



Publications 2014

In 2014, 23 research papers and one book were published in peer reviewed literature as a result of collaborations or primary studies conducted by the Fiona Wood Foundation research team. Following each paper is a statement about how we plan to take a 'TRIP' with these latest results i.e. Translate Research into Practice (TRIP).

1. [**Skin regeneration: The complexities of translation into clinical practice.**](#) Wood FM. International Journal of Biochemistry and Cell Biology. Pub online 7-NOV-2014 DOI information: 10.1016/j.biocel.2014.10.025.

TRIP: To realise the potential of the developing technologies needs alignment of not only the science and engineering but also the commercial upscaling of production in a safe and regulated framework for clinical use. Education and training for the introduction of new technology within the health system is essential, bringing together the technology and systems for utilisation to optimise the patient outcome.

2. [**The Brief Fatigue Inventory is reliable and valid for the burn patient cohort.**](#) Toh C, Li M, Jackson T, Burrows S, Finlay VD, Wood FM, Edgar DW. Burns: accepted to print Nov 2014.

TRIP: The Brief Fatigue Inventory is a reliable and valid clinical and research tool to measure fatigue levels in burn patients in the first-year post-injury. Fatigue levels in the WA burn patient population were greater in major burns and in females.

3. [**Evaluation of a streamlined model of care for minor burn patients.**](#) Finlay VD, Hendrie D, Allison GT, Phillips M, F. Wood FM, Edgar DW. J Burn Care Res: 35(4): 342-348.

TRIP: Patient self-management of minor burn injuries at home with follow-up by quality of life survey (rather than hospital) is safe; more convenient for patients; more efficient; and, produces cost-savings for WA the health service.

4. [**Sexuality, body image and relationships following burns: Analysis of BSHS-B outcome measures.**](#) Connell, K.M, Phillips, M., Coates, R., Doherty-Poirier, M., Wood, F.M. (2014). Burns.40 (7), 1329-1337.

TRIP: The psychological and psychosocial impact of burn injuries does not improve significantly for burn survivors in the first two years post-burn. This is particularly with regard to body image and sexuality, regardless of good physical and functional recovery. The next step is to create rehabilitation programs that specifically and meaningfully address these issues and improve the quality of life for burn survivors in these domains.

5. [**Is the length of time in acute burn surgery associated with poorer outcomes?**](#) Lim JS, Liew S, Chan H, Jackson T, Burrows S, Edgar DW, Wood FM. Burns. 40(2): 235-240.

TRIP: Shortening the time in surgery by 30 mins is associated with a 13% reduction in hospital bed days. Increasing the burn by 10% of the total body surface area increased time in surgery by 60%.

6. [**Paediatric burns: from the voice of the child.**](#) McGarry S, Elliott C, McDonald A, Valentine J, Wood F, Girdler S. Burns. 40(4), 606-615. doi: 10.1016/j.burns.2013.08.031

TRIP: The findings demonstrated that trauma was central to the burn experience and comprised two phases: the burn trauma and the recovery trauma. This research has clinical implications and findings can be used to inform clinical care at all stages of the burn journey from the perspective of the child.



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7. [Enhancing the clinical utility of the Burn Specific Health Scale-Brief: not just for major burns.](#) Finlay VD, Phillips M, Wood FM, Hendrie D, Allison GT, Edgar DW. Burns. 40(2): 328-336.

TRIP: We confirmed assessment of patients by a quality of life questionnaire, previously used for major burns, is a useful adjunct for clinical practice decision making and can be used for bench-marking, determine best practice and improve efficiency across the WA burn population, regardless of severity.

8. [Long term sensory function after minor partial thickness burn: A pilot study to determine if recovery is complete or incomplete.](#) Lim JY, Lum CH, Tan AJ, Jackson T, Burrows S, Edgar DW, Wood FM. Burns. 40 (8): 1538-1543.

TRIP: Measurable sensory deficits persist in mature, good quality burn scars. These deficits may influence long-term recovery after minor partial thickness burn.

9. [Sexuality following trauma injury: A literature review.](#) Connell KM, Coates R, Wood FM. Burns & Trauma. 2(2). 62-70.

