ISCRR

Institute for Safety, Compensation and Recovery Research

ISCRR Research Catalogue June 2017

TRANSPORT ACCIDENT COMMISSION

Research Projects

This report summarises the program of research undertaken for the Transport Accident Commission as a part of the Institute for Safety, Compensation and Recovery Research (ISCRR), a partnership between Monash University, the Transport Accident Commission and WorkSafe Victoria.

Contact Us

Your key contact is:

Daniel Pejic
Lead, Research Communications and Translation
Institute for Safety, Compensation and Recovery Research
E: daniel.pejic@monash.edu | P: 9903 8602 | M: 0404 428 016

A joint initiative of

WorkSafe VICTORIA | TAC TRANSPORT ACCIDENT COMMISSION | MONASH University

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About the Collaboration

ISCRR is a joint initiative of WorkSafe Victoria (WorkSafe; WSV), the Transport Accident Commission (TAC) and Monash University. It was established in 2009 to facilitate research and best practice in injury prevention, rehabilitation and compensation.

To date, ISCRR has undertaken 68 research projects and 19 evidence reviews for the TAC to inform strategic decision making, policies and programs. The Neurotrauma program comprised 44 of these research projects, focusing specifically on improving the outcomes for TAC clients with traumatic brain injury.

Types of Research Delivered

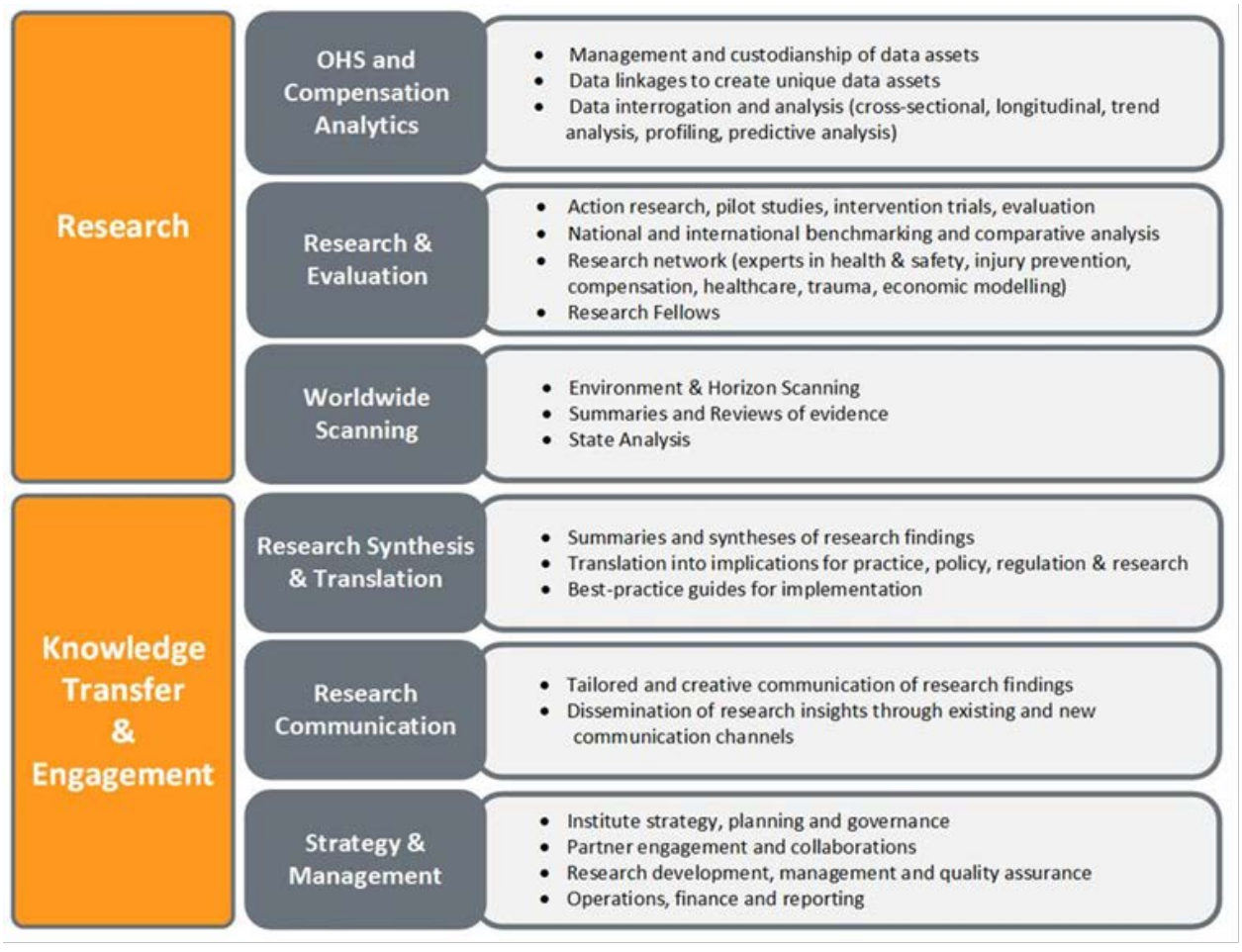
Evidence reviews - Analysing already existing evidence related to a specific topic or intervention.

Data analysis - Using data to describe trends, test interventions, predict outcomes, identify risk factors, and more.

Research projects - Developing new knowledge and information on a topic or drawing existing knowledge together through a variety of research methods.

Evaluations - Testing the impact of interventions undertaken by our partners or within the OHS and compensation environment to determine effectiveness.

ISCRR Capabilities



Research in this report

TAC-ISCRR Research Projects

For the purpose of this report, ISCRR research for TAC has been categorised into three key TAC priority areas: Compensation Systems, Health and Disability. These align to ISCRR's Strategy 2020.

	ISCRR *Strategy 2020*	**TAC priority area**
	Evidence-Informed Claims Management (insurance and compensation systems)	Compensation Systems
	Primary Care (healthcare and compensation systems) Improving Trauma Care (healthcare and compensation systems)	Health
		
	Smart Independent Living Environments (Disability and compensation systems)	Disability

1 Compensation Systems

ISCRR Strategy 2020 research category: Evidence Informed Claims Management

These evidence reviews and research projects focus on addressing structural issues within the TAC compensation system, how services are provided to clients, and identifying opportunities for improvement within the system.

1.1 Evidence Reviews

1.1.1 Client satisfaction

Lead Researcher: Associate Professor Yelena Tsarenko, Monash University

Project No. 22.2
Requested by: TAC
Timeframe: 2011

This review examined the models used for measuring and influencing client satisfaction. It highlighted the relationship between employee and customer satisfaction and made recommendations for the approach to measuring client satisfaction in the future.

Key applications: The findings can be used to enhance current measures of client satisfaction as well as to capture effectiveness and client dissatisfaction throughout the claims process. In addition, the research can form the basis for developing a predictive model of client satisfaction to guide future activity.

1.1.2 Client health outcomes

Lead Researcher: Professor Alex Collie, Monash University

Project No. 22.5
Requested by: TAC
Timeframe: 2011

This review examined major compensation/injury management/private health insurance organisations to determine reasons why there may be gaps between health outcomes experienced by TAC clients and non-compensable clients. The review found that client health outcomes were not identified as key performance indicators in the annual reports of any of the investigated organisations. In addition, only seven of these organisations listed client outcomes as an organisational objective and there was no information about the way in which health outcome targets are set or measured.

Key applications: This review identified the need for client health outcomes to be a key performance measure for major compensation, injury management and health insurance organisations. Consistent measurement of client health outcomes was also identified as required to enable reporting and monitoring.

1.1.3 Comparative effectiveness of counselling providers with different qualifications

Lead Researcher: Emma Donoghue, Monash University

Project No. 22.34
Requested by: TAC
Timeframe: 2013-2014

This review examined the impact of counsellor qualifications on patient outcomes. This review found that there was not enough evidence to support that qualifications impacted client outcomes.

1.1.4 Claims management

Lead Researcher: Dr Sharon Newnam and Professor Alex Collie, Monash University

Project No. 123
Requested by: TAC
Timeframe: 2014

This review examined the views, practices and experiences of claims managers. It identified the complexity of claims management, largely because claims managers are often the first point of contact for claimants, they must coordinate the full spectrum of client care within regulatory frameworks, and they have to navigate the substantial impact that social relationships can have on their daily work tasks. The literature identifies the numerous challenges in the role of the claims manager and the emotional labours involved in this work.

Key applications: This review highlights challenges for claims managers which could affect their ability to undertake the role. The review could be used to inform training and practice for claims managers.

1.1.5 Models for Centres of Excellence: A Snapshot evidence review

Lead Researcher: Dr Samantha Baker, Monash University (ISCRR)

Project No. 22.37
Requested by: WSV/TAC
Timeframe: 2014

With WorkSafe joining the TAC and National Disability Insurance Agency in Geelong, there is potential for the establishment of a national centre of excellence in insurance in the Geelong area. This review sought to understand models of centres of excellence and the benefits realised. The models identified were diverse in nature, and differed on key features including their purpose, partners, resources, governance, community engagement and beneficiaries. Most centres focussed heavily on community engagement with the community being central to their purpose. The review found the potential benefits of Centres of Excellence include driving innovation and change, enhancing and improving community health and well-being, and providing economic and social benefits.

Key applications: This review identified a variety of models available for creating a centre of excellence, and highlights the far-reaching benefits of taking this approach.

1.2 Research Projects

1.2.1 Factors associated with common law claims lodged to TAC

Lead Researcher: A/Professor Michael Fitzharris, Monash University

Project No. 10
Requested by: TAC
Timeframe: 2009-2016

This project explored both the contemporary common law environment and the predisposing factors associated with TAC clients who had proceeded to a common law claim. The research identified an increasing proportion of legal practitioners identifying as 'personal injury' specialists, and that people with complex claims were more likely to lodge through common law. The factors associated with increased lodgement of common law claims were age, sex, road user type, marital status and injury severity; while associated with decreased lodgements were returning to work and adequate social support.

Key applications: This report contains information about why people seek common law claims. The evidence could be used to assist TAC to provide additional support to these claimants to potentially prevent common law lodgements which are known to have detrimental impacts on health outcomes.

1.2.2 TAC client outcomes research

Lead Researcher: Professor Alex Collie, Monash University

Project No. 6
Requested by: TAC
Timeframe: 2009-2011

This study developed a client health outcome metric to assess the effectiveness of the established compensation system on client outcomes. The project was developed based on previous evidence highlighting a lack of existing data collection on mild-to-moderate injuries, the costs associated with injury and complications secondary to injury, and the broader impact of injury on family and society.

Key applications: The research was used as an input for the redevelopment of the client outcome survey in 2009.

