

Neurotrauma Research Projects 2011 - 2015

Delivering the Neurotrauma Research Strategy 2011–2015



This document presents a simple summary of research projects underway as a result of the Institute for Safety, Compensation and Recovery Research (ISCRR) delivering on the Neurotrauma Research Strategy 2011–2015 for the Transport Accident Commission (TAC).

This strategy was designed to assist the TAC to achieve its strategic objectives of supporting the recovery and independence of clients who have incurred a brain or spinal cord injury.

The objective of this document is to represent all those research projects which have been supported through the Neurotrauma Research Strategy to reach a wider audience by providing concise information on each project.

All information on the projects provided has been supplied by ISCRR with input from the researchers themselves. We would like to thank them for their co-operation in this venture.

There are four specific priorities areas which guided ISCRR/TAC neurotrauma research investment decisions. The research under each of these priorities had to demonstrate that it met a need to inform policy and practice, had a probability of impact and of meaningful changes within five years, would offer a return on the investment by the TAC in terms of client health and outcomes and/or cost savings and of course match the capacity and ability of the neurotrauma research sector to do the work.

Priority 1: Models of Lifetime Care

Research will develop new models of lifetime care focusing on attendant care, accommodation needs and community integration.

Priority 2: Improving Rehabilitation and Disability Management

Research will identify evidence-based approaches for optimal management of TBI clients with challenging behavioural issues, investigate new approaches to preventing and managing the major secondary complications of SCI and, contribute to and evaluate the Slow Stream Rehabilitation Unit at Caulfield.

Priority 3: Bench to Bedside

Research will conduct trials of promising biomedical interventions or technical innovations in clinical settings. For instance, this may include pharmaceutical therapies for limiting secondary damage of neurotrauma or new technologies aimed at improving diagnostic and prognostic accuracy.

Priority 4: Capacity Building

The strategy identifies as a priority the need to continue to build skills and resources in neurotrauma research. This will support the delivery of research in the three priority research areas.

PRIORITY 1: Models of Lifetime Care

Transition, Outcomes and User Experiences in RIPL

Ms Libby Callaway, Monash University

This research will provide a comprehensive evidence base of the impact of an intervention on outcomes, by gathering both qualitative and quantitative evidence of the impact of RIPL (the Residential Independent Pty Ltd Property Trust, a Transport Accident Commission/TAC funded initiative) models on TAC client housing transition experiences, longitudinal health, participation and cost outcomes, and user experience of built, technology and support design in other areas in Victoria - Frankston and Glenroy. This new research will be added to data from RIPL sites at Abbotsford and Lilydale. Given this comprehensive suite of models evaluated, project findings will also inform and direct best practice in built and technology design using post-occupancy evaluation methodologies.

Maximising Social Connection and Building Relationships in the Community (M-ComConnect)

Professor Jacinta Douglas, La Trobe University

Many adults who sustain severe Traumatic Brain Injury (TBI) experience difficulties developing and maintaining connections within the community. This project aims to implement and evaluate innovative strategies to support social activity, social relationships and community inclusion for people with severe brain injury who live in a range of different environments. Tailored specifically to meet the needs of the individual, the intervention program is expected to improve the wellbeing and enhance community integration of individuals with severe TBI.



Telehealth for Carers' Communication Skills

Professor Leanne Togher, University of Sydney

This project examines whether telehealth assessment of social communication skills for people with Traumatic Brain Injury (TBI) and the support skills of their carers was as accurate and reliable as a face-to-face assessment. Using Skype as a means of working on communication between a carer and the person with TBI, this research investigates the feasibility of using telehealth for diagnostic evaluations, comparing the use of telehealth to face-to-face assessment.

Design Strategies for Housing for Assisted Living

Professor Nigel Bertram, Monash University

This project investigates the impact architectural design strategies can have on the quality, performance and efficiency of the Transport Accident Commission's (TAC) new and retrofitted accommodation for traumatic brain injury (TBI) and Spinal Cord Injury (SCI) residents, especially for those who are able to live more independently over time with reduced levels of support, but who currently lack accommodation options. This project takes a holistic overview of how accommodation is currently being delivered, analyses the lessons learned, and identifies the most efficient and effective design strategies for housing models to facilitate client independence.

Disability and Driving: Vehicle Modifications (VMs)

Dr Marilyn Di Stefano, La Trobe University

The broad objective of this project was to provide a stronger basis for the future improvement of independent driving and community participation outcomes for drivers with disabilities. This was achieved through conducting a survey of drivers who use vehicle modifications and identifying key prescription issues and considerations from a literature search. These outcomes informed a draft model of practice and set of prescription guidelines which are now ready for trialling and implementation.

