Publications 2016

Fiona Wood Foundation

Publishing results of our work in the peer reviewed literature is essential. In 2016, the following research papers were published as a result of collaborations or primary studies conducted by the Fiona Wood Foundation research team.

With our understanding that every intervention from the time of injury influences the scar worn for life, we approach each clinical problem with a unique set of skills to reduce the suffering from burn injury. All the work is focused on solving a given clinical problem across the spectrum from first aid practices in the community, manipulation of scars at the cellular level, to understanding the barriers to improved function. The key strength of the group is the bringing together of basic science, population health research and clinical research - *Translating Research into Practice*. How this is achieved is indicated briefly for our most recent publications.

1. Advances in Isolation and Expansion of Human Cells for Clinical Applications. Fiona Wood, Skin Tissue Engineering and Regenerative Medicine, pp.299-315, Dec 2016.

2. Demonstration of the test-retest reliability and sensitivity of the Lower Limb Functional Index-10 as a measure of functional recovery post burn injury: a cross-sectional repeated measures study design. M Ryland, T Grisbrook, M Phillips, F Wood, Edgar, Burns & Trauma, Apr 2016

   TRIP: Following from the validation study, clinicians can use the tool knowing that a change of 1.5 on the LLFI is a true change, providing them with an understanding of the performance of the measure for lower limb burn patients.

3. The impact of non-severe burn injury on cardiac function and long-term cardiovascular pathology. E O'Halloran, A Shah, L Demob, L Hool, H Viola, C Grey, J Boyd, T O'Neill, F Wood, J Duke, M Fear. Scientific Reports, Oct 2016.

   TRIP: This paper used patient and population-based data to show that burn injury can change heart function and these changes can be sustained. We are building on this work to understand how this happens and what patients might be susceptible so we can change treatment to prevent the effects of burns.

4. Posttraumatic growth after burn in adults: An integrative literature review. L Martin, M Byrnes, S McGarry, F Wood. Burns: journal of the International Society for Burn Injuries, Oct 2016.

5. Burn leads to long-term elevated admissions to hospital for gastrointestinal disease in a West Australian population-based study. A Stevenson, S Randall, J Boyd, F Wood, M Fear, J Duke, Burns. Oct 2016

6. The impact of non-severe burn injury on cardiac function and long-term cardiovascular pathology. E O'Halloran, A Shah, L Demob, L Hool, H Viola, C Grey, J Boyd, T O'Neill, F Wood, J Duke, M Fear. Sci Rep. Oct 2016

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7. Grip and Muscle Strength Dynamometry are reliable and valid in patients with unhealed minor burn wounds. P Gittings, M Phillips, M Salet, B Ruetterman, B Wand, F Wood, D Edgar. Journal of burn care & research: official publication of the American Burn Association, Sept 2016

   TRIP: For the first time, burn clinicians have validated equipment and methods to objectively measure muscle strength after burn injury. Further, the method is reliable and valid for use when patients have acute wounds.

8. Respiratory Morbidity After Childhood Burns: A 10-year follow-up study. J Duke, S Randall, M Fear, J Boyd, F Wood, Pediatrics, Sep 2016

9. Burn injury and long-term nervous system morbidity: A population-cased cohort study. T Vetrichevvel, S Randall, M Fear, F Wood, J Boyd, J Duke. BMJ Open, Sept 2016

10. Social challenges of visible scarring after severe burn injury: A qualitative analysis. L Martin, M Byrnes, S McGarry, F Wood. Burns, Aug 2016.

11. Patient opinion of scarring is multidimensional: An investigation of the POSAS with confirmatory factor analysis. H Dejong, M Phillips, D Edgar, F Wood. Burns: journal of the International Society for Burn Injuries, Aug 2016

    TRIP: Patient perception of their whole scar outcome is influenced by the physical scar characteristics; pain, and itch, independently of each other.

12. Telehealth for paediatric burn patients in rural areas: A retrospective audit of activity and cost savings. T McWilliams, J Hendricks, D Twigg, F Wood, M Giles. Burns: Journal of the International, Aug 2016

13. ISBI Practice Guidelines for Burn Care. R Ahuja N Gibran, D Greenhalgh, F Wood, P van Zuijlen. Burns, Aug 2016

14. The effectiveness of session rating of perceived exertion to monitor resistance training load in acute burns patients. T Grisbrook, P Gittings, F Wood and D Edgar. Burns. Aug 2016

    TRIP: Session rating of perceived (RPE) can be used to effectively measure resistance training volume in acute burn patients but clinicians need to respect that pain increases session RPE.