1.2.3 Client Conversation Tool evaluation

Lead Researcher: A/Professor Michael Fitzharris, Monash University

Project No. 10
Requested by: TAC
Timeframe: 2009-2016

This project assessed the Client Conversation Tool's performance in practice and to determine its value to TAC staff. The research studied the rehabilitation coordinators' understanding of the rationale and purpose of the tool, how claims staff actually used the tool, what factors affect its use, the relationship between items in the tool and claim activity at 6 months, and how accurate the tool was in identifying clients with complex needs. The research also highlighted what could be done to improve the use of the tool in terms of its effectiveness and appropriateness based on the findings.

Key applications: The revised version of the Client Conversational Tool was implemented in April 2012. An evaluation of the new tool showed that it was more likely to be completed by TAC rehabilitation coordinators, more useable and allowed greater insight into client needs early than the previous version. The client conversational tool was later discontinued and has been replaced with a shorter more targeted tool (the Mental Health and Persistent Pain screening tool).

1.2.4 Use of evidence in public policy environments in Australia: A case study

Lead Researcher: Pauline Zardo, Monash University

Project No. 13
Requested by: TAC/WSV
Timeframe: 2010-2013

This PhD study looked at how evidence and research is used within policy and program decision-making processes in WorkSafe Victoria and the Transport Accident Commission. This project sought to provide a detailed understanding of the 'everyday' operating context of these agencies, identify factors that affect decision-making generally, identify factors that affect research use and inform the development of an intervention to drive and support increased research use in these agencies to support evidence-based practice.

Key applications: These findings have led to the development of recommendations for intervention design, implementation and evaluation, particularly focused on addressing the factors identified in the thesis and subsequent surveys with TAC and WorkSafe staff.

1.2.5 Health effects of compensation systems

Lead Researcher: Professor David Studdert, University of Melbourne

Project No. 21
Requested by: TAC/WSV
Timeframe: 2011-2013

This project revealed that more than half of compensation claimants experience moderate to high stress levels during their claim processes. This experience of stress during the process is linked to poor long-term recovery after injury. A claims process that is streamlined and transparent has the potential to lower stress levels of those claiming, thereby improving client outcomes. The research also found that clients displaying post-traumatic stress disorder or mental health issues were more likely to have a stressful claims experience.

Key applications: Simplifying claim processes and procedures to make them less stressful, and implementing interventions for clients identified most at risk of having stressful claim experiences could improve client outcomes.

1.2.6 An analysis of injured worker and healthcare provider experiences in workers' compensation systems.

Lead Researcher: Elizabeth Kilgour, Monash University

Project No. 29
Requested by: TAC/WSV
Timeframe: 2011-2015

This analysis examined which aspects of compensation systems have impacts on the way healthcare is delivered to clients. The study focussed on psychologists and the evidence showed that there were several aspects of the compensation system which left healthcare providers feeling compromised when delivering services to compensable clients.

Key applications: Working with healthcare providers to give them a better understanding of the compensation system will improve healthcare delivery. Creating opportunities for healthcare providers to input into policy and practice to improve the delivery of the healthcare services for compensable clients may also improve outcomes.

Translation reports: Included in *Return to work research synthesis* (RS002) and *Primary care research catalogue*.

1.2.7 Policy transfer and statutory injury compensation in Australia

Lead Researcher: Conan Brownbill, Monash University

Project No. 14
Requested by: TAC/WSV
Timeframe: 2011-2015

This thesis looked at the origins of legislation which dictates compensable injury in Australia. Specifically, the research set to determine the impact of policy and legislation on the evolution of compensation bodies and to better understand how policy decisions were made over time. The research highlighted that financial implications had dominated recent decision making and that behavioural impacts were often not considered, but influenced outcomes significantly. The findings highlight that changes in policy had substantially influenced the evolution of statutory injury compensation in Australia.

Key applications: This thesis recommended that potential financial implications and behavioural impacts of policy on statutory injury compensation need to be explored.

1.2.8 The implementation of beneficial return to work practices in Victorian organisations: policy and governance considerations

Lead Researcher: Dr Richard Cooney, Monash University

Project No. 69
Requested by: TAC/WSV
Timeframe: 2013-2014

This research examined the system requirements for promoting optimal return to work outcomes. The evidence identified that return to work outcomes are more likely to be successful when infrastructure that supports the employee to return to work is in place. The infrastructure included support for employee wellbeing, training for managers and employees in Return to Work, and effective organisational governance arrangements for injured workers to return to work (including formal reviews of the program and regular reporting between stakeholders).

Key applications: The employee's environment is critical in returning to work and interventions are needed to build the capacity of workplaces to support their employees returning to work. Such interventions could include training, information and resources for employers to help them to develop and maintain effective return to work practices.

Translation reports: Included in *Return to work* (RS002) and *Communication in compensation research syntheses* (RS007).

1.2.9 Outcomes of Compensated Injury Transport Accident Commission: The Medicare Linkage Study

Lead Researcher: Dr Janneke Berecki-Gisolf, Monash University

Project No. 31
Requested by: TAC
Timeframe: 2013-2014

This study sought to determine the impact of pre-injury service use on service use in response to injury. It also looked to determine the impact of chronic disease in injury outcomes and to map the interactions between Medicare and TAC compensation for health service expenditure.

To determine the impact of pre-injury health and service use on injury outcomes, this study involved data linkage of TAC claims and payment records with Medicare and PBS records from twelve months pre-injury through to eighteen months after the date of the crash.

The research found that while pre-injury comorbidity did not have a large impact on the overall injury recovery cost, certain health conditions did have a significant impact on hospital, medical and 88 paramedical expenses. These conditions included mental health disorders, diabetes, cardiovascular disease, recent surgery, and (suspected) back pain.

Key applications: This research highlighted pre-existing conditions which can significantly impact the expense of injury. Screening questions could be asked to obtain client information regarding these key pre-injury health

conditions and provide the TAC with opportunity of better claim management and the capability to better forecast the cost and duration of recovery.

Translation reports: Included in *Primary care research catalogue.*

1.2.10 The cost of comorbidity to the Transport Accident Commission compensation system

Lead Researcher: Dr Janneke Berecki-Gisolf, Monash University

Project No. 70
Requested by: TAC/WSV
Timeframe: 2013-2014

A development grant associated with the study above, this research looked at the cost of pre-injury factors on claims to determine if pre-existing conditions affected claims and if so, what conditions had an impact. The findings revealed that pre-injury factors have a relatively low impact on total TAC claims costs, with the exception of pre-injury mental health service use, which impacted costs significantly. The results also showed that pre-existing health conditions including diabetes, cardiovascular disease, recent surgery, and back pain influenced subsequent hospital, medical and paramedical expenses.

Key applications: Identifying client comorbidities early is required to identify clients that are likely to have a greater post-injury health service need, and will enable the appropriate tailoring of case management and other services.

Translation reports: Included in *Primary care research catalogue.*

1.2.11 Health Benefits of Safe Work evaluation

Lead Researcher: Professor Danielle Mazza, Monash University

Project No. 98
Requested by: HDSG
Timeframe: 2013-2015

This evaluation identified that GPs are aware of the health benefits of work for compensable clients, but there was some uncertainty around how to complete the new Certificate of Capacity, and there was a need to enhance GP skills in relation to the assessment and certification of clients' mental health.

Key applications: The production of a short instructional online video would assist GPs with their understanding of the Certificate of Capacity. In addition, the development of guidelines related to GP assessment, diagnosis and management of work-related mental health conditions may be beneficial to support clinical practice.

Translation reports: Included in *Return to work research synthesis* (RS002).

1.2.12 Determining the individual, community and societal impacts of compensable injury in Australia

Lead Researcher: Professor Alex Collie, Monash University

Project No. 030
Requested by: TAC/WSV
Timeframe: 2011-2016

This research project has developed a model that conceptualises the impact of compensable injuries on individual, community and societal domains. The framework enables consideration of the various elements in each domain that are impacted through compensable injury.

Key applications: A system-wide framework can guide development of holistic strategies to improve outcomes at the individual, community- and societal-levels.

1.2.13 Addressing client needs

Lead Researcher: Dr Ross Iles, Monash University

Project No. 174
Requested by: TAC
Timeframe: 2016-2017

This multi-competent project is focused on TAC's Supported Recovery Client group and will provide clear indications of best practice in introducing targeted approaches to care within the TAC environment. The project has an Evidence Review, State Analysis and Implementation Guide component.

The Evidence Review assessed the characteristics and effectiveness of validated tools that have been used to collect information to identify and respond to client needs (targeted care). This review of the literature found that there are a range of validated tools that can be used to identify client needs, some with high-level predictive ability and research support. However, most have not been rigorously tested in an applied setting, and no clear contextual factors emerged to direct tool selection for use in practice.

Studies that allowed evaluation of the impact of targeted care were rare. From the 8,021 studies identified in the search, only one study identified the true impact of applying targeted care (a study consisting of people with low back pain in primary care). It is unclear whether the findings can be translated to other conditions or to a compensation setting.

Key applications: There is an opportunity for the TAC to implement a world-leading approach to implement targeted care for supported recovery clients.

1.2.14 Improving Return to Work outcomes for TAC clients

Lead Researcher: Professor Alex Collie, Monash University

Project No. 176
Requested by: TAC
Timeframe: 2016-2017

This multi-component project is supporting the TAC to establish an enterprise-wide approach to return to work by providing evidence on current patterns of return to work after traumatic injuries; factors affecting return to work outcomes in TAC clients; and best-practice international models of return to work support for people who sustain traumatic injury. The project has an Evidence Review, State Analysis, Data Report and Implementation Guide Component.

Return to work: A meta-review

This evidence review synthesised existing systematic reviews of interventions that support individuals to stay at, engage in or return to work following work disability due to illness or injury. Findings suggest interventions incorporating multicomponent strategies may be effective. Specifically, there was medium- to strong-level evidence supporting four return to work models: multicomponent employer-led interventions; multicomponent workplace-based interventions; structured vocational rehabilitation; and policy initiatives.

Return to work and vocational rehabilitation: a state analysis of current and emerging practices

This state analysis provided a snapshot of current and emerging thinking and practice in the area of return to work. The analysis involved interviews and reviews of published material from a mix of compensation authorities, social insurers (welfare), mental health centres and one life insurer. The analysis found that many key organisations viewed return to work as an important outcome for their clients and were actively innovating, trialling, refining and piloting initiatives to support clients and employers.

Patterns and predictors of return-to-work in TAC clients: analysis of TAC claims and RESTORE study data

This analysis aimed to identify patterns and risk factors of return to work in TAC clients. The analysis found that, in trauma patients in RESTORE, compared to non-TAC claims, TAC clients were more likely to have a delayed return to work, to not return to work, or to try and fail to return to work. In addition, the analysis found that

predictors of failed return to work are dynamic and their importance changes over time. Understanding of the predictors of return to work outcomes and pathways are important for the development of effective interventions intended to (re)introduce client to the workforce.

