

ABSTRACTS

ASSBI/NZRA AWARDS

Kevin Walsh Award for Most Outstanding Masters Student 2019

## Readiness of community ABI therapists to learn and implement Positive Behaviour Support: a mixed-methods study

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**Background and Aims:** Positive Behaviour Support (PBS) may be an effective intervention for reducing challenging behaviours following acquired brain injury (ABI). However, it is not known whether community ABI therapists are currently using this intervention. Accordingly, this study was designed to determine the need for clinical translation.

**Method:** Data were collected from community ABI therapists about their experiences with training in and delivering behaviour management interventions. Quantitative data were collected from 135 community ABI therapists from Australia who completed a purpose-designed online survey, while qualitative data were collected through semi-structured interviews ( $n = 13$ ). Analysis of quantitative and qualitative data involved multiple regression and thematic analysis, respectively.

**Results:** Consistent with PBS, participants emphasised the importance of working with the client's support network and other therapists in order to share expertise. Although many participants identified using elements of PBS, most expressed a desire for (further) training in this intervention and behaviour management more generally. Approximately, 80% of participants indicated facing barriers to learning, and to implementing, new behaviour management interventions, with lack of time being the most common barrier. Number of barriers and confidence significantly predicted readiness to learn and implement new behaviour management interventions. Specific recommendations for training community ABI therapists in PBS will also be presented.

**Conclusions:** The results suggest that community ABI therapists largely support the use of PBS but highlight a need for further clinical translation. The results will directly inform the development of a behaviour management training program tailored to therapists' preferences and needs.

Luria Award for Most Outstanding Doctoral Student 2019

## Communication impairment and the working alliance in stroke rehabilitation

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**Background and Aims:** The processes by which productive working alliances develop in stroke rehabilitation are not currently understood. The aim was to explore the ways in which experienced allied health clinicians

establish and maintain alliances with people who have stroke-related communication impairment and to identify factors that may influence the strength of the alliance in the rehabilitation context.

**Method:** In-depth interviews were completed with 11 experienced allied health clinicians from the disciplines of occupational therapy, speech pathology and physiotherapy. Clinicians were encouraged to use individual case examples as departure points for reflection on the working alliance. Interview transcripts were coded and analysed using strategies consistent with constructivist grounded theory methods.

**Results:** Participants described processes in relation to negotiating ways of communicating, relating and understanding what is meaningful to the client. Practices that emphasised responding to the client, both within an interaction and over time, aligned with examples of productive alliances. Factors that were perceived as influencing the working alliance included client agency, client past experience with health care, the severity of the communication impairment, the physical environment and therapist credibility.

**Conclusions:** Knowledge of the practices of experienced clinicians in establishing and maintaining the working alliance with communicatively impaired clients provides insights into therapeutic processes that can be manipulated in order to enhance the alliance. Difficulty in accessing a shared mode of communication due to stroke-related communication impairment altered relational processes and influenced perceptions of the strength of the working alliance, although examples of strong alliances were present.

### Travel Award for Students 2019

## Impaired self-awareness after paediatric traumatic brain injury: liability or protective factor?

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**Background and Objectives:** There is preliminary evidence that children and adolescents with traumatic brain injury (TBI) experience impaired self-awareness. This study aimed to examine factors associated with self-awareness and the relationship between self-awareness and functional and psychosocial outcomes following paediatric TBI.

**Methods:** A prospective cohort of 86 children aged 8–16 years with TBI (63.2% male, M age = 12.8 years, SD = 2.6 years) and parents were recruited through the Queensland Children's Hospital. Children completed the Paediatric Awareness Questionnaire (PAQ) and Beck Youth Inventories; parents completed the PAQ, Adaptive Behaviour Assessment System-Third Edition, McMaster Family Assessment Device, Parenting Practices Questionnaire and Child Behaviour Checklist.

**Results:** Poorer self-awareness (i.e., more negative parent-child discrepancy scores) was significantly associated with younger age at injury ( $r = .39, p < .001$ ) and greater injury severity ( $r = -.25, p < .05$ ), but not with socio-economic status, family functioning or parenting style ( $p > .05$ ). Poorer self-awareness was related to lower adaptive function ( $r = .53, p < .001$ ) and greater behavioural problems ( $r = -.33, p < .01$ ) and contributed significant unique variance to these outcomes after controlling for demographic and injury-related factors ( $R^2_{ch} = .05-.16, p < .05$ ). However, poorer self-awareness was associated with more positive self-concept (child-rated) after controlling for adaptive function and socio-economic status ( $R^2_{ch} = .25, p < .001$ ).

**Conclusions:** Children injured at a younger age and those with more severe injuries are more likely to have poor self-awareness. Impaired self-awareness can be a liability or protective factor depending on the perspective (parent or child) and outcome of interest (adaptive function/behaviour or self-concept).

## Mindlink Brightwater Award for Interdisciplinary Research 2019

# Delivering concussion evidence to the community: A digital solution

Cathriona Clarke<sup>1</sup>, Simone Darling<sup>1</sup>, Franz E Babl<sup>1,2,3</sup>, Gavin Davis<sup>1,4,5</sup>, Peter Barnett<sup>1,2,3</sup>, Patrick Clifton<sup>6</sup>, Peter Harcourt<sup>2,6</sup>, Ali Crichton<sup>1</sup>, Michael Takagi<sup>1</sup>, Gabi Ceregra<sup>7</sup>, Sanji Kanagalingam<sup>7</sup> and Vicki Anderson<sup>1,2,3</sup>

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**Background and Objectives:** Concussion is not well understood in the community. About 70% of parents do not recognise signs of concussion, and 93% are not aware of return-to-play guidelines. Furthermore, parents, coaches and non-specialised medical professionals are often unfamiliar with recovery strategies following a head knock, and what symptoms should be considered abnormal. This is a critical gap in knowledge given that 40% of children will experience delayed symptoms following the incident. Return-to-activity guidelines have been adopted by frontline care and major sporting codes, however, are not readily available or easily digested by the community.

**Method:** Gold-standard guidelines were translated into a smartphone application consisting of (1) a sideline concussion check and (2) psychoeducational step-by-step guide for returning to school/sport covering the stages (a) rest at home, (b) return to school, (c) return to physical activity and (d) return to organised sport. The app was launched by the Australian Football Leagues to its community junior leagues.

**Results:** Data show that a high percentage of those who used HeadCheck for a sideline check also initiated the recovery component of the app. A smaller proportion of users completed recovery. User feedback was positive.

**Conclusion:** Preliminary results suggest that uptake of international guidelines can be increased by providing content in a digital, readily accessible, user-friendly smartphone application. Concurrent validity is currently being assessed through a comparison of HeadCheck to standard practice in front-line care.

## Douglas & Tate Prize for the Best Research Article in Brain Impairment 2018

Alice Theadom, *Brain Impairment* (2018), Volume 19, Special Issue 2 (Mild Traumatic Brain Injury). Theadom, A., Barker-Collo, S., Greenwood, A., Parmar, P., Jones, K., Starkey, N., McPherson, K., & Feigin, V.L. on behalf of the BIONIC Research Group. *Do mild traumatic brain injury severity subclassification systems help to identify people who go on to experience long term symptoms?*

### NZRA Best Poster Presentation Award 2019

## Prevalence and neurocognitive basis of delusions in dementia

Fiona Kumfor<sup>1,2,3</sup>, Ramon Landin-Romero<sup>1,2,3</sup>, Jessica L Hazelton<sup>1,2</sup>, Chengtao Liang<sup>1,2</sup>, Cristian E Leyton<sup>4</sup>, Cassandra Kaizik<sup>2</sup>, Emma Devenney<sup>2,5</sup>, Emily Connaughton<sup>3,6</sup>, Robyn Langdon<sup>3,6</sup>, Eneida Mioshi<sup>7</sup>, Olivier Piguet<sup>1,2,3</sup> and John R Hodges<sup>2,3,5</sup>

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**Background and Aims:** Delusions and abnormal belief formation have been reported in some people with dementia; however, the mechanisms causing their emergence are poorly understood. Here, we aimed to examine the prevalence, clinical and cognitive profile of delusions in a large, diverse cohort of dementia patients.

**Methods:** Four hundred eighty-seven dementia patients were included: 102 Alzheimer's disease (AD), 136 behavioural-variant frontotemporal dementia (bvFTD), 53 semantic dementia, 51 progressive non-fluent aphasia, 50 logopenic progressive aphasia, 29 motor neurone disease, 46 corticobasal syndrome and 20 progressive supranuclear palsy. All patients underwent brain magnetic resonance imaging and cognitive assessment, and the Neuropsychiatric Inventory was conducted with an informant.

**Results:** In our cohort, 48/487 patients (9.9%) had delusions, with the highest prevalence observed in bvFTD (18.4%) and AD (11.8%). A diagnosis of bvFTD was strongly associated with the presence of delusions (odds ratio = 3.3;  $p < .001$ ). Comparisons between 30 patients with delusions and 30 matched patients without delusions revealed worse performance on the Addenbrooke's Cognitive Examination ( $p = .035$ ), Rey Complex Figure Recall ( $p = .006$ ) and word repetition ( $p = .001$ ) in patients with delusions. Notably, the delusions group also had greater impairments in everyday skills ( $p = .004$ ), stereotypical behaviours ( $p = .031$ ), sleep disturbances ( $p = .003$ ), memory problems ( $p = .012$ ) and mood ( $p = .017$ ).