TRIP: A total of 36 research articles were included in this review. Four themes were identified in three trauma groups i.e. physiological impact of trauma on sexuality; cognitive-genital dissociation; sexual disenfranchisement; and, sexual rediscovery.

10. [Hot ash burns in the children of Western Australia: how and why they happen.](#) Martin L, McWilliams T, Burrows S, Rea S, Wood F. Burns. 40:1030-2

TRIP: Hidden hot ash can cause burns to feet which are severe enough to need surgery to heal. Always put campfires out with water.

11. ["This is not just a little accident": a qualitative understanding of paediatric burns from the perspective of parents.](#) McGarry S, Elliott C, McDonald A, Valentine J, Wood F, Girdler S. Disability and Rehabilitation. doi: 10.3109/09638288.2014.892640

TRIP: Findings from this research allow health professionals to optimise a holistic clinical service from a consumer's perspective at all stages of the burn journey. These research conclusions can be used for the development of protocols to underpin a comprehensive information and social support management plan for families that would complement and support the surgical and medical treatment plan.

12. [Burn injuries lead to behavioural changes that impact engagement in sexual and social activities in females.](#) Connell KM, Coates R, Wood, FM. (2014 in press). Sex Disabil. doi 10.1007/s11195-014-9360-x

TRIP: The results of semi-structured interviews indicated that burn injuries are life changing events that result in behavioural changes that impact engagement in sexual and social participation for females. These changes result in alterations to individuals' internalized concepts of body image and attractiveness that have the potential to impact all facets of life. Findings lead to the development of the Adjustment to Sexuality and Body Image Changes Post Burn Model. This model conceptualizes potential body image and sexuality changes, post traumatic injury, and identifies possible areas for targeted interventions that could be incorporated into rehabilitation services.



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13. [Developing a burn injury severity score \(BISS\): Adding age and total body surface area burned to the injury severity score \(ISS\) improves mortality concordance.](#) Cassidy JT, Phillips M, Fatovich D, Duke J, Edgar DW, Wood FM. Burns. 40, 5:805-813.

TRIP: Thankfully, death from severe burn injury is rare. This study provides a multi-trauma-based algorithm, more accurate than any available previously, as an adjunct to predict mortality post-burn trauma to minimise the chance of unnecessary suffering in the event of severe injury.

14. [Scald burns in children aged 14 and younger in Australia and New Zealand-An analysis based on the Bi-National Burns Registry \(BiNBR\).](#) Schricke D I, Jennings PA, Edgar DW, Harvey JG, Cleland HJ, Wood FM, Cameron PA. Burns. 40, accepted to print October 2014.

TRIP: Hard stats for targeted prevention and education campaigns in Australia and New Zealand - Scalds occur 4 times more in Aboriginal and Maori children compared to Caucasian children with 46% of injuries in the kitchen associated with someone cooking. Only 20% of children received immediate, adequate first aid and those that did spent 2.8 days less in hospital.

15. [ANZBA-JBI Burn Trauma Rehabilitation: Allied Health Practice Guidelines \(Book\)](#). Chief Editor: Edgar DW. Publisher: Dabrow-Woods A. Copyright © 2014 Lippincott Williams & Wilkins, Philadelphia, PA 19103. WA Group Co-authors – Wood FM; McGarry S; Grisbrook T; Finlay V; Rowe S; Gittings P; Noteboom B; DeJong H; Schug S.

TRIP: This book provides evidence-based guidelines to direct practice across the spectrum of burn injury rehabilitation. The book was designed and written to provide applicable information in any facility across the globe.

16. ["Assessment of human burn scars with optical coherence tomography by imaging the attenuation coefficient of tissue after vascular masking."](#) P. Gong, R.A. McLaughlin, Y.M. Liew, P.R.T. Munro, F.M. Wood, D.D. Sampson, J. Biomedical Optics, 19(2):021111, 2014.

TRIP: This work is developing a new way to assess and quantify burns scars using non-invasive, high resolution optical imaging. The resulted demonstrated some of the structural differences between normal skin and burns scars.