Key applications: This evidence base will support the TAC to establish an enterprise-wide approach to improving return to work outcomes.

1.2.15 Common law and legal innovation

Lead Researcher: Dr Genevieve Grant, Monash University (ISCRR)

Project No. 175
Requested by: TAC
Timeframe: 2016-2017

This research project will identify, explore and critically assess opportunities to generate improved outcomes for TAC, its clients and the community through innovative legal practices.

To date the project has developed six briefing notes on the following legal topics of interest to the TAC:

- Apology in TAC claims
- Restorative Justice
- Online claims and dispute resolution portals
- Technology, legal advice and information
- Independent Medical Evidence: Opportunities for Innovation, Reform and Research
- Problem-Oriented Approaches to Case Management

Key applications: This evidence will assist TAC with the development of initiatives to reduce claim time and dispute resolution, and improve client experience.

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2 Health

ISCRR 2020 research category: Primary Care and Improving Trauma Care

The research in this area focuses on addressing issues and improving patient outcomes through health care. This includes evidence about clinical treatments, working with primary healthcare providers, and ways to monitor health outcomes.

2.1 Evidence Reviews

2.1.1 Radiofrequency Denervation

Lead Researcher: National Trauma Research Institute

Project No.: 2
Requested by: HDSG
Timeframe: 2009, 2011

First completed in 2009 and then updated in 2011, this review examined the evidence of clinical effectiveness of the use of Radiofrequency Denervation for the treatment of persistent pain. Both the initial review and update concluded that there was insufficient evidence to determine with confidence the benefits and harms of Radiofrequency Denervation for the treatment of persistent pain.

Key applications: There is insufficient high quality evidence in the scientific literature at 2011 to support the treatment of TAC and WorkSafe clients with Radiofrequency Denervation.

2.1.2 Benzodiazepines for anxiety

Lead Researcher: National Trauma Research Institute

Project No. 2
Requested by: HDSG
Timeframe: 2011

This systematic review was a review of already published systematic reviews to determine the clinical effectiveness of Benzodiazepines in the treatment of generalised anxiety disorder post-injury. The systematic reviews included 41 clinical trials of five different types of Benzodiazepines registered for use in Australia. The review found inconsistencies with reference to the effectiveness of the use of Benzodiazepines in the treatment of anxiety, as well as some potential harms in their use.

Key applications: The published scientific evidence of clinical effectiveness available in 2011 for the use of Benzodiazepines for the treatment of anxiety is inconsistent and firm conclusions cannot be drawn.

2.1.3 Implantable pain therapies: Intrathecal infusions

Lead Researcher: National Trauma Research Institute

Project No. 2
Requested by: HDSG
Timeframe: 2011, 2015

Intrathecal infusion is a technique used to administer drugs through the stomach where other methods are not suitable. This systematic review examined the scientific literature to determine if intrathecal infusions are effective for the treatment of persistent pain. The review found there was only limited evidence available examining the testing of Intrathecal infusions in the treatment of pain not associated with cancer. Only three Randomised Controlled Trials were identified and as such there was insufficient evidence to conclusively determine the effectiveness of this drug delivery method for relief of pain. The review also identified that some studies reported harmful side effects for patients, including nausea, dizziness, sleepiness, headache and addiction. There was also evidence of complications with the treatment such as pump malfunction, misplacement and infection.

Key applications: Existing clinical guidelines indicate that Intrathecal infusions are only to be used where no other treatments are available. The evidence available to 2015 identifies potential complications and harmful side-effects for patients of this treatment.

2.1.4 Implantable pain therapies: Neurostimulation

Lead Researcher: National Trauma Research Institute

Project No. 2
Requested by: HDSG
Timeframe: 2011, 2015

Neurostimulation is a therapy that directs electricity on to the nerves in cases where other methods are not suitable. The treatment requires surgery to insert a device under the skin that will provide electricity directly to the nerves (a neurostimulator). The treatment is only used where no other options are available to patients. This systematic review examined the clinical effectiveness of neurostimulation for the treatment of persistent pain. There was evidence that the use of this treatment for spinal cord stimulation (SCS) relieves pain within 5 years in persistent pain conditions, however the efficacy of all other types of neurostimulation was not evident. The review also identified possible harms associated with neurostimulation, including bleeding into the brain, nausea, headache or migraine, and a low risk of death. Additional surgery required to amend complications is also an increased risk to patients.

Key applications: The efficacy of neurostimulation is limited and significant harms have been associated with the treatment.

2.1.5 Art therapy

Lead Researcher: National Trauma Research Institute

Project No. 2
Requested by: HDSG
Timeframe: 2011-2012

This evidence review examined the effectiveness of using art therapy as a treatment for clients who had experienced trauma. There was insufficient evidence available at the time of review to determine the effectiveness of art therapy in preventing or reducing psychological harm among individuals who had developed PTSD following traumatic exposure. The majority of the included studies were of children and adolescents in clinical settings, therefore the suitability of the treatment for adults could not be determined.

Key applications: In 2012 there was insufficient published scientific evidence to determine the effectiveness of art therapy for adults who had developed PTSD.

2.1.6 Beds for Backs

Lead Researcher: National Trauma Research Institute

Project No. 2
Requested by: HDSG
Timeframe: 2011-2012

This systematic review examined the impact of mattress type on back pain or the treatment of back pain. The evidence available did not provide sufficient data for effectiveness to be determined, largely due to the diversity of studies and inconsistencies in study methodology.

Key applications: In 2012 there was insufficient published evidence to determine the impact of mattress type on clinical measures of back pain.

2.1.7 Repetitive Transcranial Magnetic Stimulation in treating depression

Lead Researcher: National Trauma Research Institute

Project No. 2
Requested by: HDSG
Timeframe: 2013

Repetitive Transcranial Magnetic Stimulation is a relatively new technique similar to Electroconvulsive Therapy where a magnetic pulse is used to stimulate the brain instead of electroconvulsions. The advantage of Repetitive Transcranial Magnetic Stimulation over Electroconvulsive Therapy is that the patients do not need to be put under anaesthetic to have the therapy administered. The systematic review could not determine the clinical effectiveness of Repetitive Transcranial Magnetic Stimulation for the treatment of depression.

Key applications: The administration of Repetitive Transcranial Magnetic Stimulation for patients with depression is not yet proven to be clinically effective for treating depression.

2.1.8 Spinal Fusion

Lead Researcher: National Trauma Research Institute

Project No. 2
Requested by: HDSG
Timeframe: 2013

Spinal Fusion is a surgical technique used in the treatment of chronic pain in cases where other options (exercise, medications, and physiotherapy) are not suitable. This systematic review identified that while several studies have compared surgery with other treatments for effectiveness on pain, muscle strength, function, work and quality of life, there is insufficient evidence to determine the effectiveness of fusion on chronic pain, compared to other treatments. The review also found significant complications associated with Spinal Fusion surgery (1/10 patients) including bleeding, infection, blood clots, nerve damage, and lung and heart complications.

Key applications: The evidence in 2013 does not support the effectiveness of spinal fusion surgery for treatment of chronic pain, over other treatments. Additionally, approximately 10% of patients experience complications.

2.1.9 Body Weight Supported Treadmill Training for Spinal Cord Injury (LOKOMAT)

Lead Researcher: National Trauma Research Institute

Project No. 2
Requested by: HDSG
Timeframe: 2011

Body Weight Supported Treadmills are used to train patients to walk by harnessing them above the machine and using different methods to move their legs (electronic or manual). They are often used with Spinal Cord Injury patients, a major client group of the TAC. This project assessed the effectiveness of the use of treadmills for this purpose and found insufficient available evidence to assess benefits and harms.

Key applications: There was insufficient evidence available to determine if body-weight supported treadmills are better, worse, or the same as other types of walking training.

2.2 Research Projects

2.2.1 TAC Hospital Data Linkage

Lead Researcher: Dr Behrooz Hassani-Mahmooei, Monash University

Project No. 177
Requested by: TAC
Timeframe: 2016-2017

This project aims to support TAC to understand, engage with and influence the public health system as well as its internal claim management processes by using new data linkage. It will explore the physical, mental and behavioural health conditions of clients prior to and after their transport accident. Researchers will also focus on effective alternative discharge models from the trauma system at local and international levels.

Key applications: The project is expected to support TAC to implement an evidence-based approach to claim management, triage and early intervention through analysing the impact of comorbidities on recovery and so improve the support provided to Supported Recovery clients.

2.2.2 a. Victorian Orthopaedic Trauma Outcomes Registry (VOTOR)

Lead Researcher: Professor Peter Cameron, Professor Belinda Gabbe, Monash University

Project No. 7
Requested by: TAC
Timeframe: 2010-2013

The Victorian Orthopaedic Trauma Outcomes Registry (VOTOR) tracks orthopaedic injuries, treatment, complications and outcomes to enable the monitoring of orthopaedic injury management, treatment approaches and outcomes to improve healthcare delivery. This project has demonstrated that VOTOR is a powerful and effective tool for the long term tracking of patients following orthopaedic trauma. The data allows researchers and practitioners to predict patient outcomes, identify predictors of poor outcomes, and monitor the impact of new implementations (such as new surgical interventions).

Key applications: VOTOR is a powerful data asset that has significant potential for assisting in the tracking of new interventions and treatments as they are implemented. TAC has already built upon this foundational work through data linkage (see 2.2.2b).

b. VOTOR and Victorian State Trauma Registry (VSTR) – linkage project

Lead Researcher: Professor Belinda Gabbe, Monash University

Project No. 83
Requested by: TAC
Timeframe: 2014-2016

This project linked VOTOR and TAC administrative data to assess the impact of the TAC recovery model on patient outcomes, the association between fault and client outcomes, claim costs for clients who sustained pelvic ring fractures, and claim costs for those with tibial plafond fractures. Analysis revealed that the TAC recovery model was associated with better outcomes in the treatment of pain.

The study also identified a relationship between the perceptions of fault and patient outcomes. Clients who were not at fault, or believed that they were not at fault, demonstrated much poorer patient-reported outcomes than VOTOR Recovery clients who were at fault. This highlights a potential psychological factor in client recovery.

The linkage study also identified evidence of different clinical practices between hospitals in the management of severe pelvic ring fractures, which was associated with different patient outcomes. Through VOTOR the management practices at one hospital changed with a lifetime cost saving to the TAC.

Key applications: Linkage of VOTOR and TAC data provides a unique ability to identify predictors of poor patient outcomes after treatment for orthopaedic injuries.