Design Contributions to Lifetime Care

Professor Shane Murray, Monash University

This pilot study looks at the importance of architectural and urban design strategies in improving the quality of life for people with Traumatic Brain Injury (TBI) or Spinal Cord Injury (SCI). The study discusses case studies that have been successful in providing flexible living environments and enabling independence, both inside and outside of the home. The architectural designs address a range of issues such as privacy, opportunities for meaningful interaction and creating a sense of home. The study analyses how these architectural designs have created these quality interior and external environments. This initial research leads to a series of research questions and a more detailed, larger project.

"Treatment for communication problems following severe TBI should be available to everyone regardless of where they live. Telehealth technologies offer new opportunities to provide the best speech pathology treatments regardless of location." Prof. Leanne Togher

Using Technology in Supported Accommodation

Ms Rebecca Wood, Summer Foundation

The overarching objective of this study is to build an evidence base of assistive and mainstream technology use within shared supported accommodation (SSA) in Victoria, with a focus on identifying examples of technology use that have influenced the outcomes and experiences, as well as cost of care, of people with significant and permanent disability. The research team will also carry out a single case design intervention study, testing a new training approach developed to support tenants to maximize the use of their smart home technology in new Residential Independence Pty Ltd (RIPL) housing models (a Transport Accident Commission (TAC) funded initiative). Pre, post and delayed post intervention data will be collected to provide evidence of impact of the training, and to establish whether gains made are sustained over time.



"This research shows how a more carefully considered approach to housing for people with disabilities can enable them to live in the community, along with everyone else. The case studies presented here are designed to be adaptable to a range of uses by their occupants, giving them choices over how they live, as well as enabling opportunities for engagements with others. By going beyond universal design approaches with their focus on accessibility, this research takes a more holistic approach to design that is concerned with people living richer lives than may have otherwise been possible." Professor Shane Murray

Quadriplegic Patients' Brain Computer Interface

Associate Professor Jingxin Zhang, Swinburne University of Technology

This research aims to develop and test a user-friendly Steady State Visual Evoked Potential (SSVEP)-based brain computer interface (BCI) to help quadriplegic patients use naturally generated responses from localized brain sources as a result of visual stimulation and translate the detected stimulus frequency into action. The designed methodology (hardware and software) is suitable for implementation on tablet computers which makes the whole system inexpensive, portable, and user friendly. An improved version of this would be suitable for people such as spinal injury patients.

Evaluation of Quality of Life Outcomes for People with Traumatic Brain Injury (TBI) Living in the Community

Ms Libby Callaway, Monash University

This project evaluates the health, activity, participation and quality of life outcomes of a group of people with TBI receiving compensation through Transport Accident Commission (TAC) or WorkSafe Victoria who are living in home-like community settings with high levels of daily support funded by the scheme and/or provided informally by families. By identifying the factors that promote or impede the outcomes, the research team can provide recommendations for service planning and implementation to improve the impact of support model on outcomes, service utilisation and costs across settings across time.

Evaluation of Quality of Life outcomes of People Moving to RIPL Settings

Ms Libby Callaway, Monash University

This project specifically evaluates the health, activity, quality of life and cost outcomes for Transport Accident Commission (TAC) clients before and after their move to RIPL (the Residential Independent Pty Ltd Property Trust, a TAC funded initiative) accommodation, including opportunities for choice, flexible support, community participation and independence. It then gathers longitudinal data on outcomes through 18 months post move. This information is important to establish cost benefits and identify key factors that impact the quality of care and outcomes of this group and, subsequently, scheme viability. The TAC can also consider the use of project findings to leverage RIPL or other accommodation partnerships with government and non-government bodies.

Rehabilitation Outcome Post Spinal Cord Injury (SCI)

Ms Gillean Hilton, AQA Victoria

This research explores the experience and pathway of a person achieving vocational and a vocational outcome after SCI to assist hospital clinicians, community based rehabilitation professionals and funders, both private and public, to have a greater understanding of the perspective of the service user and reflect on optimal practice to support employment outcomes.