15. Verapamil is Less Effective than Triamcinolone for Prevention of Keloid Scar Recurrence After Excision in a Randomized Control Trial. P Danielsen, S Rea, F Wood, M Fear, H Viola, L Hool, T Gankande, M Alghamdi, A Stevenson, M Manzur, H Wallace. Acta Derm Venereol. Aug 2016

    TRIP: Keloid scars frequently recur after surgical removal unless they receive additional treatment such as injections with corticosteroids. Corticosteroids can cause side-effects and we tested a new treatment called verapamil. We found verapamil was safe but not as effective as corticosteroids in preventing keloid recurrence after surgical removal.

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16. Effects of Pediatric Burns on Gastrointestinal Diseases: A Population-Based Study. J Boyd, F Wood, S Randall, M Fear, S Rea, J Duke. Journal of burn care & research: official publication of the American Burn Association, Jul 2016.

17. Xbox Kinect™ based rehabilitation as a feasible adjunct for minor upper limb burns rehabilitation: A pilot RCT. K Voon, I Silberstein, A Eranki, M Phillips, F Wood, D Edgar. Burns: journal of the International Society for Burn Injuries, Jul 2016

    TRIP: Using interactive gaming consoles with visual feedback increases the activity time and reduces pain in upper limb burn patients, compared to routine exercise alone.

18. Increased admissions for diabetes mellitus after burn. J Duke, S Randall, M Fear, J Boyd, E O'Halloran, S Rea, F Wood. Burns: journal of the International Society for Burn Injuries, Jun 2016

19. A Descriptive Study of the Temporal Patterns of Volume and Contents Change in Human Acute Burn Edema: Application in Evidence-Based Intervention and Research Design. D Edgar, M Fear, F Wood. Journal of burn care & research: official publication of the American Burn Association, Jun 2016.

20. Investigation of optical attenuation imaging using optical coherence tomography for monitoring of scars undergoing fractional laser treatment. S Es'haghian, P Gong, L Chin, F Wood, R McLaughlin. Journal of Bio photonics, May 2016

21. West Australia population trends in the incidence of acute myocardial infarction between 1993 and 2012. S Randall, J Duke, R Zilkens, J Boyd, International Journal of Cardiology 2016

    TRIP: This study provided valuable information on trends in cardiovascular disease admissions, in particular acute myocardial infarction, among the general population in Western Australia. This study provided useful background information on patterns of disease in Western Australia that will support our investigations of cardiovascular disease after burn injury.

22. Gender is inevitable: Gender-based violence is avoidable. J Duke, H Wallace. Burns 2016

    TRIP: This paper is an invited response to a letter from Iran in the Journal, Burns, in response to our letter on the role of the courts in preventing acid and burns violence against women. Our view is that while education promotes gender equality is needed; on its own it does not necessarily lead to behaviour change. We contended that laws and their enforcement are an essential part of promoting gender equality and reducing the acid and burns violence against women.

23. Transcriptome analysis of human ageing in male skin shows mid-life period of variability and central role of NF-κB. D Haustead, A Stevenson, V Saxena, F Marriage, M Firth, R Silla, L Martin, K Adcroft, S Rea, P Day, P Melton, F Wood, M Fear. Scientific Reports, May 2016

    TRIP: This study provides important information around changes in the skin that occur with age – this basic knowledge helps us to understand the influence of age on healing and patient outcomes.

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24. Optical coherence tomography for longitudinal monitoring of vascular changes in human cutaneous burns. P Gong, S Esh'haghian, F Wood, R McLaughlin. Experimental Dermatology, Apr 2016

25. The Lower Limb Functional Index – A reliable and valid functional outcome assessment in burns. P Gittings, N Heberlien, N Devenish, M Parker, M Phillips, B Wand, F Wood, D Edgar. Burns: journal of the International Society for Burn Injuries, Apr 2016

    TRIP: This study demonstrated that the Lower Limb Functional Index is able to accurately assess the functional ability of a patient with lower limb burns, regardless of the severity and has validated our use of this tool.