2.2.3 Classification, management and outcomes of severe pelvic ring fractures

Lead Researcher: Professor Belinda Gabbe, Monash University

Project No. 26
Requested by: TAC
Timeframe: 2011-2012

Pelvic ring fractures are uncommon but carry a high mortality rate and significant complications, which affects a survivor's quality of life. This study established the importance of accurate pelvic ring fracture classification, and assessed the differences in long-term outcomes and mortality levels across differing treatment approaches. The study identified that one specific type of treatment, fixation of the fracture, was associated with better health-related quality of life outcomes for patients.

Key applications: TAC clients with pelvic ring fractures treated by fixation of the fracture are likely to have better physical and mental health outcomes than those managed conservatively.

2.2.4 Women's injuries and return to work: the social context

Lead Researcher: Associate Professor Jane Maree Maher, Monash University

Project No. 43
Requested by: TAC/WSV
Timeframe: 2012-2013

This project explored why women with children took longer to return to work than any other demographic group. The study identified that many injured women push themselves to continue to care for their children and perform household duties despite their injuries. The claims system did not appear to account for the fact that injured people may still be required to give care while they themselves are receiving care for their injuries. The factor was related to poorer return to work outcomes for women with children, compared to others with similar injuries.

Key applications: Injured women who are required to care for children and perform household duties may require additional support to improve their return to work outcomes.

Translation reports: Included in *Return to work research synthesis* (RS002).

2.2.5 The knowledge, skills and behaviours required by supervisors to facilitate a return to work after a mental disorder of musculoskeletal injury

Lead Researcher: Dr Venerina Johnston

Project No. 44
Requested by: TAC
Timeframe: 2012-2013

This project was a qualitative study conducted across five industry sectors with high rates of compensation claims for mental health or musculoskeletal injury. The interviews asked supervisors in these industries what types of skills and knowledge they would need to help one of their employees return to work in these cases. Eleven key competencies were identified by supervisors as required for supervisors to facilitate the return to work of their injured workers return to work. To develop these competencies, implementation of face-to-face training for supervisors was recommended, to allow supervisors to effectively assist employees to return to work. The study also highlighted a need to strengthen employer's understanding of the key role of supervisors in return to work and that the employer and supervisor should work closely with rehabilitation teams to support return to work. Supporting supervisors to facilitate return to work and linking them in with rehabilitation centres early was seen to be likely to lead to better return to work outcomes in mental health or musculoskeletal injury claims. Supervisors were found to be supportive of undertaking this training.

Key applications: The 11 competencies identified to support return to work can be used to develop new, and assess existing, educational and training programs for supervisors.

Translation reports: Included in *Return to work research synthesis* (RS002).

2.2.6 Examining the role of GPs in return to work

Lead Researcher: Professor Danielle Mazza, Monash University

Project No. 50
Requested by: TACWSV
Timeframe: 2012-2014

Between 2003 and 2010 in Victoria, an increasing number of sickness certificates were issued by General Practitioners (GPs). The certificates were also being issued for increasing amounts of time, with mental health claims associated with the longest periods off work. This study examined the attitudes and understanding of GP return to work practices and found that increases in the issuing of sickness certificates was likely due to a number of factors including:

- Lack of a common definition regarding GPs' role in RTW
- Heavy reliance on feedback only from the patient regarding their capacity to work
- Age and social circumstances of the patient/their family
- Lack of communication between GPs, employers and compensation agencies
- High administrative burden on GPs from the compensation system
- Compensation/health systems barriers (such as delayed payments)
- Difficulties in referrals
- Conflicting medical opinions

Key applications: The findings in this report informed the design of the Health Benefits of Safe Work program, and further research into the certification process for GPs including the revised certificate of capacity. There are further opportunities to enhance the relationship between GPs and compensation systems when they are treating a patient with a compensable injury.

Translation reports: Included in *Return to work research synthesis* (RS002).

2.2.7 A process evaluation of the new certificate of capacity for compensation claims

Lead Researcher: Dr Bianca Brijnath, Monash University

Project No. 82
Requested by: TAC/WSV
Timeframe: 2013

Following on from earlier research, a new Certificate of Capacity was designed for GPs to help them better assess what an injured worker could do, rather than what they could not do in the workplace. This study evaluated the utility of the new certificate of capacity and found that all stakeholders felt it was a significant improvement on the previous one. Compensation agents and employers had the most positive reaction, appreciating the shift in focus to a worker's capabilities. At the time of the evaluation GPs were ambivalent about the new certificate and were inclined to still certify based on incapacity and provide little information on functional capacity. This suggests that there is still further support needed for GPs to reorient their clinical practices towards assessing capacity rather than incapacity. All stakeholders sought further guidance on mental health capacity and suggested that the certificate needed to be incorporated into existing medical software.

Key applications: GPs need further support to reorient their clinical practices towards assessing capacity rather than incapacity, and guidance on clinically assessing mental health capacity is needed broadly. Implementing the certificate of capacity as an electronic tool would be highly beneficial.

Translation reports: Included in *Return to work research synthesis* (RS002).

2.2.8 Assessment of the timing of decompressive surgery in spinal cord injury

Lead Researcher: Dr Peter Batchelor, University of Melbourne

Project No. 76
Requested by: TAC
Timeframe: 2013-2014

Emerging evidence identified the importance of performing spinal decompression surgery as quickly as possible following a spinal cord injury. This study sought to identify the current average times to surgery in Victoria and the factors relating to the timing. On average, the time between injury and decompression surgery has significantly decreased over the past four years, however, it was still longer than that recommended for optimal patient outcomes. The research found that streamlining processes, such as including initial admission to a pre-surgical hospital, and organising an operating theatre after the patient had been stabilised could further reduce the time between injury and surgery timing. In addition, the study identified better patient outcomes by cooling the spinal cord to suspend further damage and opening the surgery window.

Key applications: Streamlining processes is likely to improve health outcomes in emergency situations where spinal decompression surgery is required.

Translation reports: Included in *Independence research catalogue.*

2.2.9 The nature, incidence and impact of secondary conditions on outcomes for individuals with transport and work-related injury in the state of Victoria

Lead Researcher: Professor Belinda Gabbe, Associate Professor Peter Smith, Monash University

Project No. 87
Requested by: TAC/WSV
Timeframe: 2013-2014

This study reported on the incidence of secondary complications following a claim through TAC and WorkSafe. It was found that only a small percentage of claimants develop secondary complications, which include mental health conditions and persistent pain. However, the healthcare and wage replacements costs associated were comparatively higher than for other claimants, and, more importantly, their outcomes were significantly poorer. The research identified that claimants were more likely to develop secondary conditions if: they had a previous claim, were female, were middle-aged, or were from a lower socio-economic background.

Key applications: As these risk factors are not readily modifiable, focusing on identifying and supporting at-risk individuals as early as possible in the claim journey is likely to lead to better health outcomes.

Translation reports: Included in *Primary care research catalogue.*

2.2.10 Strategies to enable physiotherapists to promote timely return to work following injury

Lead Researcher: Professor Jenny Keating, Monash University

Project No. 79
Requested by: HDSG
Timeframe: 2013-2016

With growing evidence of the health benefits of returning to work, this study examined the role of physiotherapists in return to work processes. Similar to the GP study (2.25 above), this study sought to first identify the barriers and facilitators which affected return to work outcomes in clients who were seeing a physiotherapist as a part of their treatment. The factors identified in this study which hindered or facilitated an injured worker's return to work were: injured worker attitudes, the workplace, unified targets and positive approaches to care by all stakeholders, system delays, inappropriate certification of capacity, communication skills, and knowledge of the Victorian compensation system.

Based on these findings an online education program for physiotherapists was developed. The program consisted of a variety of resources and also developed an incentive-based system to encourage physiotherapists to undertake the training. Early evaluation results suggest that this program is delivering positive results in terms of return to work rates and marked improvements in physiotherapists' understanding of the clinical framework and relevant TAC and WorkSafe policy and procedures.

Key applications: There are opportunities to implement similar strategies to build the capacity of other primary care practitioners and improve client outcomes.

Translation reports: Included in *Return to work* (RS002) and *Communication in compensation* (RS007) research syntheses and *Primary care research catalogue.*

2.2.11 Impact of compensation on persistent pain

Lead Researcher: Professor Nellie Georgiou-Karistianis, Monash University

Project No. 56
Requested by: TAC
Timeframe: 2013-2016

Although still underway, this study has identified that involvement in the compensation process after a motor vehicle accident either does not facilitate recovery or is associated with poorer recovery. The relationship with health outcomes was likely to be related to the stress experienced during the claims process. In addition, the poorer health outcomes were associated with more medical assessments, the involvement of a lawyer, multiple contact points within the compensation body, and in some cases poor case management.

Key applications: Minimising the stress felt by claimants as they interact with the compensation system is likely to improve health outcomes. This will require streamlining processes and implementing system-level changes.

2.2.12 The influence of perceived social support on compensable injury

Lead Researcher: Ms Khic-Houy Prang, Monash University

Project No. 46
Requested by: TAC
Timeframe: 2014-2016

This project investigated the impact of social support on recovery after road traffic accident. The study identified that social support has a positive impact on physical health, pain and return to work for the injured person. A number of barriers and facilitators in receiving and providing social support were identified. The source of social support (family, friends, community or healthcare provider) appears to influence recovery. There is an opportunity for healthcare professionals to identify clients at-risk of social isolation and offer additional support.

Key applications: Identifying people with low social support early in the claims process and providing appropriate interventions would be beneficial for clients with compensable injury.

2.2.13 Improving the quality of primary health care for TAC clients

Lead Researcher: Dr Katharine Gibson, Monash University (ISCRR)

Project No. 172
Requested by: TAC
Timeframe: 2016-2017

This multi-component study is investigating primary care models and interventions that support patients with complex needs. The project has an Evidence Review, State Analysis, Data Report and Implementation Guide component. The Evidence Review identified primary care models and interventions that are effective in supporting individuals with chronic and complex health conditions. The findings indicate that there is no single intervention associated with better primary health care quality, and that a tailored program in close collaboration with general practice is recommended. A program focusing on self-management support, delivery system design, decision support and clinical information systems is more likely to result in improved health outcomes for people with chronic or complex health conditions.

The State Analysis identified current and emerging primary care models for complex conditions currently in practice in Australia and internationally. Key findings from the State Analysis suggest that patients with complex needs require a multi-component, tailored approach to manage their health.

Key applications: This evidence will support the development of TAC's primary care strategy.

2.2.14 Early interventions for pain and mental health

Lead Researcher: Dr Melita Giummarra, Monash University

Project No. 173
Requested by: TAC
Timeframe: 2016-2017

This project will evaluate evidence-based early interventions focused on treating TAC clients at increased risk of developing persistent pain and mental health conditions. The project will involve a worldwide review of existing trial evidence, examination of current treatment patterns for pain and mental health in TAC clients, and evaluation of the capability of health care services around Victoria to deliver interventions where they are needed.