**Conclusions:** Our results reveal that delusions are most common in bvFTD and AD and are relatively rare in other syndromes. Both the cognitive and clinical profile of patients with delusions differs and suggests possible mechanisms for the emergence of delusions in these syndromes. Analyses are underway to examine the neural correlates underpinning delusions in dementia.

### NZRA Best Student Presentation Award 2019

## No diffusion imaging correlate of paediatric post-concussion syndrome: a TBSS study

Jesse Shapiro<sup>1,2</sup>, Tim Silk<sup>1,3,4</sup>, Michael Takagi<sup>1,2</sup> and Vicki Anderson<sup>1,2,5</sup>

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**Background and Objectives:** Post-concussion syndrome (PCS) is a continuation of concussive symptoms beyond the typical recovery period, which is 4 weeks for children and adolescents. The factors that contribute to ongoing symptoms post-concussion are unknown, but the integrity of white matter micro-structure has been associated with the development of PCS in adults. The aim of the present study was to

examine white matter microstructure in a paediatric sample and to explore possible associations between white matter integrity and recovery time post-concussion.

**Method:** This analysis formed part of the Take CARE study. Forty-three children were recruited from the emergency department of the Royal Children's Hospital and underwent magnetic resonance imaging and cognitive screening 2-week post-concussion. The Parent Post-Concussion Symptom Inventory (PCSI) was used to dichotomise participants into 'normal' and 'delayed' recovery groups. Analysis of TBSS diffusion metrics: fractional anisotropy, mean diffusivity, axial diffusivity and radial diffusivity was completed using non-parametric permutation-based analysis with threshold free cluster enhancement.

**Results:** No significant difference was found between the normal recovery and delayed recovery groups across all diffusion metrics ( $p < .05$ ). No significant difference was found on tests of cognition between the normal recovery and delayed recovery groups ( $p < .05$ ).

**Conclusions:** Two possible explanations for the findings are put forward: that any changes to white matter are too small to be seen by this study or the cause of PCS is not structural in nature.

## ABSTRACTS - THURSDAY 3<sup>rd</sup> MAY

### Workshop: 'integrating self-management support in a brain injury service: lessons learnt and secrets of success'

Fiona Jones

St George's University of London, London, UK

This workshop will explore what is meant by 'supported self-management' in the context of integrating self-management support into a brain injury service. Using findings from recent projects working across major trauma centres in London, community and voluntary services attendees will critically reflect on the unifying components of supported self-management and how they can utilise key principles and best evidence in everyday practice. During the course of the workshop, attendees will work together to explore ways to promote problem-solving, facilitate self-discovery, goal-setting, use of resources and create knowledge together about the best ways to support self-management which is authentic and person-centred. The workshop will also include examples of evaluating impact and sustaining a culture of self-management support within brain injury rehabilitation teams. Attendees will work together to create a shared understanding of the secrets to success that can be implemented into their practice the next day.

### Workshop: neurorehabilitation research – all you need to know to start

Fary Khan<sup>1,2</sup> and Bhasker Amatya<sup>1,2</sup>

<sup>1</sup>Department of Medicine, The University of Melbourne, Royal Melbourne Hospital, Parkville, VIC, Australia and

<sup>2</sup>Department of Rehabilitation Medicine, Australian Rehabilitation Research Centre, Royal Melbourne Hospital, Parkville, VIC, Australia

This intensive and interactive workshop is designed for healthcare professionals who wish to develop their knowledge and skills in conducting research and in evidence-based practice. Furthermore, it will help participants to advance their skills in searching and critically appraising the literature, designing and

conducting quantitative and/or qualitative research, and acknowledging and incorporating values and preferences in clinical decision-making. The workshop will feature:

- Lectures from the experts: general issues in planning, executing and evaluating research projects
- Interactive sessions, with free discussion including challenges and gaps in research in rehabilitation settings
- Group activities and discussion in which participants will critically appraise papers and develop case-based studies.

Participants will receive critical appraisal tools and guidelines, examples of different types of studies (e.g., systematic reviews, randomised controlled trials and observational studies) and useful links to background and additional readings. By the end of this workshop, the participants will have learned how to:

- formulate clear research questions;
- understand literature searching strategies and be familiar with different resources (both primary and secondary database searches);
- understand different study designs (qualitative, quantitative);
- write an academic manuscript;
- undertake critical appraisal of research.

## Workshop: rehabilitation of memory and executive functions after brain injury

Jonathan Evans

University of Glasgow, UK

In this workshop, Jonathan will update participants on the evidence base for the rehabilitation of memory and executive functions after brain injury. A particular focus will be on prospective memory and goal management, which relies on the integration of memory, attention and executive functions. Current developments in the use of reminding technology will be discussed including App!Tree, a reminding app designed with, and for, people with brain injury; interactive voice-based guidance and the use of augmented reality.

At the end of this workshop, participants will

- be up to date on the current evidence relating to the rehabilitation of memory and executive deficits after brain injury;
- understand how digital health technology may be used to assist memory and executive functions in everyday life after brain injury;
- be aware of ongoing developments in technology that may assist memory and executive functioning in the future.

## Workshop: rehabilitation research and service development: meeting the rights of indigenous people

Matire Harwood

University of Auckland, New Zealand

Three outcomes for the workshop:

- an understanding of the UN Declaration on the Rights of Indigenous peoples and its application to rehabilitation services and research;
- pathways to inequities;
- how to address the 'Responsiveness to Indigenous peoples' question/s in business case or funding applications.

## Accident compensation corporation: falls prevention and recognition of concussion

Shankar Sankaran

Consultant Geriatrician, Middlemore Hospital, Auckland, New Zealand

New Zealand (NZ) has a growing ageing population. With age, the risk of having a fall increases, those over 65 have a 1 in 3 chance of having a fall and for those over 80 it is 1 in 2, falls can be prevented. The Accident Compensation Corporation, the Ministry of Health, Health Quality and Safety Commission, District Health Boards, General Practitioners, health professionals, home carers and community groups all deliver services to older people. Working together, we will better coordinate our efforts and create a system that is easy to use and helps to reduce the incidence and severity of falls and fractures. This approach has been the catalyst for the creation of the *Live Stronger for Longer movement*, the unifying brand that aims to unite the falls and fracture system in NZ. Falls can be prevented by identifying when an older person is at risk of a fall, then taking action to get them the help and support they need. If an older person has indicated that they have had a slip, trip or fallen in the last year then they are potentially at risk of having a (another) fall and will benefit from the Live Strong for Longer programme. Furthermore, falls are the leading cause of brain injury in NZ, accounting 38% of all brain injury. Concussion is caused by a blow to the head or body that could result in any shaking of the brain, and a person does not have to be knocked out to be concussed. Early recognition and management is essential to minimise the severity of the injury and decrease the risk of having prolonged symptoms. Keeping older people independent and well living the life they want to live – ultimate outcome.

**ABSTRACTS - FRIDAY 4<sup>th</sup> MAY****Plenary Session****‘Feeling less alone’: co-producing self-management support following traumatic brain injury**

Fiona Jones

St George’s University of London, London, UK

People with acquired brain injury (ABI) can experience long-term cognitive, psychological, emotional and social effects, frequently resulting in ‘hidden disability.’ Likewise, families navigate a complex changing situation that may include mood disturbances associated with their relative’s injury and shifts in family relationships. Self-management programmes have traditionally been used for people with long-term chronic conditions and have shown impact on clinical, psychological and social outcomes. There are challenges in providing self-management support for people with ABI and their families, which traditionally focus on behaviour change methods and require cognitive abilities. The range of complex issues experienced by people with ABI added to the perceptions of healthcare staff particularly in the acute settings means that self-management approaches which start early after injury are relatively rare.

This keynote lecture will explore co-production methodology and a staged approach to co-designing a new self-management approach. Using participatory methods, we harnessed the knowledge, experiences and power of a group of 14 people with ABI and their families and developed a shared approach to self-management support across an acute neuroscience pathway. One hundred and ten staff in a major London trauma centre learned how to integrate self-management support strategies and patients with ABI and their families used new self-management books. The co-designed books embodied a person-centred approach to self-management with stories, ideas and reflections on life after ABI, and space for recording, hopes, targets, successes and strategies. The books had a ‘natural fit’ with patients and families and provided staff with a shared mechanism to implement self-management strategies within their everyday work.

There were clear benefits to taking part in a process of authentic co-design, and these will be discussed through the reflections of people with ABI, their families, healthcare staff and the project team. Finally, there will be a summary of lessons learnt and advice for those who seek to engage and involve people with ABI and their families in research and enhancing service provision.

