also worthy of further research is how long the increased perfusion lasted.

Implications for Practice

It is clear that the results could be used clinically, however, future research needs to focus on wound types as results could significantly differ in wounds pre-debridement, or those where infection and oedema are significantly impacting on perfusion. The authors discuss the rationale and proposed mechanism of action of each agent that may account for the results and this alone is worthy of note.

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DIAGNOSING SURGICAL SITE INFECTION USING WOUND PHOTOGRAPHY: A SCENARIO-BASED STUDY

Sanger P, Simianu V, Gaskill C et al (2016) *Journal of the American College of Surgeons*. In press.

This study reports the findings of a web-based survey of clinicians with expertise in managing surgical site (SSI) infection. A convenience sample viewed a range of scenarios, that all included surgical history, physical examinations and a description of the wound. Participants recorded SSI diagnosis, their diagnostic confidence and management plan first without, and then with an accompanying wound image; at each step respondents ranked the most important feature contributing to their decision. The results of eighty-three participants are shared, 84% of responses were from physicians from surgical specialities. The addition of photographs was found to increase the diagnostic accuracy from 67% to 76% ($p<0.001$), and increased specificity from 77% to 92% ($p<0.001$) but did not significantly increase sensitivity (55% to 65%, $p=0.16$). Photos increased mean confidence in diagnosis from 5.9/10 to 7.4/10 ($p<0.001$). Over-treatment recommendations decreased from 48% to 16% ($p<0.001$) while under-treatment did not change (28% to 23%, $p=0.20$) with addition of photos. Postoperative SSI are common and costly, a high proportion occur post-discharge, and can result

in preventable readmission and/or unnecessary urgent evaluation. In this study the addition of wound photos to existing data as available via chart review and telephone consultation with patients significantly improved diagnostic accuracy and confidence, and prevented proposed overtreatment in scenarios without SSI. The authors conclude that post-discharge mobile health technologies have the potential to facilitate patient-centred care, decrease costs, and improve clinical outcomes.

Implications for Practice

For clinicians working in remote rural settings this simple use of technology has the potential to free time to care, and should be explored. That said it is not always easy to overcome governance issues in relation to consent, storage and transfer of images. I am confident that if assurances were given at the time of consent, patients would agree to image transfer and the impact of earlier diagnosis and confidence in the treatment decision and outcome warrants further study. In addition, it would be interesting to see if use of the methodology would show similar results to improve diagnosis and treatment of other wounds such as pressure ulcers and venous leg ulceration. **WUK**

ADVANCED WOUND CARE MARKET BY PRODUCT TYPE (INFECTION MANAGEMENT, EXUDATE MANAGEMENT, ACTIVE WOUND CARE, THERAPY DEVICES), APPLICATION (CHRONIC WOUNDS AND ACUTE WOUNDS), END USER (HOSPITALS AND COMMUNITY CENTERS) GLOBAL OPPORTUNITY ANALYSIS AND INDUSTRY FORECAST, 2014–2022

Research beam (2016) Available at: <http://www.researchbeam.com/advanced-wound-care-mnm-market>

This report values the advanced wound care market was valued at \$7,117 million in 2015 and predicts it to reach \$12,454 million, growing at a compound annual growth rate of 8.3% during 2016-2022. Market growth as practitioner are aware is attributed to the rapid increase in the incidence of chronic diseases, lifestyle

and reduced hospital stays. However, the high cost of advanced wound care products coupled with low awareness, especially in underdeveloped countries is expected to restrict market growth. North America is the leading revenue-generating region, whereas Asia-Pacific is projected to have the highest annual growth rate as a result of increased demand for advanced wound care products, rising aging population, and current unmet medical needs.

The report provides an in-depth analysis of the advanced wound care market across major geographies and total revenue generated during the forecast period. Quantitative analysis of the current trends and future estimations from 2015 to 2022 is presented, which assists the manufacturers to analyse the market. The report also provides quantitative as well as qualitative market trends to facilitate the stakeholders in understanding the situations prevailing in the market. It will be interesting to see if the Lord Carter project and NHS supply chain caps to be introduced in the English supply chain in December 2016 do anything to curb predicted growth.

Implications for Practice

One could argue that the best way for clinicians to influence wound care expenditure is to ensure that diagnosis and treatment decisions are based on best practice recommendations and focus on the underlying pathophysiology. Wound care formularies to date have done little to curb expenditure alone and in the authors opinion must be coupled with education and mandatory pathways that aim to reduce unwarranted variation in practice. Focus on cost or evidence alone is notoriously difficult when it comes to wound products as research comparing one product to another across categories is of limited value as current in vivo studies often fail to reach statistical significance. Wound care product expenditure may be relatively low compared to other drug and pharmaceutical expenditure, but the latter has or is being addressed and so as the spotlight falls on wound care; clinicians working in the field must look for other innovative solutions to curb over expenditure and reduce waste without always looking at the cost of a dressing. **WUK**