The Evidence Review for this project has been completed and identified a number of effective interventions targeting persistent pain and mental health. Interventions targeting pain had moderate to large effects on pain severity, whether they were delivered by psychologists, psychiatrists, physiotherapists or multidisciplinary teams. Similarly, interventions targeting mental health conditions such as cognitive behavioural therapy and prolonged exposure therapy had small to large effects on mental health outcomes when delivered face to face by practitioners. Interventions with little or no face-to-face contact did not improve patient outcomes.

Key applications: This evidence will inform TAC's approaches to early intervention for clients at risk of developing persistent pain and secondary psychological injury.

3 Disability

ISCRR Strategy 2020 research category: Smart Independent Living Environments

The following section summarises research pertaining to clients who sustain a disability through injury. The summary also includes the projects funded by TAC through the Neurotrauma Research Program. The Neurotrauma Research Projects have been categorised in line with the Neurotrauma Research Strategy.

3.1 Evidence Reviews

3.1.1 Review of current and emerging assistive technologies for reduction of care attendant hours: Cost effectiveness, decision making tools and emerging practices

Lead Researcher: Dr Rachel McDonald, Monash University

Project No. 22.26
Requested by: HDSG
Timeframe: 2013

Assistive technologies have the potential to enhance the independence of people with brain and spinal cord injuries. A review of the evidence of effectiveness of these technologies was commissioned, particularly focused on the ability of assistive technologies to reduce attendance care requirements and increase quality of life. The review identified 33 technologies that were available in 2011, however there was a lack of scientific published evidence of the effectiveness of the technologies for reducing attendant care requirements. As such clinical effectiveness in this regard could not be established at the time.

Key applications: This evidence review informed the development of a decision making tool for assessing claims for assistive technology. The Horizon Scanning project was also established at ISCRR and has continued to identify and assess new technologies as they emerge.

Translation reports: Included in *Best practice housing design for TAC clients research synthesis* (RS012) and *Independence research catalogue.*

3.1.2 Models of supported accommodation for people with Traumatic Brain Injury

Lead Researcher: Ms Libby Callaway, Monash University

Project No. 22.24
Requested by: HDSG
Timeframe: 2012-2013

This review examined the models of supported accommodation for people with Traumatic Brain Injury. The review identified that there were limited options available to clients living with Traumatic Brain Injury. These options were largely through family care, residential care and group houses. The review also found that there was only limited information available at the time to support people with Traumatic Brain Injury and their families to plan the type of supported accommodation needed for long-term community living.

Key applications: A need was identified for further research in the areas of housing and support, and appropriate slow stream rehabilitation for people with Traumatic Brain Injury. The Residential Independence Pty Ltd (RIPL)

project was set up to develop best-practice care for clients who sustain traumatic brain injury.

Translation reports: Included in *Independence research catalogue*

3.1.3 Segmented Rehabilitation: A Rapid Review

Lead Researcher: Professor Natasha Lannin, La Trobe University

Project No. 22.29
Requested by: HDSG
Timeframe: 2013

Segmented care involves grouping individuals into a rehabilitation stream according to a common goal, injury type or shared motivation such as returning to work, school, or daily living. This approach is based on evidence which suggests that each of these vocational goals requires separate skills, and as a result, the rehabilitation program needs to help clients develop these skills. This review identified that there was only limited scientific evidence available to support segmented care in general, including segmenting care by shared goal such as return to work. The concept of segmented care according to a shared goal such as a vocational outcome (return to work) has evidence-based grounds but there is currently no evidence to support that this will lead to better client outcomes.

Key applications: There is insufficient evidence to have confidence that segmented approaches to rehabilitation or any inpatient models of vocational rehabilitation will improve outcomes for people with acquired brain injury.

Translation reports: Included in *Independence research catalogue*.

3.1.4 The costs and benefits of end user engagement in disability research

Lead Researcher: Ms Nerida Joss and Professor Brian Oldenburg, Monash University

Project No. 22.32
Requested by: HDSG
Timeframe: 2013

This review examined the evidence surrounding the benefits and costs of involving people with disabilities in research by assessing research questions and outcomes. The review identified five papers which were specific to engaging with people with disabilities in the research context. The evidence showed that the involvement of end users had a positive impact on both end user and researcher through ensuring relevance and appropriateness of the research. The barriers to engaging with end users in a research context were found to be related to the extra time required for involving people with disabilities, and the possible need for researcher training.

Key applications: Engaging end-users with disabilities in research improves research outcomes and builds understanding.

Translation reports: Included in *Best practice housing design for TAC clients research synthesis* (RS012) and *Independence research catalogue.*

3.1.5 The effectiveness of synchronous telemedicine for clients with mental health conditions

Lead Researcher: Dr Tracey Varker, University of Melbourne (Phoenix)

Project No. 159
Requested by: TAC
Timeframe: 2015

This systematic review assessed the effectiveness of synchronous telemedicine for mental health conditions. Telemedicine involves the delivery of healthcare via information and communication technologies, such as online and by phone. Synchronous telemedicine interventions are those that are delivered in real-time between a clinician and a client. This review assessed the evidence on effectiveness for synchronous telemedicine interventions for depression, anxiety, posttraumatic stress disorder and adjustment disorder. The evidence supported the use of telephone-delivered, evidence based treatments such as cognitive behavioural therapy for anxiety and depression. The evidence suggests that delivering these treatments by telemedicine may be less

effective for clients who present with complex psychological issues. Evidence for the use of video-conferencing for these same conditions is promising but less research is available.

Key applications: Telemedicine can ideally be used to treat clients with anxiety or depression who have geographical barriers to accessing face-to-face specialised services.

Translation reports: Included in *Primary care research catalogue*.

3.2 Research Projects

3.2.1 Provider performance measurement and engagement – external environment scan

Lead Researcher: Professor Jacinta Douglas, La Trobe University

Project No. 58
Requested by: HDSG
Timeframe: 2012-2013

This research identified a need for developing a Provider Performance Management Framework to assist management of the various providers involved in the compensation system and measuring ongoing provider performance. The project identified international best practice in this area, and identified that implementation of the Provider Performance Management Framework will require engagement with, and participation from stakeholder groups.

Key applications: An evidence-based guide for implementing a Provider Performance Management Framework has been developed.

3.2.2 Disability and Driving: Vehicle Modifications

Lead Researcher: Dr Marilyn Di Stefano, La Trobe University

Project No. 71
Requested by: TAC
Timeframe: 2013-2015

This study aimed to provide a stronger evidence base for the future improvement of vehicle modification prescriptions for drivers with disabilities. The study involved a survey of drivers who regularly used vehicle modifications to understand how they used their vehicles, a literature review of prescription issues, and a study tour to learn from other jurisdictions about their approaches and guidelines. Victoria's Occupational Therapy Driving Assessors were also engaged to redevelop guidelines around assessing the need for vehicle modifications for drivers with disabilities. As a result of the research, a draft model of practice and set of prescription guidelines were developed.

Key applications: The development of evidence-based guidelines for the prescription of vehicle modifications has the potential to improve the practice of Occupational Therapy Driving Assessors. The findings can be used in assessor training, service delivery and quality assurance processes.

Translation reports: Included in *Independence research catalogue*.

3.2.3 OzENTER-TBI

Lead Researcher: Professor Jamie Cooper, Monash University

Project No. 129
Requested by: TAC
Timeframe: 2015-2018

OzENTER is the Australian component of the international research program CENTER-TBI. CENTER-TBI is a 21 country study of patients presenting to hospitals who have sustained traumatic brain injury. The study aims to compare treatment and rehabilitation practices across countries to improve classification of TBI, explore emerging technologies and identify the most effective clinical care and treatment programs worldwide. The Australian arm of this study, OzENTER-TBI involves 200 patients from The Alfred and Royal Melbourne Hospitals (100 per site). Data will also be collected from all TBI patients presenting to emergency departments, for a wider comparative study of up to 25,000 patients worldwide.

Key applications: The OzENTER contribution to the CENTRE-TBI study will help to identify worldwide best practice clinical care for patients presenting to emergency departments with traumatic brain injury.

Translation reports: Included in *Independence research catalogue*.

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*The following research projects align to the Neurotrauma Strategy key priority area of **Models of Lifetime Care** and including projects related to:*

- *Meeting the specific and varied needs of accommodation for clients*
- *Improving attendant care and their capacity to support clients*
- *Methods for community integration including employment*

3.2.4 New Models of Care

Lead Researcher: Professor Amrik Sohal, Monash University

Project No. 65
Requested by: TAC
Timeframe: 2013

This study assessed the implications for service delivery by organisations providing care for people with spinal cord injury or traumatic brain injury in light of TAC's adoption of new client-centred approach. The research identified that therapies and care provided need to be based on building positive behaviours, independence and personal goal setting. The skills and competencies of care workers were assessed to determine their future training needs and identify the potential for the adoption of new service delivery models based on continuous improvement and service innovation. The study also examined how digital technology might be designed and deployed to support such service delivery.

Key applications: This research can be used to inform service delivery models and highlights the most suitable methodology for training care workers to improve client outcomes.

Translation reports: Included in *Primary care and Independence research catalogues.*

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

Lead Researcher: Ms Libby Callaway, Monash University

Project No. 040
Requested by: TAC
Timeframe: 2012-2013

This observational study evaluated the Quality of Life outcomes for TAC and WorkSafe clients living in shared supported accommodation post sustaining traumatic brain injury. The research identified factors that promote or impede improved health, participation and quality of life outcomes and highlighted the areas that could be influenced by TAC and WorkSafe through targeted interventions. This study has been undertaken in an observational manner and has led to the introduction of a longitudinal study which will enable a comparison of client outcomes for people living in supported accommodation, housed in RIPL settings and those at home with high attendant care. This will help better understand the factors which impact quality of life outcomes long-term.

Key applications: As findings on the factors which influence quality of life outcomes become better known through the longitudinal study, significant improvements to quality of life for TAC clients with traumatic brain injury could be achieved through the implementation of targeted interventions.

Translation reports: Included in *Best practice housing design for TAC clients research synthesis* (RS012) and *Independence research catalogue.*

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

Lead Researcher: Ms Libby Callaway, Monash University

Project No. 62
Requested by: TAC/WSV
Timeframe: 2013

This pilot study examined the lives of 40 people with severe traumatic brain injury living in shared supported accommodation funded by the TAC and WorkSafe. Their physical and mental health, choice, social networks, and community integration and participation outcomes were examined. The study identified areas within supported

housing as well as the design and implementation of models of paid support that could influence client experience, outcomes and scheme viability.