**Concurrent Sessions****The experience of attending a camp for families with a child with acquired brain injury: perspectives of young people with acquired brain injury and siblings**Penelope Analytis<sup>1,2</sup>, Narelle Warren<sup>3</sup> and Jennie Ponsford<sup>1,2</sup>

<sup>1</sup>Monash-Epworth Rehabilitation Research Centre, Monash University, Melbourne, Australia, <sup>2</sup>Monash Institute of Cognitive and Clinical Neurosciences, School of Psychological Sciences, Monash University, Melbourne, Australia and <sup>3</sup>School of Social Sciences, Faculty of Arts, Monash University, Melbourne, Australia

**Background and Objectives:** Paediatric acquired brain injury (ABI) is associated with long-term negative sequelae, and families must continually adapt to meet the changing needs of the child with ABI and family



members. Interventions that provide enriching educational opportunities, such as condition-specific camps, may support families following ABI. This study explored the experience of a camp for children with ABI and their families from the perspective of young people with ABI and siblings.

**Method:** Semi-structured interviews were conducted with 7 young people with ABI and 11 siblings.

**Results:** Using thematic analysis, four themes were identified: accepting ABI, camp friendships, personal mentoring, and escape from daily life. Participants experienced camp as an environment where ABI was understood and accepted, and they felt relieved of the pressure to explain their family's situation. This acceptance provided the background to camp friendships and to having fun. By interacting with others in similar situations, participants felt they understood ABI better, and for some, this shaped their values and future career choices. While camp was viewed as an escape from daily life, for some participants, negative experiences such as family conflict crept into the camp experience.

**Conclusions:** Condition-specific camps may provide young people with ABI and siblings with opportunities to better understand ABI and its impact on the individual and the family. Camps may also provide opportunities to have fun and to make friends, providing a buffer against challenges faced by families with a child with ABI. As such, camps may provide an important allied health support service.

## The spousal experience of Primary Progressive Aphasia

Margaret Pozzebon<sup>1,2</sup>, Jacinta Douglas<sup>1,3</sup> and David Ames<sup>4</sup>

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**Background and Aims:** Primary Progressive Aphasia (PPA) is a neurocognitive–degenerative disorder, characterised by early and ongoing decline of language–communication–cognitive abilities. Despite the pivotal role that spouses play in supporting their partner diagnosed with PPA, little is known about how they deal with and face the challenges associated with this progressive condition. The aim of this qualitative research project was to gain an understanding of the personal experiences of spouses living with this condition.

**Method:** Thirteen spouses whose partners were diagnosed with PPA participated in 1:1 semi-structured, in-depth interviews to explore their lived experiences of this illness. Using a constructivist grounded theory approach, analysis moved through a process of data-driven open and focused coding, for the identification of emergent categories, themes and subthemes that captured the lived experiences of spouses supporting partners with PPA.

**Results:** A constructivist grounded theory analysis of the interview data revealed an overarching theme of ‘facing the challenges of PPA’ that captured the overall experiences of spouses. Four interdependent and overlapping themes that sat within this overarching theme included: acknowledging disconnect in the spousal relationship, living the decline, re-adjusting sense of self and getting on with living. Each of these core themes revealed how spouses dealt with the ongoing and evolving challenges of PPA, particularly concerning changing relational dynamics with their partner and adjusting their own self-conceptualisation.

**Conclusions:** The findings highlight the importance of addressing the relational consequences of PPA for spouses, specifically to manage their changing emotional–relational connectivity within self, their partner and social world.

## Family and traumatic brain injury: an investigation using the family outcome measure

Christine Migliorini<sup>1</sup>, Libby Callaway<sup>1,2</sup>, Sophie Moore<sup>1</sup> and Grahame K Simpson<sup>3,4</sup>

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**Background and Objectives:** The Family Outcome Measure (FOM-40) captures multidimensional data about well-being and capacity of family members and the relative with brain injury. This study aimed to produce a profile (positive and negative) of families supporting relatives with traumatic brain injury (TBI) who experience high support needs.

**Methods:** A cross-sectional survey-based pilot study was undertaken with 38 dyads. Dyads consisted of a family member and relative with TBI and high daily support needs (a median Care and Needs Scale (CANS) score of 7, indicating near 24-h per day care requirements). The survey examined demographic and clinical characteristics of the relative with TBI and the family member, and the CANS, Health of the Nation Outcome Scale–Acquired Brain Injury and Role Checklist for the person with TBI. Non-parametric bivariate analyses were conducted.

**Results:** Independence of the FOM-40 domains was confirmed. Place of residence (supported accommodation/family home) was an important predictor variable. Supported accommodation was strongly associated with lower levels of burden reported in families. Family home was strongly associated with better adjustment of the relative with TBI. Family resilience was positively associated with sustainability of support and comorbidity in the relative with TBI.

**Conclusions:** Family outcomes were associated with a variety of demographic and clinical characteristics of the relative with TBI including residence, behaviour and mental health symptoms. The results provide meaningful evidence for service providers given the increasing investment in housing and support options for people with disabilities, and the ongoing reliance on families to provide informal support after TBI.

## Meeting unmet needs: education and support for adult family members of individuals with brain injury

Nic Ward, Nalita Naidu, Siobhan Palmer and Kristin Gozdzikowska

Laura Fergusson Trust, Christchurch, New Zealand

**Background and Objectives:** Traumatic brain injury (TBI) has adverse, long-term impacts on not only survivors, but on family members as well. Family members often have critical supporting roles in the recovery process; research has identified relationships between family member well-being and survivor outcome. However, there is a gap in translating this research to clinical practice due to limited provision for funded interventions for family members. However, there has been a recent shift in policy with Accident Compensation Corporation TBI Strategy and Action Plan (2017–2021) stating clearly a goal ‘to improve services that extend to whānau, taking a more holistic approach.’

**Method:** Group programmes to educate and support adult family members were implemented over an 18-month period. This presentation will review the rationale, intervention content, implementation process and pre-/post-outcome measures of these services to date.

**Results:** Wilcoxon signed-rank test revealed a significant median decrease in self-ratings of perceived stress following group intervention, as compared to pre-treatment self-ratings ( $z = -2.070$ ,  $p = .038$ ). All

participants reported that they would recommend the programme. Qualitative data highlighted the self-reported themes of increased ability to cope, increased understanding of the individual with TBI, as well as benefits of peer support.

**Conclusions:** Professionally led family/whānau support and education appears integral for individual and family systems' optimal recovery and outcome after moderate-to-severe TBI. Understanding the importance of whānau contributions to recovery is also fundamental to understanding Māori health and whānau ora, or supporting Māori families in collectively achieving optimal well-being.

## Carers' way ahead: a resource for families caring for someone with brain injury

Emily Trimmer<sup>1</sup>, Skye McDonald<sup>1</sup>, Jill Newby<sup>1</sup>, Samantha Grant<sup>2</sup>, Paul Gertler<sup>2</sup> and Grahame Simpson<sup>3</sup>

<sup>1</sup>School of Psychology, University of New South Wales, Sydney, NSW, Australia, <sup>2</sup>Inspire Rehabilitation and Psychology, Sydney, NSW and <sup>3</sup>Ingham Institute of Applied Medical Research, Sydney, NSW

**Background:** Challenging behaviours can have a major impact on family members caring for an individual with a brain injury and are often the cause of increased stress and poor quality of life in both the person with brain injury and their families and social networks. Often access to intervention and support is limited for many families, especially those living in rural areas. The aim of this programme was to develop an easily accessible online resource for families to help them understand and support their family member with challenging behaviours.

**Method:** Eight family members of a person with brain injury completed the pilot trial of the Carers' Way Ahead programme. The programme was developed by six clinicians and targets the most common types of challenging behaviours identified by family members in seven modules. Participants of the trial completed a number of measures before and after completing the programme and were also asked to provide feedback on the feasibility and acceptability of the programme.

**Results:** Overall, feedback from families suggests that the programme 'Carers' Way Ahead' is both feasible and acceptable. All family members identified the need for support, especially those in rural areas. Responses from families indicated that an online programme is both easily accessible and convenient to those with time constraints.

**Conclusions:** This project aims to address a significant gap in resources for families trying to manage challenging behaviour post brain injury.

## Taking action to support sexual expression using a team approach: the recognition model

Narelle Higson

Outside the Square OT Solutions, Perth, Western Australia

Although it is generally agreed among healthcare professionals that engaging in activities related to sexual expression may be an important part of health and wellness for people of all ages, abilities and cultural backgrounds, there often remains a theory/practice when it comes to addressing the area in rehabilitation and community settings. Research suggests that many healthcare workers do not feel adequately equipped to address sexual concerns in a competent, safe and supported manner.

This presentation will outline the steps of The Recognition Model, a useful framework for team-based practice published in 2010 by UK occupational therapist Lorna Couldrick, which may be used to assist both individual practitioners and health teams in a variety of work settings to positively support sexual expression. The presentation will identify potential challenges health conditions, and disability may present to engaging in sexual expression, outline potential barriers to including sexual expression in practice in a safe, respectful and inclusive way and identify practical strategies that may be used to assist in increasing confidence, comfort and competence when addressing this area. Resources and avenues of support to foster further learning will also be identified.