Community Integration Outcomes following Traumatic Brain Injury (TBI)

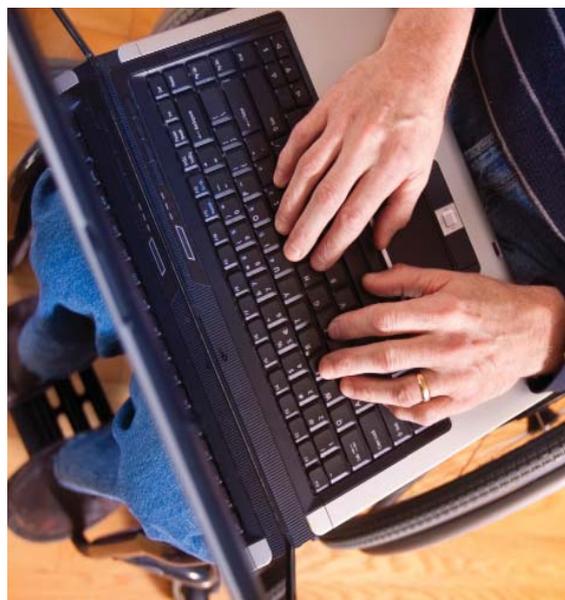
Dr Di Winkler, Summer Foundation

This study extends the Community Integration Questionnaire (CIQ), a key measure of rehabilitation outcomes for their people with neurotrauma, to incorporate an assessment of electronic social networking. Also gathering normative data for Australian adults of working age for comparison, the study allows for better understanding of the home, social and productivity integration outcomes of Transport Accident Commission (TAC) clients. Findings give indications as to whether clients had in fact returned to a level of integration comparative to non-disabled Australians.

Google Calendar: Using Technology to increase Independence in Traumatic Brain Injury (TBI) Survivors

Associate Professor Natasha Lannin, La Trobe University

Memory loss is common following TBI and affects the independence of the person with a TBI in doing daily tasks. While traditional compensatory strategies such as diaries and lists have proven to be helpful, they are passive in nature. Therefore, this mixed-methods study looks at the feasibility of an intervention using Google Calendar to prompt recall of everyday tasks in people with cognitive dysfunction after TBI. Furthermore, this study evaluates clinician use and acceptability of the Google Calendar as an intervention in the Australian community-based rehabilitation setting.



"This research gives a voice to the very challenging but highly rewarding experiences for people of returning to work after sustaining a spinal cord injury. It was a true privilege to hear people's stories and I hope this work will ultimately make a difference for others in the future."
Ms Gillean Hilton



New Models of Care

Professor Amrik Sohal, Monash University

This project assessed the implications for service delivery by organisations providing care for people with neurotrauma in light of TAC's adoption of new client-centred approaches and therapies and care needs based on building positive behaviours, independence and personal goal setting. The research assessed the current skills and competencies of care workers in these organisations and their future training needs, identified the potential for adoption of new service delivery models based on continuous improvement and service innovation and examined how digital technology might be designed and deployed to support such service improvement.

User Engagement in Disability Research for Improved Outcomes and Knowledge Translation

Professor Brian Oldenburg, Monash University

Involving end users in the research process ensures relevance and appropriateness for disability research. This snapshot review considers the evidence for the costs and benefits of end users involvement in the design, delivery, management and translation stages of the research.

RIPL Built and Technology Design Evaluation: Project One

Ms Libby Callaway, Monash University

This project is an iterative evaluation which examines the uptake and effectiveness of built environments and technology design elements, and the success of these in facilitating client independence and autonomy, to inform housing partnerships with government and non-government organisations over time, and expand supported housing options for Transport Accident Commission (TAC) clients and other people living with disability. Project findings are being used by the TAC and RIPL (the Residential Independent Pty Ltd Property Trust, a TAC funded initiative to inform future designed environment procurement and evaluation processes, as well as offering an evidence base for targeted good design criteria.

RIPL Built and Technology Design Evaluation: Project Two

Ms Libby Callaway, Monash University

This project has a focus on the second housing project implemented by the Transport Accident Commission's (TAC) property trust, Residential Independence Pty Ltd (RIPL) in Lilydale, Melbourne. Both pre-move data on built design, technology use, activity monitoring, home and community mobility, as well as post occupancy user experience, are collected to determine whether the anticipated outcomes are being achieved. These findings will be added to evidence collected through Project One evaluation to build an evidence base on design barriers, enablers and outcomes across sites. Findings will help inform future RIPL projects and also any future TAC accommodation strategies to ensure that value for money and client outcomes are achieved and represent best practice.

Experiences of Community Transitions

**Ms Libby Callaway,
Monash University**

This project delivers a comprehensive scan of all existing literature which examines the experiences of people with acquired brain injury (ABI) transitioning across community accommodation settings and evaluates the experience of transition planning for people moving into the new RIPL (the Residential Independent Pty Ltd Property Trust, a Transport Accident Commission/TAC funded initiative) accommodation from perspectives of a person with a disability, the family and support providers, in order to make recommendations to TAC and Worksafe Victoria regarding transition planning and maximise its success.