Key applications: This study has since become a longitudinal study which is actively working with RIPL to improve processes and outcomes for clients (see 3.3.7).

Translation reports: Included in *Best practice housing design for TAC clients research synthesis* (RS012) and *Independence research catalogue.*

3.2.7 Transition, Outcomes and User Experiences in RIPL

Lead Researcher: Ms Libby Callaway, Monash University

Project no. 151
Requested by: TAC
Timeframe: 2013-2017

This longitudinal study will measure the impact of the RIPL housing project on key outcomes such as cost to the TAC and client outcomes such as health, behaviours, independence, social and economic participation, community integration and life satisfaction. The study will take place over a number of years across four varied models of housing developed by RIPL. The four models are: an inner urban integrated apartment model, two small cluster unit models, and a larger unit development.

Key applications: This study will evaluate the impacts of RIPL on client's lives and inform and direct best practice in built and technology design using post-occupancy evaluation methodologies.

Translation reports: Included in *Best practice housing design for TAC clients research synthesis* (RS012) and *Independence research catalogue.*

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

Lead Researcher: Ms Libby Callaway, Monash University

Project No. 63
Requested by: TAC/WSV
Timeframe: 2013-2016

This study evaluates the health, activity, participation and quality of life outcomes of a group of people with traumatic brain injury receiving compensation through TAC or Worksafe Victoria. The individuals are living in home-like community settings with high levels of daily support funded by the scheme and/or provided informally by families. The study will characterise the modifiable factors which are found to influence the outcomes (promote or impede).

Key applications: The findings will inform strategies for improving service planning and implementation to improve outcomes, service utilisation and costs across settings across time.

Translation reports: Included in *Best practice housing design for TAC clients research synthesis* (RS012) and *Independence research catalogue.*

3.2.9 Using Technology in Supported Accommodation

Lead Researcher: Ms Rebecca Jamwal, Summer Foundation

Project no. 99
Requested by: TAC
Timeframe: 2014-2016

This study investigated the extent to which electronic technology is being used by people living with disability in Victorian shared supported accommodation settings. The study found that access to electronic assistive technology and internet in supported accommodation settings can lead to positive psychosocial outcomes for residents, including increased independence, autonomy and ability to participate in social and recreational

activities. In addition, use of technology may reduce the burden on support services by increasing residents' independence. Electronic assistive technology appears under-utilised in accommodation settings and capacity building of people with disability and their support networks may positively influence this.

Key applications: Opportunities exist to review, implement and/or retrofit electronic assistive technology into shared supported accommodation to increase resident independence and reduce reliance on support services.

Translation reports: Included in *Best practice housing design for TAC clients research synthesis* (RS012) and *Independence research catalogue.*

3.2.10 RIPL Built and Technology Design Evaluation: Project One

Lead Researcher: Ms Libby Callaway, Monash University

Requested by: TAC
Timeframe: 2013-2014

This evaluation of RIPL Project One, delivered in 2013, aimed to assess the ability of the residences to meet client needs and improve quality of life outcomes. After investigating the environment and user experiences, the study developed a key set of evaluation criteria to measure the impacts of RIPL. The results of the evaluation showed that overall Project One was very successful against the vast majority of criteria and sub-criteria identified. The consultation with users also showed generally positive experiences. From this evaluation, several recommendations are made to improve the program.

Key applications: The recommendations from this evaluation of the first RIPL project have been implemented in the subsequent design and builds undertaken by RIPL, with a view to ongoing continual improvement.

Translation reports: Included in *Best practice housing design for TAC clients research synthesis* (RS012) and *Independence research catalogue.*

3.2.11 RIPL Built and Technology Design Evaluation: Project Two

Lead Researcher: Ms Libby Callaway, Monash University

Project no. 97
Requested by: TAC
Timeframe: 2014-2016

This project has a focus on the second housing project implemented by RIPL in Lilydale, Melbourne. Initially pre-move data was collected on built design, technology use, activity monitoring, home and community mobility. Post occupancy user experience is being collected to determine the outcomes of the design of Project Two.

Key applications: These findings will add to evidence collected through Project One evaluation to enhance the evidence base on design barriers, enablers and outcomes across RIPL sites, and the value for money and impacts on client outcomes.

Translation reports: Included in *Best practice housing design for TAC clients research synthesis* (RS012) and *Independence research catalogue.*

3.2.12 Community Integration Outcomes following Traumatic Brain Injury (TBI)

Lead Researcher: Dr Di Winkler, Summer Foundation

Project No. 74
Requested by: TAC
Timeframe: 2013-2014

The Community Integration Questionnaire is used internationally to measure community integration post rehabilitation. This study revised and extended the Questionnaire after identifying a need to incorporate an assessment of electronic social networking and to collect information about levels of community participation and integration in community members without a disability to provide a baseline comparison. The data collected enhances the understanding of the home, social and productivity integration outcomes of TAC clients with

traumatic brain injury following rehabilitation. The findings provide the ability to assess whether clients had returned to a level of integration comparative to non-disabled Australians.

Key applications: This study provides a useful tool for measuring participation outcomes in TAC clients and identifies opportunities for improving factors that influence community participation and integration.

Translation reports: Included *Independence research catalogue.*

3.2.13 The experience of achieving a successful employment outcome following traumatic spinal cord injury: Pathways and processes

Lead Researcher: Ms Gillean Hilton, AQA Victoria

Project No. 72
Requested by: TAC/HDSG
Timeframe: 2013-2014

Return to Work is widely known to improve client outcomes. This study examined the experiences of people seeking, gaining or maintaining employment after suffering traumatic spinal cord injury. The study identified that the type of work undertaken before injury impacted on return to work prospects, particularly as in some cases people were unable to return to their pre-injury workplace. When investigating factors that helped facilitate returning to their original workplace or finding employment elsewhere when that wasn't suitable it was identified that participating in further study greatly increased employment opportunities post-injury. Additionally, the study found that many people with injury were unaware of their options or what they could do to seek employment.

Key applications: Providing appropriate information, support and resources to employers and clients, as well linking clients to further study options can help those who are injured find employment back at their pre-injury employer or elsewhere.

Translation reports: Included *Return to work research synthesis* (RS002) and *Independence research catalogue.*

3.2.14 Telehealth for Carers' Communication Skills

Lead Researcher: Professor Leanne Togher, University of Sydney

Project No. 73
Requested by: HDSG/TAC
Timeframe: 2013-2015

This study trialled the implementation of telehealth services (Skype) to assess social communication skills for people with Traumatic Brain Injury and the support skills of their carers instead of face-to-face assessment. The Skype assessment method was found to be as reliable and accurate as face-to-face assessment. This finding supports the feasibility of videoconferencing as a way to increase access to conversation assessment and brain injury rehabilitation services in general.

Key applications: Videoconferencing is a potential tool for increasing access to supports and services for people with Traumatic Brain Injury and their families.

Translation reports: Included in *Primary care research catalogue and Independence research catalogue.*

3.2.15 Design Contributions to Lifetime Care

Lead Researcher: Mr Shane Murray, Monash University

Project no. 66
Requested by: TAC
Timeframe: 2015

This project involved an analysis of eleven national and international supported living dwellings. Design strategies and high-quality design components that meet the needs of the client and users of lifetime care housing were documented. The aim was to investigate accommodation settings that have a positive impact on the client, their support network and cost of care.

Key applications: This evidence can inform future accommodation strategies for severely injured clients by considering the role that effective design can play in increasing independence.

Translation reports: Included in *Best practice housing design for TAC clients* (RS012) and *Independence research catalogue.*

3.2.16 Design Strategies for Housing for Assisted Living

Lead Researcher: Professor Nigel Bertram, Monash University

Project no. 94
Requested by: TAC
Timeframe: 2014-2016

This study investigated the impact of architectural design strategies on the quality, performance and efficiency of the TAC's new and retrofitted accommodation for traumatic brain injury and spinal cord injury residents. Researchers found that using a master planning approach was an effective strategy for the design of home modifications. The approach empowered participants and allowed them to consider housing options in relation to their goals and values, and opportunities to connect with the community. This process may have some therapeutic benefit for clients, and has the potential to avoid modifications that are dangerous or less than optimal to the client.

Key applications: Using a master planning design approach for home modifications is a successful way to build participation and empower TAC clients in the design of optimal home modification design and should be done early in the process.

Translation reports: Included in *Best practice housing design for TAC clients research synthesis* (RS012) and *Independence research catalogue.*

3.2.17 Person Centred Active Support Project

Lead Researcher: Professor Christine Bigby, La Trobe University

Project no. 93
Requested by: TAC
Timeframe: 2014-2017

Person Centred Active Support is an enabling relationship that increases engagement in meaningful activities and social relationships. This approach has been shown to improve quality of life outcomes and increase engagement in meaningful activity and social relationships for other TAC client groups, and this study will pilot Person Centred Active Support in TAC clients with high and complex needs following Neurotrauma. For the study clients will reside in three supported accommodation settings and the evaluation will assess the impact on client's independence and quality of life.

Key applications: The findings from this study will inform the model for effectively embedding the Person Centred Active Support approach into the work practices of supported accommodation providers.

Translation reports: Included *Independence research catalogue.*

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

Lead Researcher: Professor Jacinta Douglas, La Trobe University

Project no. 155
Requested by: TAC
Timeframe: 2016-2019

This study involves implementing and evaluating innovative strategies to support social activity, social relationships and community inclusion for people with severe brain injury living in different environments. The intervention is tailored specifically to meet the needs of the individual and aims to improve wellbeing and enhance community integration of individuals with severe traumatic brain injury.

Key applications: The findings from this research will inform strategies to improve the quality of life of people living with severe traumatic brain injury.

Translation reports: Included *Independence research catalogue.*

3.2.19 Steady-State visual evoked potential-based brain computer interface

Lead Researcher: Associate Professor Jingxin Zhang, Swinburne University of Technology

Project no. 75
Requested by: TAC
Timeframe: 2015

This study developed a brain computer interface typewriter able to be integrated into a tablet to allow quadriplegic patients with no hand movement to communicate. The interface converts naturally generated responses from localised brain sources as a result of visual stimulation to communication. The designed methodology (hardware and software) is suitable for implementation on tablet computers, making the system largely inexpensive, portable, and user friendly. Testing of the system resulted in improvements in speed and accuracy, and increasing suitability for other applications.

Key applications: The improved version of the system can greatly assist people with spinal cord injury to communicate.