## What causes impaired empathy after traumatic brain injury: trialling an emotional stroop task

Skye McDonald, Katie Osborne-Crowley, Emily Wilson, Frances De Blasio, Travis Wearne and Jacqueline Rushby

School of Psychology, University of New South Wales, Sydney, Australia

**Background and Objectives:** Emotional empathy allows the observer to share, or ‘resonate’ with, the emotional state of others. People with traumatic brain injury (TBI) often have a reduced ability to resonate with the emotions of others, but there is little research into the mechanisms for this. The perception–action model of empathy proposes a mechanism whereby, when an observer pays attention to another’s emotional state, all relevant conceptual representations relating to the observed emotional experience are rapidly and automatically activated providing access to the meaning in the stimuli. This study aimed to determine whether people with TBI are also rapidly accessing parallel emotional information, making them susceptible to incongruity in an emotional Stroop task.

**Method:** About 26 people with TBI and 30 matched control participants were presented with 105 trials in which they were asked to categorise an emotional word, superimposed on a congruent facial expression, an incongruent facial expression or a neutral face. Measures of empathy and emotion recognition were taken.

**Results:** People with TBI were slower than controls overall. They did, however, demonstrate a similar magnitude Stroop effect on incongruent trials. Stroop performance was not related to emotion perception accuracy of self-reported empathy.

**Conclusion:** This study found that rapid conceptual processing of emotional faces was preserved in people with TBI, despite substantially slowed processing speed. There was no evidence that this conceptual processing of emotional faces plays a role in the ability to recognise or to resonate with the emotions of others after a TBI or in healthy controls.

## What is the relationship between empathic responses and emotion recognition following brain injury?

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**Background and Objectives:** Recognising emotions and empathising with others’ feelings contribute to positive psychosocial outcomes, but the relationship between them is not well understood. This study aimed to compare the association between emotion recognition and empathic responses to film clips in people with and without traumatic brain injury (TBI).

**Method:** Sixty adults with moderate-to-severe TBI and age 60 and sex-matched healthy controls (HC) participated. Participants viewed affective film clips, reported the character's expressed emotions, and their own emotional responses to the clips. Responses were considered empathic if participants reported feeling the same emotion they had identified the character in the clip to be feeling.

**Results:** Participants with TBI were significantly less accurate than HCs at emotion recognition,  $t = .274$ ,  $p = .007$  and less likely to experience an empathic response,  $\chi^2 = 14.33$ ,  $p < .001$ . Emotion recognition accuracy was significantly associated with empathic responses but did not guarantee an empathic response. HCs accurately recognised and empathically responded to the characters' emotions more frequently (78% versus 65% for TBI),  $\chi^2 = 19.63$ ,  $p < .001$ .

**Conclusions:** The results showed a robust relationship between emotion recognition and empathic responses. People with TBI were less likely to recognise and respond empathically to others' expressions of sad and fearful, thus may not provide emotional support in response to these vulnerable emotions within their interpersonal interactions. Intervention should include techniques that encourage people with TBI to feel the same emotion as others.

## Changes in social and emotional functioning in the early stages of dementia

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**Background and Objectives:** Changes in social functioning in people with dementia (PwD) are common; however, little is known about the broader effects these have on well-being. This study examined the relationship between social functioning and mood, the quality of the relationship between the PwD and care partner, and care partner stress at three time points.

**Method:** One hundred and one people with a diagnosis of dementia and their care partner completed the Social Emotional Questionnaire (SEQ), alongside measures of dementia symptom severity, cognition, relationship quality, mood and stress. Twelve months later 65 dyads were reassessed on the same measures, and 49 dyads a further 8 months later.

**Results:** When rated by the PwD, significant decreases in social difficulties as measured by the SEQ were observed over time,  $t(48) = 2.06$ ,  $p = .045$ , while care partners reported a significant increase over time,  $t(50) = -2.35$ ,  $p = .023$ . The PwDs self-reported mood and quality of relationship both significantly correlated with social difficulties ( $p < .05$ ). Care partners' rating of social difficulties was significantly and positively correlated with stress, and negatively correlated with quality of the relationship ( $p < .001$ ).

**Conclusions:** This study is the first to the authors' knowledge to have examined trajectories of self- and informant-rated social and emotional functioning in people with early-stage dementia and the effect of these on care partners. It is hoped that increased awareness and understanding of social changes early in the course of dementia will help facilitate longevity of the caring relationship.

## Self-reported quality of life outcomes after in-person and telehealth social communication skills training for people with traumatic brain injury

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**Background and Objectives:** Traumatic brain injury (TBI) Express is a communication partner training programme for social communication skills after TBI. We developed a modified version called TBIconneCT and compared outcomes between telehealth (TH) and in-person (IP) delivery. This paper reports on self-reported quality-of-life (QOL) outcomes.

**Method:** Thirty-six people with TBI were recruited. Participants in Sydney ( $n = 23$ ) were randomised to TH or IP training using a 1:3 ratio. Participants outside Sydney ( $n = 13$ ) were allocated to TH training, resulting in 19 TH and 17 IP participants. Participants completed 10 training sessions with identical content across training modes. Participants with TBI completed the Quality of Life After Brain Injury (QOLIBRI) scale both pre- and post-training. Data were analysed using two-way mixed analyses of variance.

**Results:** Participants had severe ( $n = 35$ ) or moderate ( $n = 1$ ) TBI. No significant differences existed between groups in demographic or injury severity measures, or on baseline QOLIBRI scores. For the Social Relationships scale, there were no significant interactions between group and time; however, the main effect of time was significant ( $p = .033$ ). For the Cognition scale, there was a significant interaction between group and time, with a significant effect of time for the TH group only ( $p = .001$ ). There were no significant interactions, or time or group effects for other QOLIBRI scales.

**Conclusions:** TBIconneCT participants reported improved QOL in social relationships. TH participants reported improved QOL in cognition, whereas IP participants did not.

## Protocol, process, and progress on a feasibility RCT targeting social cognitive impairments after acquired brain injury

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**Background and Objectives:** Social cognitive impairments are common after acquired brain injury (ABI) and detrimentally impact on social relationships. Despite this, few have treated social cognitive deficits in this population. This study aims to establish the feasibility of a novel social cognition group treatment ('SIFT IT') for people with ABI.

**Method:** The SIFT IT study is a multi-site randomised controlled trial. Recruitment commenced mid-2017 at three NSW brain injury rehabilitation services and the community. Eligible participants are randomly allocated into SIFT IT or waitlist control (WLC). SIFT IT runs in small groups for 14 weekly 90-min sessions, delivered by a Clinical Psychologist. The programme covers emotional self-awareness, emotion perception, perspective-taking and choosing social responses. Feasibility, qualitative and quantitative outcomes are monitored. Measures are administered at three time-points: T1 (eligibility), T2 (post-SIFT IT) and T3 (post-waitlist SIFT IT/3-month follow-up).

**Results:** The study is ongoing with 23 participants eligible thus far: 12 randomly allocated to SIFT IT and 11 to WLC. Half of the recruitment waves are complete, with four programmes finished. By T3, retention has been 91% with excellent group attendance: 100% retention of programme-attenders and 71%–100% individual session attendance. Three cases will be illustrated to convey the breadth of treatment responses: (1) reliable and clinical improvements, (2) no change post-treatment with delayed improvement and (3) non-response.

**Conclusions:** Challenges arising from the research process will be discussed, including difficulties with potential participant identification and maintaining group allocation. The case illustrations will be reflected upon to consider possible mediating factors to treatment response.

## Cognitive reserve and age predict cognitive recovery following TBI

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**Background and Objectives:** Cognitive impairments are common and disabling after traumatic brain injury (TBI). Little is known of factors associated with cognitive recovery. This longitudinal study examined the association of age, intelligence quotient (IQ) and post-traumatic amnesia (PTA) duration with cognitive recovery 2–5 years following TBI.

**Methods:** One hundred and seven individuals with mild to severe TBI,  $M_{\text{age}} = 44.38$  years,  $M_{\text{educ}} = 14.04$  years,  $M_{\text{PTA}} = 21.66$  days and  $M_{\text{IQ}} = 109$  were assessed early post-injury and reassessed an average 44.65-month post-injury. A matched healthy control group ( $n = 63$ ) with  $M_{\text{age}} = 46.92$  years,  $M_{\text{educ}} = 13.34$  years and  $M_{\text{IQ}} = 107.21$  completed measures once. Measures included the National Adult Reading Test (premorbid IQ), Digit Symbol Coding (DSCT) (processing speed), Rey Auditory Verbal Learning Test (RAVLT; memory) and Trail Making Test Part B (TMT-B) (executive function). Regression analyses examined predictors of cognitive performance.

**Results:** Participants with TBI performed significantly worse than controls on all measures (all  $p < .001$ ), and age, PTA and IQ were significant predictors of performances on all tasks at initial assessment. Performances improved significantly in the TBI group at follow-up. Premorbid IQ was associated with gains on all measures, after accounting for initial performance ( $\beta = 0.35$ ,  $p < .001$ ), RAVLT ( $\beta = 0.22$ ,  $p < .05$ ) and TMT-B ( $\beta = -0.43$ ,  $p < .001$ ). Age was associated with gains on DSCT ( $\beta = -0.35$ ,  $p < .001$ ) and TMT-B ( $\beta = 0.28$ ,  $p < .05$ ). PTA duration was not significantly associated with cognitive recovery on any measure.

