PROFILE

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The National Trauma Research Institute Melbourne, Australia

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The National Trauma Research Institute (NTRI) is based within the Alfred Medical Research and Education Precinct, co-located alongside the Baker and Burnet Institutes, Monash University, and The Alfred Hospital. Although only fully operational since mid 2004, the NTRI has brought together an expert group of researchers and collaborators from various disciplines that include scientists, clinicians, nurses, allied health staff and other health professionals, within its state-of-the-art facility located in close proximity to the busiest and largest clinical trauma centre in Australia, The Alfred Trauma Service. The Director of the NTRI Professor Thomas Kossmann, is strongly supported by four co-directors, Professor Jamie Cooper (Clinical Research), A/Professor Cristina Morganti-Kossmann (Basic Research), Professor Peter Cameron (Trauma Systems & Monitoring) and Professor Jennie Ponsford (Rehabilitation). The NTRI's main focus is on improving trauma patient care and outcomes through research, and by effectively translating research outcomes into clinical practice through education programs. The Institute's areas of research extend along a continuum of pre-clinical animal based experimentation, pre-hospital (paramedic), emergency presentation, intensive care management, definitive surgical care, and rehabilitation medicine.

A major pre-clinical/laboratory based project currently in operation is the 'Traumatic injury to the brain and spinal cord: secondary injury, development and evaluation of new treatments', which is an interdisciplinary collaborative program with participation from several key centres in Melbourne: NTRI, University of Melbourne, Austin & Repatriation Hospital, Howard Florey Institute and Monash University. This project is investigating the role of inflammation, the changes of the blood-brain barrier integrity, chemokine function, and neuronal apoptosis following traumatic brain injury. Techniques used have included gene array, SAGE analysis, *in situ* hybridization, and immunohistochemistry. This project has also evaluated various novel compounds such as neuroprotectants and immunosuppressants following traumatic injury.

Pre-hospital projects include the 'Paramedic prediction of severe injury and major trauma status' study, whereby the accuracy of the paramedics' identification of injury severity are analysed in terms of sensitivity, specificity and positive and negative predictive values. Studies conducted by various staff from the emergency & trauma centre medical teams include the 'Trauma reception and resuscitation project' which investigates critical decision making and interventions in trauma resuscitation to develop graphic and written trauma algorithms to further improve risk management and change management plans. Intensive care

projects conducted by nursing staff include 'Optimisation of patient management through expediting the spinal clearance process in the major trauma patient project' through to the implementation of clinical protocol for spinal care of a major trauma patients in the acute setting to reduce the amount of time to spinal clearance, therefore decreasing patient morbidity as a result of complication of immobilisation.

One of the largest clinical projects of its kind is currently being conducted under the auspices of the NTRI and through the ICU, Neurosurgery and Trauma Surgery departments at the Alfred Hospital. The 'Decompressive craniectomy (DECRA) study', is a multi-centre randomized control study involving 22 sites throughout Australia, New Zealand, Canada, Israel, Saudi Arabia and Singapore. This important study aims to assess the effectiveness of surgical intervention to better control increased brain pressure resulting from brain swelling when conservative medical management effective. DECRA involves temporarily removing part of the skull bone which allows intracranial pressure to decrease during brain swelling. The bone flap is surgically replaced when the swelling has subsided, which can be some months later.

One of the key rehabilitation projects being conducted is the 'Psychopathology following injury: screening for vulnerability' study which is a collaborative project between the Australian Centre for Post-traumatic Mental Health at the University of Melbourne, the NTRI, and the Departments of Psychiatry and Trauma Surgery at the Alfred and Royal Melbourne Hospitals. The study will aim to develop and validate a screening instrument that will identify, in the acute setting, patients who are vulnerable to develop mental health conditions such as post traumatic stress disorder and depression following injury.

The National Trauma Research Institute has a wide range of collaborative partnerships with centres and groups such as: Trauma Services - The Alfred Hospital, Royal Melbourne Hospital, Royal Children's Hospital, and the Austin Hospital; Interstate Trauma Services - Liverpool Hospital and Westmead; Universities - Monash, Melbourne, Deakin, Latrobe and RMIT; Ambulance Services - Metropolitan Ambulance Service and Rural Ambulance Victoria and many other international centres. The NTRI's research and education programs are supported through the generosity of AAMI and the Victorian Trauma Foundation. The NTRI welcomes collaboration with any individual or Institution that aims to improve the outcome of patients following a traumatic injury.

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