Translation reports: Included *Independence research catalogue.*

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

Lead Researcher: Associate Professor Natasha Lannin, La Trobe University

Project no. 100
Requested by: TAC
Timeframe: 2013-2015

Memory loss is common following traumatic brain injury and impacts the capacity of the injured person to perform daily tasks. While traditional strategies such as diaries and lists have proven to be helpful, they are passive in nature. This study found that using Google Calendar improved participants' ability to independently undertake planned tasks and activities. This was not a result of improved memory, but rather a result of the use of the tool to compensate for memory loss. As a secondary impact of the use of the strategy, a reduction of attendant care hours was observed. The research found that the effective use of Google Calendar requires a hands-on approach by occupational therapists. Google Calendar was used most consistently by clients who were able to identify how the tool could benefit them and who received active training and support from their occupational therapists.

Key applications: When implemented effectively, Google Calendar has the potential to increase independence for clients in their day-to-day activities and subsequently reduce attendant hours required by the client.

Translation reports: Included in *Best practice housing design for TAC clients* (RS012) and *Independence research catalogue.*

The following research projects align to the Neurotrauma Strategy key priority area of ***Improving rehabilitation and disability management*** and include the following:

- Managing challenging behaviours in clients with traumatic brain injury
- Better management of secondary complications in spinal cord injury
- Slow stream rehabilitation

3.2.21 Reducing Behaviours of Concern following Traumatic Brain Injury: Phase 1 –Understanding Behaviours of Concern

Lead Researcher: Professor Jennie Ponsford, Monash University

Project no. 84
Requested by: TAC
Timeframe: 2014-2016

This study is investigating Behaviours of Concern which are common following traumatic brain injury. These behaviours include aggression, agitation, lack of initiation, and sexual inappropriateness and cause significant challenges for the person with traumatic brain injury, the people who care for and support them, service organisations and wider society. This project aimed to identify the factors underpinning chronic behaviours of concern in patients with traumatic brain injury. The study consisted of a retrospective analysis of cases in the TAC database and a series of semi-structured interviews with the client, the client's primary carer and therapist. In this study the range and severity of behaviours of concern were identified, as well as the factors associated with the behaviours.

Key applications: The findings from this study will be used to develop and trial interventions to reduce behaviours of concern in traumatic brain injury clients.

Translation reports: Included *Independence research catalogue.*

3.2.22 Reducing Behaviours of Concern following Traumatic Brain Injury: Phase 2 - Intervention and Evaluation

Lead Researcher: Professor Jennie Ponsford, Monash University

Project no. 135
Requested by: TAC
Timeframe: 2015-2018

Following from project 85, this project will develop, implement and evaluate the effectiveness of a Positive Behaviour Support model of intervention. The intervention will aim to modify the factors contributing to the behaviours of concern, and provide training or environmental supports to help prevent them.

Key applications: This study will test how to effectively intervene to reduce the occurrence and impact of behaviours of concern in people with traumatic brain injury.

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

Lead Researcher: Dr Andrew Nunn, Austin Health

Project No. 111
Requested by: TAC
Timeframe: 2013-2015

This study audited patients with spinal cord injury admitted to the Victorian Spinal Cord Service to establish the incidence of urological complications, the treatment provided and current practice. Information was collected through a data linkage project which allowed for the identification of urological complications. The results found high rates of urinary tract infections and multi-resistant organism colonisation (resistance to multiple antibiotics) in patients following spinal cord injury. The rates were attributed to the use of indwelling catheters in patients with spinal cord injury, indicating a need to change clinical practice regarding the use of indwelling catheters and bladder management practice.

Key applications: Changes in clinical practice can reduce urological complications in patients following spinal cord injury.

Translation reports: Included *Independence research catalogue.*

3.2.24 Evaluation of the New Model of Bladder Management Care at the Victorian Spinal Cord Service

Lead Researcher: Professor Belinda Gabbe, Monash University

Project no. 139
Requested by: TAC
Timeframe: 2015-2018

The most common reason for hospital readmission among those affected by spinal cord injury was a urinary tract infection. 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 Victorian Spinal Care Service.

Key applications: 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.

Translation reports: Included *Independence research catalogue.*

3.2.25 Bladder Management Practice Change Model

Lead Researcher: Dr Andrew Nunn, Austin Health and Peter Bragge, BehaviourWorks

Project no. 138
Requested by: TAC
Timeframe: 2015-2017

This study is investigating how to better manage urological complications, such as urinary tract infections, that are common and costly complications of spinal cord injury. The study will develop an optimal, evidence-based practice model of Spinal Cord Injury bladder catheter management using contemporary healthcare quality improvement methods. The project aims primarily to decrease the time taken to transition from an indwelling catheter to intermittent catheterisation following newly acquired spinal cord injury. Implementation of this best practice model for all individuals admitted to the Victorian Spinal Cord Service is expected to reduce the incidence of urinary tract infections, resulting in improved quality of life and economic benefits.

Key applications: The findings will establish the ability to reduce urological complications in patients following spinal cord injury using contemporary best practice bladder catheter management.

Translation reports: Included *Independence research catalogue.*

3.2.26 Improving Bladder Health after Spinal Cord Injury

Lead Researcher: Professor James Brock, Monash University

Project no. 110
Requested by: TAC
Timeframe: 2015-2018

The project aims to understand the mechanisms that contribute to the rapid disruption of the bladder lining (urothelium) following spinal cord injury, and to develop strategies to prevent its occurrence. The study uses urinary markers of urothelium breakdown identified in animal models to assess whether similar changes to the urothelium occur in humans immediately following spinal cord injury. Further, the study will investigate the actions of drugs currently used clinically for other purposes for application in patients with spinal cord injury as a novel preventative treatment.

Key applications: This research will inform the availability of effective treatments for disruption of the bladder lining in TAC clients.

Translation reports: Included *Independence research catalogue.*

3.2.27 Bladder Management Post Spinal Cord Injury in the Community

Lead Researcher: Dr Sandra Braaf, Monash University

Project no. 137
Requested by: TAC
Timeframe: 2015-2016

This project studied 22 Victorians living with spinal cord injury to gain an understanding of their experiences with urological issues. The study identified a number of barriers for clients living with urological complications. Some barriers prevented them from living daily life freely, and other barrier related to the maintenance of bladder health. Barriers included a lack of availability of appropriate health care services, high costs of effective equipment, lack of professional assistance from paid carers, lack of accessible toilets and little information about the conditions for people living with these complications and their carers.

Key applications: This study identified a number of opportunities to improve the lives of people living in the community with urological issues.

Translation reports: Included *Independence research catalogue.*

3.2.28 Treatment in Post-Traumatic Amnesia

Lead Researcher: Professor Jennie Ponsford, Monash University

Project no. 89
Requested by: TAC
Timeframe: 2014-2017

Individuals with traumatic brain injury experience an initial period of disorientation and inability to lay down new memories known as post-traumatic amnesia. This project aims to understand and enhance the processes of assessing patients in post-traumatic amnesia as well as to evaluate the effectiveness of therapy to improve the individual's independence in activities of daily living during post-traumatic amnesia.

Key applications: These findings will inform clinical practice in rehabilitation centres in Australia and worldwide.

Translation reports: Included *Independence research catalogue.*

3.2.29 Nutrition after Spinal Cord Injury

Lead Researcher: Professor Mary Galea, University of Melbourne

Project no. 78
Requested by: TAC
Timeframe: 2013-2015

This study examined the processes associated with acute spinal cord injury leading to malnutrition. The loss of lean body mass is a result of an initial hypermetabolic response to the stress of injury as well as an abrupt decrease in activity because of paralysis. This study established a robust evidence base to calculate nutritional requirements for people with spinal cord injury to better inform and monitor the dietary intake in this vulnerable population and improve client outcomes.

Key applications: These findings provide a method of determining the nutritional needs of patients with spinal cord injury. Implementation of this approach in clinical settings will significantly improve client outcomes.

Translation reports: Included *Independence research catalogue.*

3.2.30 Improving Health after Spinal Injury: Bowel Management

Lead Researcher: Dr Brid Callaghan and Professor John Furness, University of Melbourne

Project No. 85
Requested by: TAC
Timeframe: 2014-2016

This study tests the pre-clinical and clinical use of cholekinetic drugs for restoring patient-controlled bowel emptying following Spinal Cord Injury. Restoring this function would significantly reduce attendant care requirements, increase patient well-being and avoid the need for surgery.

Key applications: The study will inform clinical practice for restoring patient-controlled bowel movements and reducing care requirements.

Translation reports: Included *Independence research catalogue.*

3.2.31 Post Traumatic Brain Injury (TBI) Psychopharmacology Guideline Development

Lead Researcher: Professor Malcolm Hopwood, University of Melbourne

Project no. 141
Requested by: TAC
Timeframe: 2015-2017

Neurobehavioural disturbances such as depression, anxiety, psychosis and impulsive behaviour are common following traumatic brain injury. While medications may be useful for these difficulties on appropriate occasions, the higher rates of side effects in this group compared to a general population complicates matters, and prescription guidance is required. This project is developing Australian best practice guidelines for the Pharmacological Management of Neurobehavioural Symptoms following traumatic brain injury. Importantly, the 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.

Key applications: The implementation of these evidence-based guidelines will lead to improved prescription and better outcomes for patients who experience neurobehavioural disturbances following traumatic brain injury.

Translation reports: Included *Independence research catalogue.*

3.2.32 Remaking Masculinities after Spinal Cord Injury (SCI)

Lead Researcher: Associate Professor Murray Fisher, University of Sydney

Project no. 102
Requested by: TAC
Timeframe: 2014-2016

Researchers interviewed 15 men who had recently sustained a spinal cord injury using a life history method. Participants talked about their experiences of being a man, both before and after the spinal cord injury. They also gave insights into their thoughts and feelings about their sense of masculinity and how their injury had affected them physically and psychologically, with feelings of inadequacy and lack of value common among those surveyed. While prevention was not the focus of the study, the report found that most of the men surveyed had sustained their injury undertaking risky behaviour.

Key applications: This study has identified important psychosocial needs of men with spinal cord injury that could be addressed during rehabilitation for improved outcomes.

Translation reports: Included *Independence research catalogue.*

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

Lead Researcher: Associate Professor Natasha Lannin, La Trobe University

Project no. 57
Requested by: TAC
Timeframe: 2012-2014

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.

Key applications: This best practice model should better meet the needs of patients and carers, maximising the likelihood of them achieving better outcomes.

Translation reports: Included *Independence research catalogue.*

3.2.34 Rehabilitation after catastrophic acquired brain injury

Lead Researcher: Associate Professor Natasha Lannin, La Trobe University

Project no. 108
Requested by: TAC
Timeframe: 2014-2019

This project is evaluating the effectiveness of the development and delivery of Alfred Health's Acquired Brain Injury Rehabilitation Centre following. Phase one of the project evaluates the process of setting up the centre, and if it has operated as intended. Initial results show that the centre has achieved adherence to 96% of clinical best practice guidelines indicators, up from 35% pre-centre. Additionally, staff and patients are reporting a positive response to the centre and staff have expressed confidence in making evidence-based decisions. The second phase of the project will investigate the impact of the centre's model of care on key client outcomes.