**Conclusions:** Findings support the contention that cognitive reserve and to a lesser extent age determine degree of long-term cognitive recovery following TBI.

## Use of social identity mapping to understand the impact of brain tumour on social groups and identity: a qualitative study

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**Background and Objectives:** Confidence in support has been found to buffer the adverse effects of brain tumour on psychological well-being. This study aimed to explore individuals' experience of changes in social networks and the impacts on self-identity after brain tumour.

**Method:** A purposive sample of 20 adults with primary brain tumour (35% benign; 15% low grade; 50% high grade) participated in two semi-structured interviews over 3 months. A visual social map was used during the interviews to characterise members of their social network and their function, importance and meaning. Guided by phenomenology, interview transcripts and social maps were analysed to identify major themes.

**Results:** Four themes depicted patterns of loss, stability, growth and expansion of social networks. 'Continuation and stability' was characterised by long lasting and supportive social networks which helped to maintain self-identity. 'Maintenance and expansion' depicted the experience of both retaining pre-existing networks and forming new ones, and learning to assimilate old and new identities. 'Loss and disconnection' reflected the loss of social groups without forming new connections and an ongoing struggle to rebuild one's self-identity. 'Loss and rebuilding' was characterised by disruption of social groups, with new connections forming over time to support a reconstituted self-identity.

**Conclusions:** Social networks can be substantially altered following a brain tumour diagnosis. Individuals who are able to maintain, expand or rebuild their social networks typically experience greater continuity or positive shifts in their self-identity. The implications for psychosocial interventions will be discussed.

## A journey of ambiguity – the healthcare experiences of people with mild stroke

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**Background and Objectives:** While it has recently been acknowledged that people with mild stroke experience ongoing issues following hospital discharge, mild stroke-specific services are lacking internationally. Consequently, the ability to understand how this population experiences health services is restricted, halting advancement in the area. It is imperative that the views of this population are sought in regards to health services to address their needs and reduce the impact of ongoing issues. For this reason, this study aimed to answer the question: 'How do people with mild stroke perceive their experience of stroke-related services?'

**Method:** Qualitative investigation using an interpretative phenomenological analysis. Five participants were interviewed at 1-, 3- and 6-month post-discharge. Visual Analogue Scale scores that measured satisfaction with health services were used for triangulation.



**Results:** Three themes were identified that reflected the core of participants' experiences: (1) the difficult diagnosis, (2) standard care: good but not good enough and (3) a journey better not done alone.

**Conclusion:** All participants reflected on difficulties experienced during the diagnostic period. Consequently, further research and attention is needed to ensure appropriate and efficient care is provided at the time of stroke for this population. Issues were also identified following hospital discharge in terms of service coordination, access, information provision and secondary prevention, supporting the need to target services to people with mild stroke. Regular follow-up or contact from the research team was observed to increase participants' feelings of support and should be considered in the design of future mild stroke services.

## Tarnished dreams – Australian women's experience of traumatic brain injury

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**Background and Objectives:** Robust research in the field of traumatic brain injury (TBI) is readily available; however, an exploration of gender issues that are specific for women following TBI remains scarce in the literature. Researchers do recognise the intersection of gender and disability; however, the gendered TBI body of research is limited. By exploring the health, activity and participation issues for Australian women post-TBI, this research aims to draw attention to the current limitations within the literature and to stimulate discussion and inform future directions for research, policy and practice.

**Method:** Pragmatism as a research paradigm underpinned a critical feminist transformative framework for this concurrent mixed methods study. Findings from qualitative interviews and a quantitative survey were integrated to develop an understanding of Australian women's experience of living with TBI.

**Results:** About 20 Australian women participated in conversational interviews and 97 Australian women shared their experience through completion of an online survey. Themes which have emerged from this research include: Changing Perception of Self; Sexuality, Sexual and Reproductive Health; Having Tenacity; and Being and Feeling Vulnerable.

**Conclusion:** Without research that focuses specifically on the experience of women living with TBI, there is a risk that acute clinical care, rehabilitation, policy development and advocacy services may not effectively accommodate them.

## Humanising healthcare: understanding the potential of narrative storytelling

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**Background and Objectives:** Despite strong theoretical foundations and organisational expectations of person-centred care, healthcare services continue to struggle to deliver on this promise. In the context of brain injury rehabilitation, a significant number of qualitative studies from the client perspective report disempowering and de-humanising lived experiences. As part of a larger study that explored narrative storytelling for adults with acquired brain injury (ABI), this paper explores the potential of narrative storytelling to humanise healthcare and support positive adaptation following ABI.

**Method:** In-depth interviews were conducted with eight adults with severe ABI who have previously participated in storytelling workshops to produce a personal narrative, and six facilitators of the

storytelling. In total, 24 transcripts (17 from participants with ABI and 7 from facilitators) were thematically analysed drawing upon the Humanisation Values Framework.

**Results:** A key finding that emerged from the data analysis was the strength of narrative storytelling as a humanising experience, for both the storytellers with ABI and the facilitators. In particular, narrative storytelling offered a way of understanding the insider or lived experience of the storytellers. Furthermore, story sharing enabled experiences of togetherness, agency and sense-making.

**Conclusions:** The findings of this research provide further evidence to support the therapeutic value of narrative storytelling, emphasising the potential as an approach to humanising healthcare. Clinicians and healthcare services are encouraged to create opportunities for clients to share their personal lived experiences, recognising their needs and rights as humans.

## The student journey: living and learning following traumatic brain injury

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**Background and Objectives:** Participating in education provides a pathway for returning to important aspects of a student's pre-injury life. However, ongoing challenges in supporting students persist with variations in access, provision and length of support across rehabilitation and educational settings. Additional challenges faced by students reflect broader issues beyond the academic environment, but these areas have received relatively little attention. In this research, we aim to understand the experiences of students participating in education following traumatic brain injury (TBI): exploring academic and non-academic factors, as well as the impact of changes in experiences over time.

**Method:** The data for this project were drawn from a longitudinal, qualitative investigation. Twelve students (17–32 years) completed up to three in-depth interviews over a period of 4–15 months. A total of 30 time points were captured. Data were analysed using grounded theory methods.

**Results:** Students' participation experiences were varied with different timelines and outcomes; however, they shared many similar critical points. We interpreted their experiences as a complex student journey that travelled through four significant landscapes, 'Choosing to study,' 'Studying,' 'Deciding what to do,' 'Making the next step. As with all journeys, moving along the pathway was not always smooth or straightforward.

**Conclusions:** Students' experiences of returning to study following TBI can be interpreted as a complex journey of living and learning. Four important stages of the journey provide clinicians and educators with landscape features that can provide a structure for exploring supports to address both academic and non-academic factors to assist students in their study journey.

# Exploring social network maintenance and quality of life in people with social cognition impairment post-right hemisphere stroke

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**Background and Aims:** Perceptions of quality of life (QoL) and maintenance of social networks have not been explored for people with a cognitive-communication disorder (CCD) following a right hemisphere (RH) stroke. It is furthermore not known if particular impairments across cognition and communication may create a risk for social isolation and poor QoL. Evidence considering social cognition impairment after traumatic brain injury supports the notion that poor emotion perception and social inferential reasoning are sources of interpersonal difficulty. This study explores QoL and social network maintenance in people with CCD characterised by social cognition impairment.

**Method:** A multiple case study methodology incorporating qualitative and quantitative data was utilised to explore differences within and between seven cases. Three theoretically developed propositions related to changes in social networks and QoL were tested.

**Results:** Social network size reduction was evident in five of seven cases (71.4%) representing people (mean age of 66 years) with impaired social cognition post RH stroke as determined on the Awareness of Social Inference Test (TASIT-R). Interpersonal relationship change was reported often ( $n = 6$ , 85.7%), with potential contributors including altered personality, communication style and spousal roles. All participant-proxy dyads reported changes in QoL on the Stroke-Specific Quality of Life Scale, which was most apparent where valued social roles were lost.

**Conclusions:** This research offers an exploratory insight into living with CCD and impaired social cognition post RH stroke. Findings support the need for the inclusion of role and relationship maintenance as rehabilitation goals.

# Evaluating the impact of the BRAINSPaN clinician and researcher network on multidisciplinary collaboration and knowledge translation in the brain impairment field

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**Background/Aims:** The complexity of brain impairment requires multidisciplinary collaboration and specialised clinical skills to optimise outcomes. The challenges involved in acquiring and maintaining these skills can result in inconsistent translation of research findings into clinical practice. We aimed to evaluate whether BRAINSPaN, an online 'community of practice' launched in June 2017 for clinicians and researchers in brain impairment, has the potential to improve multidisciplinary collaboration and translation of knowledge to practice.

**Method:** BRAINSPaN members ( $n = 697$  in October 2018) were invited to complete an online survey at three time points: 1 month (T1), 7 months (T2) and 14 months (T3) after launch.