26. Nanocrystalline silver dressings significantly influence bioimpedance spectroscopy measurements of fluid volumes in burns patients. T Grisbrook, P Kenworthy, M Phillips, F Wood, D Edgar. Burns: journal of the International Society for Burn, Apr 2016

    TRIP: When measuring swelling with bioimpedance, clinicians need to adjust for the presence of ActicoatTM (Antibacterial) dressings.

27. The Burns Registry of Australia and New Zealand: progressing the evidence base for burn care. H Cleland, J Greenwood, F Wood, B Gabbe. The Medical journal of Australia, Mar 2016

28. Evaluation of the posttraumatic growth inventory after severe burn injury in Western Australia: clinical implications for use. L Martin, M Byrnes, S McGarry, F Wood. Disability and Rehabilitation, Mar 2016

    TRIP: The Posttraumatic Growth Inventory (PTGI) is a valid tool for use in burn injury patients.

29. Investigations into methods to improve the antibacterial activity of Acticoat. F O'Brien, J Ravensdale, F Wood, K Gregg. Journal of Medical Microbiology, Mar 2016

30. Mental Health and itch in burns patients: Potential associations. S McGarry, S Burrows, T Ashoorian, T Pallathil, T Ong, D Edgar, F Wood. Burns: journal of the International Society for Burn Injuries, Mar 2016

    TRIP: There is an association between itch and mental distress among adult burn survivors for at least six months post burn and regardless of the size of the burn injury. Strategies to improve treatment of itch post burn may also assist the mental health outcomes after burn.

31. Childhood burn injury – impacts beyond discharge. J Duke, J Boyd, S Randall, F Wood. Feb 2016

32. Timing of excision after a non-severe burn has a significant impact on the subsequent immune response in a murine model. V Fear, W Poh, S Valvis, J Waithman, B Foley, F Wood, M Fear. Burns: journal of the International Society for Burn Injuries, Feb 2016

TRIP: This paper provided evidence as to why excision of the wound early might change how the wound progresses and impact on healing. This improved understanding of how clinical practice impacts on patients are critical in improving burn care.

33. Water First Aid is Beneficial in Humans Post-Burn: Evidence from a Bi-National Cohort Study. F Wood, M Phillips, T Jovic, J Cassidy, P Cameron, D Edgar. PLoS ONE, Jan 2016

    TRIP: First aid education: In patients without smoke inhalation injury: who have 20 minutes cooling within three hours of burn injury will reduce: their risk of surgery by 13%; admission into ICU by 48%, and, their length of stay by 2.3 days. Partial benefit of water cooling for less than 20 minutes was evident also.

34. A Functional Reactive Polymer Electrospun Matrix. V Agarwal, D Ho, D Ho, Y Galabura, F Yasin, P Gong, W Ye, R Singh, A Munshi, M Saunders, R Woodward, T St Pierre, F Wood, M Fear, D Lorenser, D Sampson, B Zdyrko, I Luzinov, N Smith, S Iyer. ACS Applied Materials & Interfaces, Jan 2016

    TRIP: We are currently developing new materials that could be used as better dressings or ways to deliver drugs to wounds to improve healing and reduce scarring. This paper was written by a recently completed PhD student who was working win this collaboration with our team. There will be a lot more work in developing these new materials.

35. Understanding the long-term impacts of burn on the cardiovascular system. J Duke, S Randall, M Fear, J Boyd, S Rea, F Wood. Burns: journal of the International Society for Burn Injuries, Jan 2016

    TRIP: The studies listed above form part of the Western Australian Population-based Burn Injury Project. While burns predominantly affect the skin, there are hidden impacts of burns. The “whole of body” responses that are triggered by the initial burn can have long term effects on different organs of the body, long after the wound has healed. When compared to a large cohort of people with no history of injury admission, we identified that those with a history of burns were at increased risk of diseases of the heart and circulatory system, respiratory tract, the gut and diabetes.