Evaluating Innovative Models of Care

Professor Fang Lee Cooke, Monash University

This project examines innovative models of care implemented within and outside the disability sector in different parts of the world. It seeks to identify good practices and innovations in service delivery models that enhance client experience to support more independent living on the part of acquired brain injury-spinal cord injury (ABI-SCI) clients and improve the cost-effectiveness of service delivery. Outcomes of this project include a better understanding of how to align ABI-SCI clients' needs for care and care provisions and how to promote the transfer of identified innovative practices to service providers in Victoria.

Person Centred Active Support Project

Professor Christine Bigby, La Trobe University

Person Centred Active Support (PCAS) is an enabling relationship that enables increased engagement in meaningful activities and social relationships. With the aim to optimise the independence and quality of life outcomes of the Transport Accident Commissions (TAC) neurotrauma clients, this project pilots the application of a staff practice known as PCAS in three supported accommodation settings. PCAS has been shown to lead to higher quality of life outcomes and increased engagement in meaningful activity and social relationships for other client groups. So for the first time, this project evaluates the effectiveness of PCAS for TAC clients with high and complex needs following neurotrauma. This study will also provide an understanding of how the PCAS model can be most efficiently implemented and effectively embedded in the work practices of supported accommodation providers.

Evaluation of Quality of Life Outcomes for People with Traumatic Brain Injury (TBI) Living in Shared Supported Accommodation

Ms Libby Callaway, Monash University

Based on an evaluation framework previously used with younger people with acquired brain injury (ABI) transitioning from residential aged care in a large-scale project funded by the Department of Human Services, the research team set about identifying factors that promote or impede improved health, participation and quality outcomes for people with TBI who are receiving compensation through Transport Accident Commission (TAC) or WorkSafe Victoria and living in shared supported accommodation. The observational study subsequently aimed to provide recommendations for service planning and implementation to improve TAC/WorkSafe client outcomes, experience and scheme viability.

PRIORITY 2: Improving Rehabilitation and Disability Management

Improving Health After Spinal Injury: Bowel Management

Dr Brid Callaghan and Professor John Furness, University Of Melbourne

Following injury to the spine, there can be loss of conscious control of the bowel, which commonly leads to constipation and bowel accidents due to the over-full bowel and causes great inconvenience and embarrassment for people with a spinal cord injury (SCI). In the longer term, complications associated with weakening of the bowel wall can require surgery to remove the bowel and the creation of an ileostomy, further compromising quality of life. This study conducts pre-clinical and clinical testing of colokinetic drugs with the aim to restore patient-controlled bowel emptying following SCI, thus significantly reducing attendant care requirements, increasing patient well-being and avoiding the need for surgery.



Rehabilitation after Catastrophic Acquired Brain Injury (ABI)

Associate Professor Natasha Lannin, La Trobe University

A new state-wide specialist rehabilitation service for adults with severe ABI opened at the Alfred Health's Caulfield Hospital in late 2014. This program of research aims to determine the impact of Alfred Health's ABI Rehabilitation Centre by conducting an evaluation of the process of developing a state-wide, evidence-based specialist severe ABI rehabilitation service; and an evaluation of outcomes of care achieved within a slow-stream ABI rehabilitation service. Together, project findings will provide first-ever information on the establishment of a best-practice acquired brain injury rehabilitation service.

"We are currently recruiting people with spinal cord injury for a clinical trial to test the effectiveness of our drug at producing predictable bowel movements, this builds on a previous trial we have completed in a group of spinal cord injured people and uninjured people that showed the drug is handled by the body similarly in people with and without injury with no adverse events occurring." Prof. John Furness and Dr Brid Callaghan

Post Traumatic Brain Injury (TBI) Psychopharmacology Guideline Development

Professor Malcolm Hopwood, University Of Melbourne

Neurobehavioural disturbances such as depression, anxiety, psychosis and impulsive behaviour are known to be common following TBI. While medications may be useful for these difficulties on appropriate occasions, the higher rates of side effects in this group than seen in a general population complicate matters. Currently there are no known guidelines of this kind available in Australia and the only other known guidelines internationally are dated and produced over 10 years ago in the United States for the United States environment. Therefore, this project sees the development of Australian best practice guidelines for the Pharmacological Management of Neurobehavioural Symptoms following TBI. An important aspect of this project is that these guidelines will be communicated to various clinical and community avenues and worked into practice in Victoria through an extensive communication and translation program of activities including a launch, publications, presentations and stakeholder group involvement throughout the project.