**Results:** Participants from multiple disciplines responded to the surveys, at T1 ( $n = 118$ ), T2 ( $n = 69$ ) and T3 (data collection by November 2018). Respondents' primary goals for BRAINSPaN participation were improving access to research findings and increasing interaction with other clinicians/researchers. Frequency of multidisciplinary collaboration increased slightly from T1 to T2 (74.1%–76.8% reporting 'frequently' or 'sometimes'). The top three domains of interest for skill development were cognitive rehabilitation, behaviour management and working with families/carers. On repeated measures *t*-tests, there was a significant increase from T1 to T2 in self-reported knowledge relating to participants' top two domains but no changes in skill or confidence. Qualitatively, respondents reported benefiting from sharing of information and resources and connecting with the multidisciplinary community.

**Conclusions:** In its initial year, BRAINSPaN shows promise for enhancing collaboration and knowledge translation in the brain impairment field, though the impact may be greater for increasing knowledge than developing skills.

## Community–academic partnership as an effective methodology for research which can benefit participants, contribute to knowledge and impact policy

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**Background and Aims:** The Brain Injury Whānau Action Project started as a community-academic partnership between Brain Injury Association (Auckland) and AUT University. Its purpose was to conduct research to increase the capabilities of whānau of adults with serious brain injury to live their lives in the ways they have reason to value.

**Design and Methods:** The Capability Approach provided a human rights-based philosophy to guide the research. Using the methodology of Māori-Centred Community-Based Participatory Research, we gathered together a group of whānau who were prepared to work together with the goal of improving the lives of their own and other whānau. Nineteen co-researchers met for 25 meetings over a period of 6 months and discussed topics of brain injury, family-whānau, research and partnerships. Co-researchers shared their own experiences of what had worked, what had not worked and what they wanted in order to agree on an action project that would benefit whānau.

**Findings:** The group determined that conducting a wānanga with invited speakers would help them to educate and strengthen themselves in order to educate and strengthen others. An effective intervention was developed by drawing on tikanga processes alongside Māori and Pākehā knowledge. The capabilities of co-researchers and participants were increased, and the work is acknowledged to have directly impacted policy.

**Conclusions:** Whānau learnt from professionals and each other in an environment that focused on holism. Academic research can be conducted in a way which directly benefits participants, contributes to knowledge and can impact policy.

# Almost 1 in 10 Cochrane reviews are on rehabilitation interventions: findings from a Cochrane rehabilitation review ‘tagging’ project

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**Background and Objectives:** One of the core objectives of Cochrane Rehabilitation (a new Field with Cochrane) is to help identify and collate Cochrane reviews relevant to work in that field. We developed an online relational database to crowd-source the identification of reviews relevant to the scope of practice of rehabilitation and to categorise reviews according to the professionals involved in delivering the intervention that was the subject of each review and the broad area of clinical practice.

**Method:** We built an online, membership-driven relational database into which we imported the titles and abstracts of all reviews and protocols published in the Cochrane library from 1996 to April 2018 (9376 unique titles). We recruited rehabilitation professional to contribute to the tagging of ‘rehabilitation’ reviews in this database, with one rehabilitation physician and one allied health professional independently tagging each title against pre-specified criteria, with a Review Committee resolving decisions where there was uncertainty or disagreement.

**Results:** We identified 888 reviews and protocols (9.5% of all Cochrane publications) as being directly relevant to the practice of rehabilitation. The professional groups most frequently ‘tagged’ as being responsible for providing an intervention featured in a rehabilitation review were rehabilitation physicians and physiotherapists/physical therapist.

**Conclusions:** Many Cochrane reviews are directly relevant to rehabilitation. We uploaded all these tagging decisions into Archie and are using this information to disseminate information about rehabilitation reviews to our community via the Cochrane Rehabilitation website. Cochrane needs to consider the rehabilitation community a major stakeholder in all its work.

# Using knowledge translation to develop a sensory modulation pathway within acquired brain injury rehabilitation

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**Background and Objectives:** Sensory modulation interventions are an emerging area of practice in acquired brain injury (ABI) rehabilitation. Clinician knowledge around methods for exploring individuals’ sensory preferences, along with strategies for optimising arousal levels, is paramount in maximising participation in rehabilitation and quality of life following ABI. The objectives of this study are to explore clinician’s knowledge, perceived skills and beliefs around delivering sensory modulation interventions for an ABI population and establish the outcome of provision of targeted education around implementation of a sensory modulation clinical pathway.

**Method:** A survey was developed in alignment with the theoretical domains framework that explored clinicians’ perceived knowledge, skills, beliefs and influencing factors in relation to sensory modulation

practices. The survey was completed by 26 clinicians working across inpatient and community ABI rehabilitation settings pre- and post-implementation of a sensory modulation clinical pathway. Data were analysed using descriptive statistics.

**Results:** Survey data indicated that clinicians perceived sensory modulation interventions to be an important part of service delivery that was beneficial to patients with ABI. Occupational therapy and psychology clinicians identified sensory modulation interventions to be important to their roles, however, expressed low confidence and need for further education. Post-implementation data indicated an increase in perceived knowledge and skill, with the clinical pathway suggested to be routinely applied within practice.

**Conclusion:** Development of an evidence-based clinical pathway, in combination with a targeted education strategy that is developed through clinician engagement, can facilitate knowledge translation and embed sensory modulation practices in an ABI rehabilitation setting.

## Creating opportunities for knowledge brokers to capitalise on the relational aspects of knowledge translation

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**Background and Objectives:** Knowledge translation is a concern for research and health service delivery; however, it is a complex process. We trialled the use of knowledge brokers to support integration of new ways of working into physiotherapy practice.

**Methods:** We delivered the same workshop introducing person-centred and behaviour change techniques to practitioners ( $n = 13$ ) from three private musculoskeletal physiotherapy practices (the knowledge users). Practitioners from two of those practices were then supported by knowledge brokers, seconded from within the organisation, to assist in the implementation of the new techniques into routine service delivery. Practitioners from the third practice were left to their own devices to find ways to implement these new techniques, serving as a control site.

**Results:** Our findings suggested that while the knowledge brokers were somewhat effective in supporting the uptake of new knowledge, their success relied on them being able to build a relationship to develop an awareness of the unique and specific needs of the knowledge user, having the opportunity to open up the possibility for knowledge use and being flexible and responsive to their needs. However, a range of nuanced contextual and individual factors constrained their capacity to fulfil their brokerage role.

**Conclusion:** While a knowledge broker can manipulate many of the factors relevant to knowledge uptake, some were outside their sphere of influence. We suggest all factors, including those related to practice context, should be considered when employing knowledge brokers to capitalise on the relational aspects of knowledge brokerage.

# From systematic review of rehabilitation exercise to clinical practice: a knowledge translation ‘call to action’

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**Background and Objectives:** Research interventions are not easily translated to practice when clinicians cannot replicate them. In a Cochrane review, we investigated the utility of the 19 item Consensus on Exercise Reporting Template (CERT) for extracting and presenting rehabilitation exercise descriptions to support knowledge translation.

**Method:** A non-experimental study, within a review comparing one approach to pelvic floor muscle exercise (PFME) versus another, investigating CERT inter-rater agreement and utility. One PFME ‘novice’ (Rater 1) and an ‘expert’ (Raters 2–5) independently extracted intervention descriptions from both arms of 21 trials and assessed information ‘sufficiency’ (Yes, No, Uncertain, N/A). Analysis comprised coefficient kappa and McNemar’s test for difference in marginal proportions with reference to a ‘Yes’ assessment (Rater 1 versus all others) and content analysis of utility question responses.

**Results:** For both trial arms, three CERT items had a kappa > 0.4. Experts more often rated information as sufficient for 6. CERT was comprehensive but not complete or contextualised for PFME. Many trials did not report on most CERT items – a call to action for trialists – and itemising each CERT element made the intervention description too ‘spread out’ to grasp easily.

**Conclusions:** Relatively sparse data and numerous analyses are limitations; findings are subject to type I error. CERT enabled comprehensive extraction of interventions, and this may help reviewers decide if information is sufficient or not, informing their clinical recommendations based on review findings. Presenting 19 CERT items separately in the review may lack utility for summarising interventions for ease of knowledge translation.

## Māori cultural support: a unique role within brain injury rehabilitation

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**Background and Objectives:** Māori are over-represented in New Zealand traumatic brain injury (TBI) rehabilitation populations, just as indigenous groups are in Australian TBI statistics. This abstract describes an essential role within the multidisciplinary team at our organisation – Kaiarahi Kaupapa Māori (Māori Cultural Support).

**Method:** Te Waka Kuaka is a bilingual cultural needs assessment tool for whānau (extended families, including the client with TBI). Meaning ‘a flock of godwits,’ birds renowned for their long distance migrations, Te Waka Kuaka provides structure for whānau to navigate their healing journey. Te Waka Oranga uses the metaphor of a waka (canoe) to bring the recovery forward.