Key applications: The improvements in clinical services and staff and patient measures achieved to date suggest the model implemented at the new Acquired Brain Injury Rehabilitation Centre is beneficial.

Translation reports: Included *Independence research catalogue.*

3.2.35 Rehabilitation Outcome Post Spinal Cord Injury

Lead Researcher: Ms Gillean Hilton, AQA Victoria

Project no. 72
Requested by: TAC
Timeframe: 2013-2014

This study examined the experience of injured persons in seeking employment after spinal cord injury and what factors lead to different employment outcomes – unemployment, unstable employment and stable employment. The study found a number of factors which influenced employment outcomes in injured patients including positive links between further education and employment prospects and negative links with comorbidities such as mental health issues.

Key applications: These findings can inform the development of strategies to support employment for injured clients.

Translation reports: Included *Independence research catalogue.*

These projects relate to the ***Bench to Bedside*** section of the Neurotrauma strategy, which aimed to conduct proof of principle studies of promising biomedical interventions or technical innovations in humans to help improve client outcomes.

3.2.36 Multimodal MR Imaging in Severe Traumatic Brain Injury Patients

Lead Researcher: Professor Jamie Cooper, Monash University

Project no. 37
Requested by: TAC
Timeframe: 2015-2018

This study aimed to improve outcomes in traumatic brain injury patients through two pilot programs involving the implementation of improved MRI brain scanning. The first pilot study analysed brain structure after decompressive craniectomy surgery and found that there is some preliminary evidence to suggest that these procedures could lead to secondary complications. The second pilot study used multimodal MR imaging to enable early prognostic algorithms to assist early decision making after traumatic brain injury. The second study contributes to a broader international collaboration, with the Alfred now adopting international techniques. The small sample sizes in these studies did not lead to conclusive results, however, initial results are promising.

Key applications: If these findings are confirmed with future research, they will transform neurosurgical thinking about unexpected brain injury after craniectomy and help improve interventions and client outcomes.

Translation reports: Included *Independence research catalogue.*

3.2.37 Nerve Transfers for Restoration of Upper Limb Function in Tetraplegia

Lead Researcher: Professor Mary Galea, University Of Melbourne

Project no. 91
Requested by: TAC
Timeframe: 2014-2019

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.

Key applications: This research will develop appropriate criteria to determine patient eligibility for nerve transfer surgery and enable refinement of post-operative training regimens.

Translation reports: Included *Independence research catalogue.*

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

Lead Researcher: Professor Jamie Cooper, Monash University

Project no. 38
Requested by: TAC
Timeframe: 2012-2014

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 Medical Research Council. It measured the effect of hypothermia at different temperatures on coagulation in patients with severe traumatic brain injury who are already enrolled in the POLAR trial.

Key applications: Outcomes of the study could directly enable more effective and safer application of induced hypothermia therapy in TBI patients.

Translation reports: Included *Independence research catalogue.*

3.2.39 Timing of Spinal Cord Injury Decompressive Surgery

Lead Researcher: Dr Peter Batchelor, University Of Melbourne

Project no. 76
Requested by: TAC
Timeframe: 2013-2014

This study identified the average time to decompression surgery following spinal cord injury. Existing data showed that this type of surgery has the best outcomes when performed within a few hours of injury, but is usually performed between 12-14 hours after injury. The study identified the average time taken to perform the surgery in Victoria and what processes could be changed to shorten the window and found that some common protocols and practices increase the time to surgery and improvements could be made. The team is now working with Ambulance Victoria to shorten times to improve outcomes. Additionally, the study found promising information around using immediate induced hypothermia therapy (deliberate cooling of the body) to extend the time window between injury and surgery.

Key applications: Following this research, a large multicentre clinical trial is now planned to test the effects of immediate cooling following by decompression to assess if this will increase the surgical window.

Translation reports: Included *Independence research catalogue.*

3.2.40 Immediate Cooling and Emergency Decompression for the Treatment of Spinal Cord Injury

Lead Researcher: Dr Peter Batchelor, University of Melbourne

Project no. 090
Requested by: TAC
Timeframe: 2014-2018

This study developed and tested the validity of an early neurological assessment tool – the SPinal Emergency Evaluation of Deficits (SPEED). The SPEED assessment tool assesses motor and sensory function to determine injury severity and level. The study found that the SPEED assessment was able to determine the severity and level of cervical spinal cord injury. In particular, assessment of foot motor function was accurate in determining severity of the injury. Handgrip strength, along with location of spinal pain was accurate in assessing whether there was a cervical cord injury.

Key applications: If successful, the SPEED assessment has the potential for early identification of patients who will benefit from acute interventions such as decompression surgery, which will be critical in ensuring that they are taken to a specialist centre and have decompression surgery performed within the optimal timeframe.

Translation reports: Included in *Independence research catalogue.*

The projects under this category were undertaken to increase the capacity for Neurotrauma research by increasing available data and creating new datasets.

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

Lead Researcher: Dr David Berlowitz, Austin Health

Project no. 39
Requested by: TAC
Timeframe: 2012-2013

This study assembled a comprehensive, cost-efficient dataset for the Victorian Spinal Cord Service and documented it with a data dictionary. These data fields are mapped to clinical care within the unit, and staff of the Victorian Spinal Cord Service were involved in developing a protocol for how the data was embedded into routine clinical care. The result is a more efficient way to collect information about spinal cord injury.

Key applications: This project established a template for local implementation of international data standards and has significantly improved opportunities for collaborative learning in spinal cord injury.

Translation reports: Included in *Independence research catalogue.*

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

Lead Researcher: Professor Belinda Gabbe, Monash University

Project no. 109
Requested by: TAC
Timeframe: 2014-2015

This project linked data from hospitals and the TAC to determine the rate, type and direct costs of secondary conditions in Spinal Cord Injury. Sub-group analysis of various patient characteristics, such as type and severity of injury, age, gender, and compensation status was performed to examine the relationship with post-injury complications and the costs associated.

Key applications: The findings from this study should inform interventions for preventing secondary conditions in patients with spinal cord injury.

Translation reports: Included in *Independence research catalogue.*

3.2.43 Longitudinal Head Injury Outcomes Research

Lead Researcher: Professor Jennie Ponsford, Monash University

Project no. 34
Requested by: TAC
Timeframe: 2012-2015

This study aims to improve functional outcomes and quality of life for people living with a traumatic brain injury. TAC client needs are identified at various times across their lifespan and TAC is assisted to most efficiently and effectively plan how to meet long-term needs and support clients with Traumatic Brain Injury to achieve the highest possible level of independence and participation in work, study, community and family life.

Key applications: This research can inform policy and practice in relation to managing clients who sustain traumatic brain injury.

Translation reports: Included in *Independence research catalogue.*

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

Lead Researcher: Professor Jennie Ponsford, Monash University

Project no. 150
Requested by: TAC
Timeframe: 2015-2016

This project continues the Longitudinal Head Injury Outcome Study which has been conducted at Epworth Hospital since 1995. This project has a focus on translating findings for improving outcomes, as well reviewing measures to ensure the 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 supported by the TAC.

Key applications: The continuation of the MERRC LHIS provides unique data to inform policy and practice for managing clients who sustain traumatic brain injury.

Translation reports: Included in *Independence research catalogue*

4 Research Synthesis

4.1.1 Return to work

Lead Researchers: Dr Amanda Sampson, Frances Taylor, Monash University (ISCRR)

Project no. RS002
Requested by: TAC
Timeframe: 2016

This project synthesised ISCRR's existing evidence on the factors that influence return to work. Overall, returning to work after injury has been shown to contribute to positive health outcomes for the injured worker. Recovery from musculoskeletal injury is significantly improved by earlier return to work however, the health benefits of return to work for workers experiencing mental health issues are not conclusively established.

Several interventions known to improve return to work outcomes have been examined through ISCRR. Key findings are:

- Organisational-level interventions are generally more effective than individual-level interventions
- There is increasing evidence supporting the effectiveness of specific mental-health related interventions
- Case conferencing is a promising approach to improving communication between stakeholders which is critical to facilitating return to work.

This synthesis found that return to work outcomes are influenced by a variety of factors including those at the individual level, particularly pre-injury factors, the type of injury sustained, employer factors, healthcare provision factors and factors within the compensation system. Return to work is also influenced by how the system and the stakeholders within the system interact with each other. There is strong evidence that return to work approaches which comprise a combination of healthcare provision, service co-ordination and workplace accommodations are effective in reducing work absence following musculoskeletal conditions, pain-related conditions and mental health conditions.

4.1.2 Communication in Compensation

Lead Researcher: Trevor Gosbell, Monash University (ISCRR)

Project no. RS007
Requested by: TAC
Timeframe: 2016-2017

This project synthesised ISCRR's existing evidence on communication between compensation bodies, clients and providers in the compensation process. The findings suggest that clients who find the compensation system confusing or lack an understanding of their rights in the compensation system may not enter the system at all, or they may enter the system much later, when their injury has worsened. Poor communication is associated with delays and disputes which negatively impact client health outcomes. International evidence shows that verbal (telephone and in person) communication is viewed positively by clients and may reduce delays in the compensation process.

Clients want their treating health professionals to provide a clear diagnosis and information to support decisions about their treatment and recovery. Communication becomes challenging when clients are receiving complex information (particularly in the post-trauma period), information perceived as insufficient or contradictory, and where there is a lack of effort to engage clients in decision making.

This synthesis revealed multiple barriers for communications between service providers and the compensation scheme. Many providers do not have a good understanding of compensation schemes and there is some evidence that training for service providers in compensation processes can improve client outcomes.

4.1.3 Best practice housing for TAC clients

Lead Researcher: Daniel Pejic, Monash University (ISCRR)

Project no. RS012
Requested by: TAC
Timeframe: 2017

This project synthesised ISCRR's existing evidence on accommodation for clients following severe injury in a variety of settings. Evidence supports the importance of engaging clients through all stages of the development, design (or modification) and transition to new housing to maximise outcomes. Evaluations suggest that clients have been successfully engaged regarding their accommodation options in the TAC Residential Independence Pty. Ltd. (RIPL) developments. Additional findings suggest that engaging clients in a master planning approach when determining home modifications can help them visualise themselves in their new homes and may have a therapeutic benefit.

Assistive technologies can assist clients to increase their independence and minimise the need for intensive, in-person support. There is evidence that assistive technologies are not widely used by clients in some shared supported accommodation settings. Strategies to improve use of assistive technologies include planning the integration of technology into builds/modifications, providing specific training and ongoing support to support workers, clients and families in the use of technologies and integrating technologies into housing transition and daily routines.