Complications Audit of Urological Issues in Spinal Cord Injury Evaluation Study (CAUSES)

Dr Andrew Nunn, Austin Health

By utilising agreed complication codes this project is complementary to the outcomes obtained from the 'Rate, type and cost of complications experienced by spinal cord injury patients in Victoria: Usage of linked data sources' project, which showed that Urinary Tract Infections predominate. Thus a hospital linked coding clinical file and pathology audit was done in parallel amongst spinal cord injured (SCI) patients at the Victorian Spinal Cord Service (VSCS). The primary purpose of this project was to establish the incidence of urological complications particularly of urinary tract infections, those with systemic symptoms and colonisation with of multi resistant organisms, plus the associations with current patterns and practice of catheter usage, treatment and management strategies were studied. The project findings are expected to inform on how to best apply best practice and remeasure outcomes within the system.

Acute Spinal Cord Injury (SCI) Care

Dr Ian Mosley, La Trobe University

By mapping the flow of care for SCI patients in Victoria, this research will identify the care provided in the emergency / trauma, specialist in-hospital and rehabilitation phases of care. Our aim was to broaden the focus of reporting to include hyper-acute, acute, rehabilitation and community outreach. The results will improve our understanding of factors that influence pathways of care for SCI patients. Subsequently, in conjunction with Professor Leonid Churilov from the Florey Institute, an Operations Research Simulation Model has been developed to describe the process of care and modelling of strategies for potential care improvements.

"This guideline should ensure that individuals with ABI can know what to expect when they consult a doctor about these problems."
Prof. Malcolm Hopwood

Segmented rehabilitation after Acquired Brain Injury (ABI)

Associate Professor Natasha Lannin, La Trobe University

This research includes a rapid review of evidence on the effectiveness of segmented rehabilitation for adults with ABI in terms of increasing return to work and/or study, independence, community integration, reducing care costs and/or improving mental health after mild/moderate brain injury.

Remaking Masculinities After Spinal Cord Injury (SCI)

Associate Professor, Murray Fisher, University of Sydney

This life history project aims to examine how men following a SCI reconstruct their masculinity. This study aims to identify the psychosocial needs of men as they transition to a post injury life, where their functional performance in areas of mobilization, urinary and bowel management, and sexuality has been significantly affected. This is important knowledge for the development of interventions that addresses the psychosocial needs of men with SCI throughout rehabilitation.

Reducing Behaviours of Concern (BoC) following Traumatic Brain Injury (TBI): Phase 2 - Intervention and Evaluation

Professor Jennie Ponsford, Monash University

BoC following TBI – including aggression, agitation, lack of initiation, and sexual inappropriateness – present significant challenges for the person with TBI, the people who care for and support them, service organisations and wider society. This project is developing, implementing and evaluating the efficacy of a Positive Behaviour Support model of intervention such as modifying contributing factors and providing training or environmental supports. Apart from minimising BoC, findings will also shape adaptive social behaviours and promote independence and self-management in people with TBI.

"We set out to develop a model that could be used to investigate health care delivery strategies and improve outcomes for SCI patients. The modelling has enabled us to look further ahead and model the potential impact of policy changes targeted at reducing the severity of injuries and reducing the total burden of traumatic injuries on the health system and the community."
Dr Ian Mosley

Slow Stream Rehabilitation at Alfred Health's Acquired Brain Injury Rehabilitation Centre

Associate Professor, Natasha Lannin, La Trobe University

This program of research addresses eight key questions associated with care and services for people with severe acquired brain injury in Victoria. By investigating how much impact the existing acquired brain injury (ABI) rehabilitation care models have on ABI patients and their families, the research team delivers a state-wide, evidence-based ABI rehabilitation program to be adopted by the Alfred Health's Acquired Brain Injury Rehabilitation Centre. This best practice aims to better meet the needs of patients and carers, maximising the likelihood of them receiving satisfactory decision making and better outcomes.

Data Linkage – Rate, Type and Cost of Complications of Spinal Cord Injury (SCI)

Professor Belinda Gabbe, Monash University

This is the final phase of a project investigating the incidence of secondary conditions in SCI. Using two linked datasets, the research team aims to identify the incidence, type and cost of complications resulting following traumatic SCI in Victoria so that the delivery and coordination of care to such patients can be improved. The study compares the Victorian experience with comparable linked data from Western Australia. The use of existing data provides an efficient approach to this problem and will be beneficial in informing future research directions in this field.