Because the role of the whānau is recognised as an essential aspect of hauora (well-being) for Māori, but whānau knowledge systems are underutilised as a potent resource for enhancing recovery outcomes in

western models of rehabilitation, a specialist Māori cultural support role uses these tools to facilitate the conversation between the whānau and rehabilitation providers.

**Results:** Observations have shown that health workers and whānau paddle side by side bringing together knowledge, skills and feelings to improve the experience of recovery for the whānau. Feedback from conversations with whānau suggests they feel a sense of ease and self-determination in the process of their own healing.

**Conclusions:** Wairua (a pivotal component of hauora; the unique connection between Māori and the universe) is supported by the use of Māori-specific tools in the hands of the specialist Māori support person.

## Aboriginal Australian experiences of brain injury and ways forward in culturally secure rehabilitation

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**Background and Objectives:** Aboriginal Australians have a higher incidence of acquired brain injury than non-Aboriginal Australians. Demographic, medical and outcome details of this population are scant, with pilot data suggesting under-representation of Aboriginal brain injury survivors in rehabilitation services. This paper summarises the findings of the Missing Voices project which explored the extent and impact of acquired communication disorders (ACD) post stroke and traumatic brain injury (TBI) within the Aboriginal population in Western Australia (WA).

**Method:** Mixed methods included analysis of linked routine hospital admission data, retrospective file audits, development and piloting of a culturally secure screening tool, and interviews with people with ACD, their families and health professionals. The study was based on five regional and one metropolitan area in WA.

**Results:** Aboriginal brain injury survivors were more likely to come from rural/remote areas than non-Aboriginal survivors, have higher rates of comorbidities, and be younger when having strokes. ACD was rarely identified in the Aboriginal TBI population, and relatively few participants received rehabilitation services in the long term. Interview themes included hospital staff/client communication barriers, the importance of family, effects of rural/metropolitan hospital transfers, being away from country, change in identity and spirituality.

**Conclusions:** Missing Voices provided the first comprehensive data on brain injury in an Australian Aboriginal population. The findings highlighted the need for increased cultural security in hospital settings and Aboriginal support in navigating rehabilitation services post-hospital discharge. They have directly informed a new randomised control trial aimed at enhancing rehabilitation services for Aboriginal brain injury survivors.



# Yarning together: developing a culturally secure rehabilitation approach for Aboriginal Australians after brain injury

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**Background and Objectives:** Stroke and traumatic brain injury are more common in Aboriginal Australians than their non-Aboriginal counterparts, yet knowledge surrounding what constitutes a culturally secure and accessible rehabilitation service for Aboriginal Australians is sparse. This research (Lowitja Institute Funding 2018–2019) is working with Aboriginal people with an acquired communication disorder (ACD) following brain injury to (i) develop an understanding of the individual's perceptions of rehabilitation services and (ii) test the feasibility and acceptability of a culturally tailored model of speech pathology rehabilitation delivered via one of two modes: face to face or using telehealth technology.

**Method:** Participants ( $n = 20$ ) with an ACD after stroke or traumatic brain injury will be allocated to one of two groups: face-to-face therapy or therapy utilising telehealth technology and will receive  $16 \times 1$  h treatment sessions provided twice weekly. Therapy utilises collaborative planning, integrates a yarning framework and is provided by a speech pathologist and Aboriginal co-worker. Improvement in participant communication skills is being measured through change in verbal output in discourse. The perspectives of the participants on the rehabilitation services accessed previously, the therapy provided through the study and change in everyday communication will be collected through semi-structured interviews.

**Results:** This paper will present the therapy protocol, an explanation of the key elements involved in therapy implementation and some preliminary findings.

**Conclusions:** The findings from this study will provide direction for rehabilitation therapists who provide services to Aboriginal brain injury survivors to improve quality of care.

# Does New Zealand's geographical and cultural challenges impact patient access to inpatient rehabilitation services – a study using 5 years of AROC data

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**Background and Objectives:** To examine access to rehabilitation services in New Zealand using data from the Australasian Rehabilitation Outcomes Centre (AROC), with a particular focus on whether rehabilitation was equally accessible to all ethnicities. Distance to healthcare services has long been recognised as an important factor in access to care with numerous studies describing an inverse relationship between distance and utilisation across many diseases. AROC is a joint initiative of the Australasian rehabilitation sector and has nearly 100% coverage of all designated inpatient rehabilitation services in both New Zealand and Australia. As part of participation in AROC, rehabilitation services collect a defined data set against each and every rehabilitation patient they treat.

**Method:** The AROC longitudinal database provided the rehabilitation service utilisation data. The activity data comprised all rehabilitation discharges reported to AROC over the 5-year period July 2013–June 2018. This resulted in a study data set of 60 366 episodes provided by 39 inpatient facilities across New Zealand. A measure of distance, determined by longitude and latitude of postcodes, was added to the AROC data to enable the analysis.

**Results:** For impairments treated largely in specialist units (e.g., brain and spinal injury), the locations of these services impacted the distance a patient had to travel for their rehabilitation. The impact of distance travelled and ethnicity on inpatient rehabilitation outcomes will be explored.

**Conclusions:** New Zealand has significant geographical and cultural challenges that need to be taken into account when considering equitable access to rehabilitation.

## Meeting the needs of people who have sustained very serious lifelong injuries in South Australia: a multi-method research project

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**Background and Aims:** The immense cost of trauma as a result of motor vehicle accidents, in terms of mortality, morbidity and financial (\$27 billion in Australia), has been well documented. In South Australia, the Lifetime Support Scheme (LSS) provides treatment, care and support for people who have sustained very serious lifelong injuries as a result of a motor vehicle accident. The LSS ensures timely identification of needs so that early, effective and responsive service can be provided to injured people, including for those with brain impairments. The aim of this research was to explore participants' perspectives about, and impact of, LSS.

**Method:** A multi-methods research, underpinned by quantitative (a bespoke survey instrument) and qualitative (semi-structured interviews) research paradigms, informed this project which was conducted over a 3-year period (2016–2018).

**Results:** The participants from LSS were involved in surveys ( $n = 138$ ) and interviews ( $n = 14$ ). A myriad of rehabilitative services was utilised, which demonstrated generally positive impacts in terms of physical, social and mental health well-being. The ability of LSS to provide financial backing, especially in time of need, was valued. The service planner acted as a conduit between LSS and participants and was a central gateway for services. Despite positive impacts, barriers (e.g., organisational delays, complexities of individual cases) continue to persist.

**Conclusion:** While a centralised agency that coordinates care for people with serious lifelong injuries, including brain impairments, can result in wide-ranging positive impacts, the evolving needs of injured people require it to be continually adaptive and responsive.

## Exploring the unmet needs of minor stroke survivors

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**Background and Objectives:** Medical advances have reduced the likelihood that a stroke and its associated disability will be severe. Yet, less is known about the needs of minor stroke survivors. The objective was to conduct an exploratory prospective pilot study to document the unmet health, rehabilitation and psychosocial needs and service access of a recently hospitalised minor stroke cohort.

**Method:** A mixed methods exploratory cohort design was used to investigate the unmet health, service and social needs of 20 minor stroke survivors (14 males, 6 females; mean age = 68 years). Participants completed previously validated questionnaires (Survey of Unmet Needs and Service Use, Mayo-Portland Adaptability Inventory-4, Exeter Identity Transition Scales, La Trobe Communication Questionnaire and RAND 36-Item Health Survey 1.0) at 2 weeks (T1) and 2-month (T2) post-hospital discharge.

**Results:** Participants received significantly more support at T1 compared with T2 ( $p < .05$ ). Nine participants reported needing additional support (i.e., experienced unmet needs) at T1 and seven participants reported needing additional support at T2. Between T1 and T2, there was a statistically significant improvement in perceived role limitations due to physical health and social participation (both  $p = .01$ ). Perceived communication skills were rated significantly poorer at T2 ( $p = .01$ ). Unmet needs were predicted by social participation and communication skills ( $p < .05$ ).

**Conclusions:** Minor stroke survivors may have health, service and social needs unmet by the existing services. The next step will be to translate these findings into the development of a new service pathway for minor stroke patients.

## Supporting persons with ABI and communication impairment to access the legal system: a case study review

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**Background and Aims:** This report analyses the experience of a young adult who was supported to access the criminal justice system, as a victim of crime, from initial report through to trial. The individual, has moderate-to-severe acquired brain injury (ABI) and communication impairment, was participating in rehabilitation while living at a community transitional accommodation programme in Perth, Western Australia (WA). The primary aim of this review is to demonstrate how strong multi-sector collaboration is needed to facilitate communication through the legal process for vulnerable adults. Secondly, it highlights how the importance of right to equity before the law has impacted on this individual's overall mental well-being and their ability to participate in the rehabilitation process.

**Method:** A literature review was conducted of Australian and International models of supporting vulnerable people to access the justice system, with specific review of WA legal system and processes. The case

was analysed with reference to the experience of allied health professionals, police officer and state prosecution, detailing the successes and limitations.

**Results:** Positive rehabilitation outcomes for client due to engagement in therapy to achieve goal of giving evidence, increased sense of empowerment, positive effect on mental health and well-being. Recommendations formulated in multi-sector collaboration to support adults with communication and cognitive impairment to achieve best outcomes when accessing criminal justice system.