17. [Designer self-assembling hydrogel scaffolds can impact skin cell proliferation and migration.](#) Bradshaw M, Ho D, Fear MW, Gelain F, Wood FM, Iyer KS. Sci Rep. 2014 Nov 11; 4:6903. doi: 10.1038/srep06903.

TRIP: This work will help to progress the development of new scaffolds that can replace damaged tissue after burn injury. The work demonstrated that new scaffolds could promote skin cells to repair damage and suggests these types of scaffolds may be useful in the future.

18. [Non-severe burn injury leads to depletion of bone volume that can be ameliorated by inhibiting TNF- \$\alpha\$.](#) O'Halloran E, Kular J, Xu J, Wood F, Fear M. Burns. 2014 Oct 7. pii: S0305-4179(14)00292-7.

TRIP: We showed for the first time that even non-severe burns can cause changes in bone tissue. This is important as >90% of patients in Australia have non-severe burns yet possible damage to the bones has been overlooked. We will need to look further at these changes in patients and whether we can prevent these changes which appear to be caused, at least in part, by the inflammatory response to the injury.



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19. **Ephrin-A2 and Ephrin-A5 Are Important for the Functional Development of Cutaneous Innervation in a Mouse Model.** Wijeratne DT, Rodger J, Wallace HJ, Maghami S, Sykes M, Wood FM, Fear MW. *J Invest Dermatol.* 2014 Sep 22.

TRIP: This work shows that Ephrins are important in the sensory function of the skin. In scars, sensation is often lacking and there are other problems associated with nerves such as pain and itch. This study sheds light on an important pathway that controls nerves in the skin. Currently we are looking to see if this same pathway is important in regenerating nerves after injury. In the future, it may be possible to manipulate this pathway to improve sensation after injury, but much more work needs to be done before this will be possible.

20. **Burn injury, gender and cancer risk: population-based cohort study using data from Scotland and Western Australia.** Duke JM, Bauer J, Fear MW, Rea S, Wood FM, Boyd J. *BMJ Open.* 2014 Jan 17;4(1): e003845.

TRIP: This study showed using two different populations that there is an increased risk of cancer after a burn injury. This is a clear demonstration that burn injury has impacts long after the burn has healed and has led to a number of research projects that are ongoing into understanding why the burn injury leads to these long-term pathologies. One key to this maybe the immune response to burns and we are currently investigating this in more detail.

21. **Reliability of scar assessments performed with an integrated skin testing device - The DermaLab Combo®** Gankande TU, Duke JM, Danielsen PL, Dejong HM, Wood FM, Wallace HJ. *Burns.* 2014 Mar 11

TRIP: Assessing scars is critical to ensuring quality of care and understanding the impact of interventions to improve patient outcomes. Current scar assessments are not optimal, and we have been investigating the use of new objective ways to measure scar outcome. This paper shows the results of the use of a Dermalab device which is a reliable and accurate way to measure some components of the scar. This is part of ongoing work to improve scar assessment for clinical trials and patient evaluation.

22. **Evaluating the effects of nacre on human skin and scar cells in culture.** Vipul Agarwal, Edwin S. Tjandra, K. Swaminathan Iyer, Barry Humfrey, Mark Fear, Fiona M. Wood, Sarah Dunlop and Colin L. Raston *Toxicol. Res.*, 2014, 3, 223-227

TRIP: This work evaluated some of the properties of pearl nacre on skin and scar cells. Pearl nacre is widely used in cosmetics and there have been suggestions it may be beneficial for wound repair. This preliminary study looked in more detail at the effects exposure to nacre has on skin cells.

23. **Burns education for non-burn specialist clinicians in Western Australia.** McWilliams T, Hendricks J, Twigg D, Wood F. *Burns.* 2014 Sep 16. pii: S0305-4179(14)00224-1

TRIP: Burn patients often receive their initial care by non-burn specialist clinicians, with increasingly collaborative burn models of care. The provision of relevant and accessible education for these clinicians is therefore vital for optimal patient care. This paper demonstrates the value of dedicated education sessions provided by videoconference for non-specialist clinicians to better treat burn patients at the time of presentation.