Bladder Management Practice Change Model

Dr Andrew Nunn, Austin Health and Peter Bragge, BehaviourWorks

Urological complications, in particular urinary tract infections (UTI) are a common and costly complication of spinal cord injury (SCI). This project will develop an optimal, evidence-based practice model of SCI bladder catheter management using contemporary healthcare quality improvement methods. The key aim of the project is to decrease the time taken to transition from an indwelling catheter to intermittent catheterisation following newly acquired SCI. Implementation of this best practice model for all individuals admitted to the Victorian Spinal Cord Service (VSCS) is expected to reduce the incidence of UTIs, resulting in improved quality of life and economic benefits.

Nutrition after Spinal Cord Injury (SCI)

Professor Mary Galea, University Of Melbourne

Acute SCI can lead to malnutrition, with loss of lean body mass as a result of an initial hypermetabolic response to the stress of injury as well as an abrupt decrease in activity because of paralysis. The project aims to provide a sound basis for current practice in the estimation of nutritional requirements for people with SCI, and for the ongoing monitoring of the adequacy of dietary intake in this vulnerable population.

Evaluation of the New Model of Bladder Management Care at the Victorian Spinal Cord Service (VSCS)

Professor Belinda Gabbe, Monash University

The most common reason for hospital readmission among those affected by spinal cord injury (SCI) was a urinary tract infection (UTI). Therefore, reducing the burden of urological complications in this group requires a coordinated, best practice approach to management from an early stage following injury. This project uses qualitative and quantitative methods to evaluate the impact of a new model of bladder management care, based on published best clinical practice, at the VSCS. Findings from the qualitative component of this study will provide valuable information for planning and informing clinical practice change, including what does and does not work.



"There appears to be a strong correlation between body composition measured using Bioimpedance Analysis (BIA) and reference values given by dual x-ray absorptiometry (DEXA, which provides a surrogate measure for lean muscle mass) in patients with spinal cord injury. BIA is an inexpensive technique for clinicians to accurately monitor changes in body composition at the bedside, and will now be incorporated into clinical practice."
Prof. Mary Galea

Reducing Behaviours of Concern (BoC) following Traumatic Brain Injury (TBI) - Phase 1

Prof. Jennie Ponsford, Monash University, Prof. Malcolm Hopwood, University of Melbourne and Prof. Justin Kenardy, University of Queensland

The broad objective of this project is to identify the factors underpinning chronic behaviours of concern – including aggression, agitation, sexual inappropriateness and lack of initiation – in people following TBI. These behaviours often result in social isolation, relationship breakdown and dislocation from accommodation, and create a significant burden for the person living with TBI, families or other carers. Outcomes of this project will become basis for development and evaluation of a program to alleviate these behaviours, enhance client independence and participation and reduce costs.

Improving Bladder Health after Spinal Cord Injury (SCI)

Associate Professor James Brock, University Of Melbourne

The project aims to understand the mechanisms that contribute to the rapid disruption of the bladder lining (urothelium) following SCI with the objective of developing strategies to prevent its occurrence. The project uses urinary markers of urothelium breakdown identified in animal models to assess whether similar changes to the urothelium also occur immediately following SCI in humans. Importantly, the project investigates the actions of drugs that are already used clinically for other purposes and potentially could be rapidly applied to patients with SCI as a novel preventative treatment.

Bladder Management Post Spinal Cord Injury (SCI) in the Community

Dr Sandra Braaf, Monash University

This project seeks to understand the health and societal impacts of urological complications, and patient interaction with the health care system as experienced by SCI patients living in Victoria. Findings will be hugely beneficial in identifying any unmet needs and potential improvements in the delivery and care of community services to SCI patients and in improving their independence, health and wellbeing. The information will also be useful for the implementation of a new model of care project.

PRIORITY 3: Bench to Beside

Multimodal MR Imaging in Severe Traumatic Brain Injury (TBI) Patients

Professor Jamie Cooper, Monash University

Using multi-modality magnetic resonance imaging, this project aims to improve outcomes in TBI patients through enabling early prognostic algorithms to assist early decision making after the injury. The algorithm would assist clinicians to make a more informed assessment of a patient's possible outcome which in turn will better guide clinical decision making. The findings of this project provide meaningful data for broader international collaboration and stimulate interest in the use of Diffusion Tensor Imaging (DTI) to further investigate brain integrity post decompression.