36. Polymeric Nanofibre Scaffold for the Delivery of a Transforming Growth Factor? 1 Inhibitor. V Agarwal, F Wood, M Fear, K S Iyer. Australian Journal of Chemistry, Jan 2016

37. Long term mortality in a population-based cohort of adolescents, and young and middle-aged adults with burn injury in Western Australia: A 33-year study. J Duke, J Boyd, S Randall, F Wood. Accident; analysis and prevention, Dec 2015

38. Regulation of collagen expression using nanoparticle mediated inhibition of TGF-**β activation** BINBIN LI. T Clemons, V Agarwal, F Wood, S Iyer. New Journal of Chemistry, Nov 2015

39. Interactive gaming consoles reduced pain during acute minor burn rehabilitation: A randomized, pilot trial. M Parker, B Delahunty, N Heberlein, F Wood, D Edgar. Burns: journal of the International Society for Burn Injuries, Nov 2015

40. Modified Vancouver Scar Scale score is linked with quality of life after burn care. V Finlay, S Burrows, F Wood, D Edgar. Burns Nov 2016.

    TRIP: Surprisingly, this is the first paper to demonstrate specifically that scar outcomes are linked to quality of life after burn. Clinicians can now be confident in using the modified Vancouver Scar Scale to rate the severity of scar and direct treatment appropriately with the aim of reducing the impact of the scar on a patient's quality of life.

41. Predictors of moderate to severe fatigue 12 months following admission to hospital for burn: Results from the Burns Registry of Australia and New Zealand (BRANZ) Long Term Outcomes project. B Gabbe, H Cleland, D Watterson, R Schrale, S McRae, S Taggart, A Darton, F Wood, D Edgar. Burns. Oct 2016.

    TRIP: Bi-national burn registry study demonstrating that moderate to severe fatigue is present in >25% of all burn patients up to 1 year after injury. Fatigue is worse in females (risk 2.6 x males); those living in outside metro areas (up to 3.6 x greater) and with burn >20% of the body surface. Fatigue was linked to greater work-related disability at each assessment up to 1 year.

42. One world one burn rehabilitation standard. M Serghiou, J Niszczak, I Parry, C Li-Tsang, E Van den Kerckhove, S Smailes, D Edgar. Burns. Apr 2016.

    TRIP: Results of worldwide burn rehab clinician survey identified vast discrepancies in the areas of education, training and capacity to conduct research to improve the care of burn survivors, particularly in resource limited countries. Collaborative paper by the members of ISBI Burn Rehabilitation Committee.

43. The need for effective literature searching for burns research: A timely reminder. R Kornhaber, A de Jong, A Mpi, D Edgar. Burns, Letter to the Editor. Jun 2016

    TRIP: A reminder for clinicians and researchers to attend to what we know now, before starting new research which may duplicate previous work. Collaborative paper with members of ISBI Burn Nursing Committee.

44. Long term outcomes data for the Burns Registry of Australia and New Zealand: Is it feasible? B Gabbe, H Cleland, D Watterson, R Schrale, S McRae, C Parker, S Taggart, D Edgar. Burns. Apr 2016.

    TRIP: The study identified the difficulties and pitfalls of long-term outcome data collection and proposed ways forward in tailoring measurement frameworks in the future.

45. Hip strength profiles in elite, sub-elite and amateur Australian Footballers. N Prendergast, D Hopper, M Finucane, T Grisbrook. Journal of Science and Medicine in Sport. Feb 2016.

    TRIP: Provides an understanding of the aims of training hip strength muscles in athletes.

46. The relationship between landing sound, vertical ground reaction force and kinematics of the lower limb during drop landings in healthy males. K Wernli, X Phan, P Davey, T Grisbrook. Journal of Orthopaedic and Sports Physical Therapy. Feb 2016

    TRIP: Exploration of normal movement patterns when landing, with a focus on being able to diagnose at risk movements to prevent injury in athletes.

Thank you to all the individuals, corporates, Trusts and Foundations that have contributed to the Fiona Wood Foundation in 2016. Your support directly impacts our ability to continue our research. Anyone's life can change in an
instant from a burn injury and we strive to continually improve outcomes from burn injury for all.

The Fiona Wood Foundation Board, staff, clinicians and researchers extend to each of you, our heartfelt appreciation
of your support. Without you, we would not be able to continue on our journey of scarless healing – in mind and body.

www.fionawoodfoundation.com