Treatment in Post-traumatic Amnesia

Professor Jennie Ponsford, Monash University

Individuals with traumatic brain injury (TBI) experience an initial period of disorientation and inability to lay down new memories known as post-traumatic amnesia (PTA). This project aims to firstly, understand and enhance the processes of assessing patients in PTA and secondly, evaluate the effectiveness of therapy to improve the individual's independence in activities of daily living provided during PTA. These findings will be readily and rapidly translatable into clinical practice in rehabilitation centres in Australia and worldwide.

Timing of Spinal Cord Injury (SCI) Decompressive Surgery

Dr Peter Batchelor, University Of Melbourne

This project aims to determine firstly, the average time to decompression in cases of severe cervical SCI within Victoria over the last three years and secondly, where substantial delays occur as patients move from the accident scene to surgery.



Nerve Transfers for Restoration of Upper Limb Function in Tetraplegia

Professor Mary Galea, University Of Melbourne

The Victorian Spinal Cord Service at Austin Health is the first in Australia to offer nerve transfers to patients with tetraplegia for upper limb reanimation. At present there are no clear criteria for selection of appropriate patients for this procedure, and eligibility is determined on the basis of clinical judgment. This project conducts a series of single case studies of patients who undergo nerve transfer surgery. In addition, detailed clinical and neuro-physiological assessments pre-and for up to two years post-operatively, and histological investigation of donor and recipient nerves is documented. Based on these findings, the research team is developing appropriate criteria to determine eligibility of patients for nerve transfer surgery and to refine post-operative training regimens.

"We have recruited ten participants to this study, with some having surgery on both upper limbs. Analysis of nerve tissue samples taken during the surgery has shown abnormalities to varying degrees in almost all samples collected, even in donor nerves considered to be functional on clinical examination. How these abnormalities affect the outcome of surgery remains to be seen."
Prof. Mary Galea

Understanding how Hypothermia Impairs Coagulation in Severe Traumatic Brain Injury (TBI) Patients

Professor Jamie Cooper, Monash University

This project is a sub study of an established large randomised controlled trial, the "Prophylactic hypOthermia trial to Lessen trAumatic bRain injury" (POLAR), funded by the National Health and Research Council. It measured the effect of hypothermia at different temperatures on coagulation in patients with severe TBI who are already enrolled in the POLAR trial. Outcomes of the study could directly enable more effective and safer application of induced hypothermia therapy in TBI patients.

"This completed study has enhanced our understanding of cool temperature on blood coagulation in traumatic brain injury. It has added reassurance to the investigators on the POLAR randomised trial."
Prof. Jamie Cooper

Immediate Cooling and Emergency Decompression for the Treatment of Spinal Cord Injury (SCI)

Dr Peter Batchelor, University of Melbourne

The aim of this research project is to conduct the pilot, safety and feasibility studies necessary for a clinical trial of immediate cooling and emergency decompression (ICED) in patients with cervical SCI. When given early, these therapies may improve neurological outcomes following cervical SCI as well as reduce the incidence of serious complications and shorten hospital stay.

"Early surgery may be of value in SCI if performed in the first few hours following injury. However, this is difficult to achieve in most cases. Cooling may 'buy time' and prevent neurological deterioration, allowing patients to still benefit from surgery many hours later."
Dr Peter Batchelor

PRIORITY 4: Capacity Building

Longitudinal Head Injury Outcomes Research

Professor Jennie Ponsford, Monash University

The overarching purpose of this project is to improve functional outcomes and quality of life for people living with a traumatic brain injury (TBI) and reduce cost in relation to individuals with TBI supported by the Transport Accident Commission (TAC). This includes identifying TAC client needs at various times across their lifespan and assisting the TAC to most efficiently and effectively plan how to meet long-term needs and support clients with TBI to achieve the highest possible level of independence and participation in work, study, community and family life.





Development of a Clinical Research Database for Spinal Cord Injury (SCI)

Dr David Berlowitz, Austin Health

This research assembles a comprehensive, cost-efficient dataset for the Victorian Spinal Cord Service (VSCS), thoroughly documented with a data dictionary. These data fields are mapped to clinical care within the unit, and staff of the VSCS are involved in developing a protocol for how these data are embedded into routine clinical care. This project supports a thorough review of current assessment and data collection practice in the VSCS, and as a result meaningful changes to the way in which some of the clinical data are collected have already been made.

OzENTER – Traumatic Brain Injury (TBI)

Professor Jamie Cooper, Monash University

The OzENTER-TBI research is funded by NHMRC and supports the global CENTER-TBI project by enrolling 100 patients into the ICU-Core study and collecting snapshot data on all TBI patients attending The Alfred over two four-week time periods. This project expands the cohort with a further 100 patients at Royal Melbourne Hospital. Australian participation in this new global TBI research effort will provide Australian researchers with access to global expertise and to open access databases. The study aims to advance the care of traumatic brain injury (TBI) patients by improving the classification of TBI, exploring emerging technologies and identifying effective clinical care not just in Australia but globally.

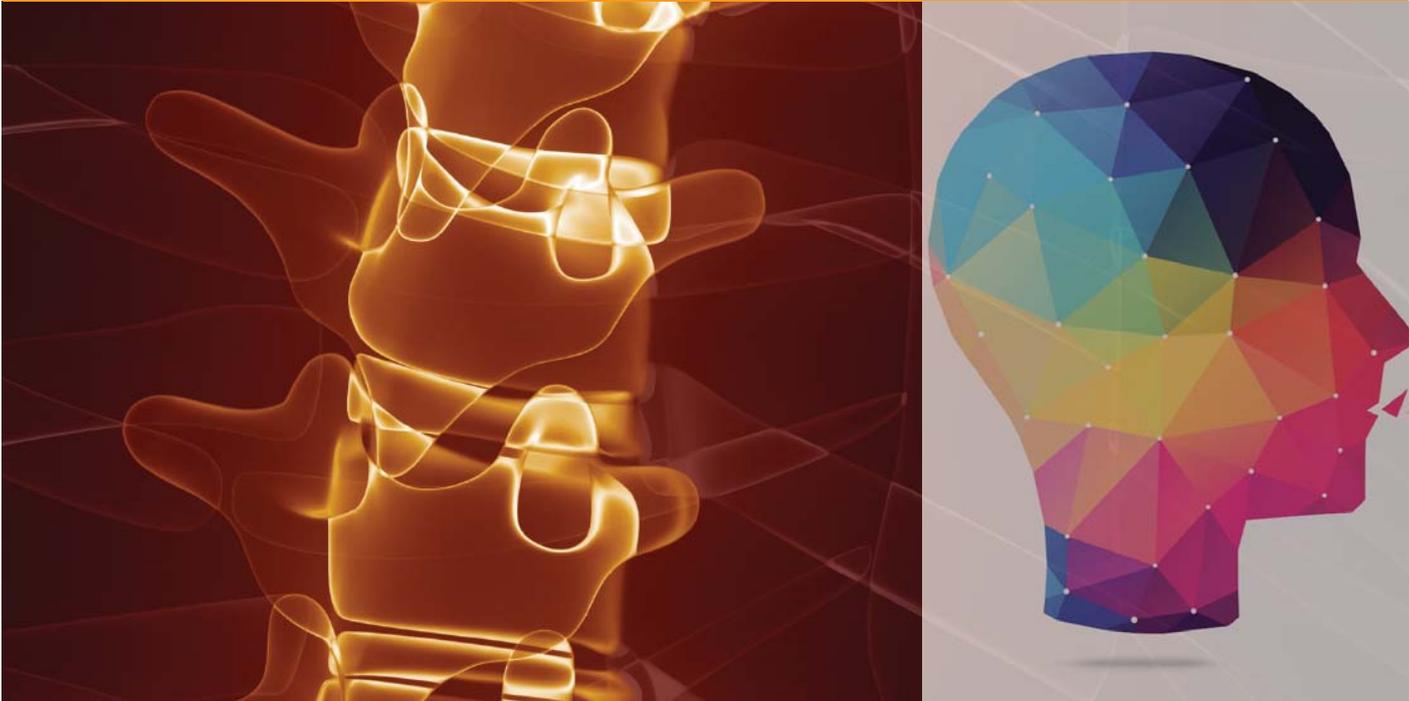
Monash-Epworth Rehabilitation Research Centre (MERCC) 2015 – 2016 Longitudinal Head Injury Outcome Study (LHIS)

Professor Jennie Ponsford, Monash University

This project sees the continued development and maintenance of the database and analysis of the data from the LHIS which has been conducted at Epworth Hospital since 1995. During this period there is an increased focus on how findings can be best translated for optimal outcomes as well as a review of measures to ensure data collected is of most value. The overarching purpose of this project is to improve functional outcomes and quality of life and reduce cost in relation to individuals with traumatic brain injury (TBI) supported by the Transport Accident Commission (TAC).

What is ISCRR?

The Institute for Safety, Compensation and Recovery Research (ISCRR) is a collaboration between Monash University, WorkSafe Victoria and the Transport Accident Commission that seeks to improve outcomes for WorkSafe, the TAC and their clients through applied research and innovation.



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