**Conclusions:** This review highlighted the need for change to make the criminal justice system accessible for people with ABI/communication impairment in WA and evidenced the positive outcomes for the individual when supported to pursue justice.

## Long-term follow-up of moderate-to-severe traumatic brain injury in the Canterbury region

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**Background and Objectives:** While evidence supports immediate impact of intensive rehabilitation following moderate-to-severe traumatic brain injury (TBI), data are needed to elucidate long-term functional outcomes and health-related quality of life (HRQL) in these individuals once in the community. The present study analyses the course of recovery during rehabilitation and 1- to 4-year post-injury.

**Method:** A cross-section of individuals with moderate-to-severe TBI, admitted to Rehabilitation at Laura Fergusson Unit from the greater Canterbury region ( $n = 142$ ), were interviewed 1- to 4-year post-injury. A retrospective review was conducted regarding TBI characteristics (e.g., Glasgow Coma Scale Score, Post-Traumatic Amnesia duration) and compared to current functional status (e.g., household independence, community and social inclusion, return to school or work, HRQL report). Descriptive statistics included age, gender, self-identified ethnicity and aetiology of the TBI.

**Results:** TBI affected men more than women (73.6% male). Average age was 41.72 years ( $SD = 18.97$ ); there were no significant differences in length of stay for individuals under 40 ( $\bar{x} = 32.2$ ;  $SD = 27.5$ ) compared with those over 40 ( $\bar{x} = 33.6$ ;  $SD = 24.9$ ). Predominant injuries included motor vehicle accidents (37%), falls (22%) and assault (9%). Long-term outcome data and HRQL will be discussed.

**Conclusions:** Long-term outcomes highlight the persistence of functional impairments following moderate-to-severe TBI. Opportunity for community and social inclusion appear paramount, consistent with the existing research. Future research and routine long-term follow-up is critical to further elucidate effective methods to support long-term inclusion, meaningful life roles, relationships and maintenance of functional ability.

## Early intervention for social skills impairment following acquired brain injury: promoting self-awareness to optimise community integration

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**Background and Objectives:** Impaired social skills are a common consequence following acquired brain injury (ABI) and can contribute to challenges with both maintaining and forming relationships, resulting

in lowered mood and social isolation. The impact of these impairments is often not realised until difficulties are encountered with community integration after leaving hospital. The purpose of this study is to describe a social skills training (SST) protocol for an inpatient ABI population and to evaluate the effectiveness of this programme in increasing awareness of social skills impairments.

**Method:** An inpatient SST protocol was developed, informed by two existing protocols. A pre- and post-design was used, with outcome measures including the Self-Awareness of Deficits Interview (SADI), LaTrobe Communication Questionnaire (LTQ) and the Hospital Anxiety and Depression Scale (HADS). Knowledge of goals was also recorded. Six inpatients from an ABI Unit were recruited to the programme. Data were analysed using descriptive statistics and coding techniques.

**Results:** The protocol for the 8-week SST programme will be described. LTQ and HADS scores remained stable over time. Self-reports of social skills impairments obtained from SADI increased from 0% (pre-intervention) to 75% (post-intervention) for those participants who completed the full programme. Knowledge of social skills goals reached 100% by the sixth group session.

**Conclusions:** Early intervention in the subacute phase of recovery following ABI is important to achieve greater awareness of social skills impairments and successful community integration. Reinforcement of social skills goals is key to building awareness of impairments to achieve best outcomes.

## Gaps in occupational participation following severe TBI: associations with cognition, mood, and psychosocial function

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**Background and Objectives:** Severe traumatic brain injury (TBI) can significantly impact activity participation. This study examined the nature of occupational gaps and desired re-engagement in occupation following severe TBI, alongside the relationship to cognition, mood, self-identity change and psychosocial functioning.

**Method:** Participants were 59 adults (73% male; *M* age = 36.50) with severe TBI living in the community. The Occupational Gaps Questionnaire was administered to measure past, current and desired participation in 30 everyday activities. Participants were also administered a neuropsychological test battery and measures of mood (Depression Anxiety and Stress Scale), self-identity change (Head Injury Semantic Differential Scale) and social reintegration (Sydney Psychosocial Reintegration Scale).

**Results:** High levels of current occupational participation (>75%) were reported for visiting relatives/friends, watching TV and playing computer games/surfing the internet, and low levels (<25%) were reported for working, studying and volunteering. Significant gaps were found between actual and desired participation ( $p < .001$ ). Gaps in activity participation were significantly related to cognitive ability ( $r_s = -.35$  to  $-.50$ ,  $p < .01$ ), social reintegration ( $r = -.30$ ,  $p < .05$ ) and emotional distress (anxiety  $r = .29$ ,  $p < .05$ ). A mediation analysis revealed that re-engagement gaps were indirectly related to self-identity change through an association with anxiety.

**Conclusions:** Occupational gaps are commonly experienced after severe TBI. These gaps are related to cognitive ability, anxiety and poorer psychosocial functioning. Anxiety regarding these gaps may contribute to negative comparisons between one's pre-injury and post-injury self. The clinical implications of these findings within the context of client-centred rehabilitation will be discussed.

## Stroke and traumatic brain injury in New Zealand: Contrasting incidence, and mood functioning across two epidemiological studies

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**Background and Objective:** Stroke and traumatic brain injury (TBI) are two of the leading causes of adult death and disability, leading to difficulties in activities of daily living and quality of life. Here, the Brain Injury Outcomes in the New Zealand Community study and the fourth round of the Auckland Regional Community Outcomes of Stroke (ARCOS-IV) will be presented.

**Methods:** Two community-based epidemiological studies of incidence and outcomes. Methods used by the two studies will be reviewed in parallel, as will incidence by age, gender and ethnicity. Other outcomes of interest (Depression and Anxiety; at 1, 6 and 12 months) will also be contrasted.

**Findings:** Comparison of the two studies shows that TBI incidence is much higher than stroke incidence, and those who self-identify as of Pacific and Maori ethnicity are at greater risk of TBI (particularly males) and of Young stroke. Anxiety is much more prevalent than depression, particularly after TBI.

**Conclusion:** Presenting the findings in parallel highlights the similarities and differences between the diagnostic groups. Of particular note are differences in the profiles of those at risk, which has implications for efforts at prevention; and differences in the experience of anxiety has implications for the timing and focus of rehabilitation.

## Estimated life-time savings in the cost of ongoing care following specialist rehabilitation for severe traumatic brain injury in the UK

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**Background and Objectives:** Rehabilitation following severe traumatic brain injury (TBI) is both effective and cost-efficient. However, severely disabled patients also have a significantly reduced life span, so that the long-term cost-savings should be considered in relation to their life expectancy to prove value for money.

**Objective:** To evaluate cost-efficiency of rehabilitation following severe TBI and estimate the life-time savings in costs of care.

**Methods:** TBI patients ( $n = 3578/6043$ ) admitted to all 75 specialist rehabilitation services in England 2010–2018. A multi-centre cohort analysis of prospectively collated clinical data from the UK Rehabilitation Outcomes Collaborative national clinical database. Primary outcomes were (a) reduction in dependency (UK Functional Independence/Functional Assessment Measure (UK FIM+FAM)), (b) cost-efficiency, measured in time taken to offset rehabilitation costs by savings in costs of ongoing care estimated by the Northwick Park Dependency Scale/Care Needs Assessment (NPCNA) and (c) estimated life-time savings.

**Results:** The mean age was 49 years, 74% males. Excluding patients who remained in persistent vegetative state on discharge, the mean episode cost of rehabilitation was £40 612 (95% CI £39 261, £41 957), which

was offset within 15.9 months by NPCNA-estimated savings in ongoing care costs. The mean period life expectancy adjusted for TBI severity was 22.7 years, giving mean net life-time savings in care costs of £740 929 (95% CI £694 621, £791 256).

**Conclusions:** Specialist rehabilitation proved highly cost efficient for severely disabled patients with TBI, despite their reduced life-span, potentially generating over £4 billion savings in the cost of ongoing care for this 8-year national cohort.

## Preliminary evidence from action: first year outcomes of the acquired brain injury transitional rehabilitation service pilot project

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**Background and Objectives:** The Acquired Brain Injury Transitional Rehabilitation Service (ABI TRS) is a 5-year pilot model of service that aims to facilitate early community reintegration outcomes for persons with acquired brain injury (ABI) and their families. This service was established in response to an identified unmet need in the continuum of ABI rehabilitation in Queensland. To determine the impact of ABI TRS on community re-integration, a formal service evaluation is currently being undertaken. This study presents outcomes from the first year of clinical service delivery (2017–2018).

**Method:** Persons with ABI ( $n = 68$ ) completed the 12-week ABI TRS community-based programme, comprising an intensive, individualised, goal-directed programme using an interdisciplinary, client-centred approach. Self or practitioner-rated questionnaires were completed at 0 (baseline) and 3 months, and compared to a quasi-control (CON) where no transitional rehabilitation service existed. Data were analysed using linear mixed models in a Bayesian framework.

**Results:** Baseline ratings in all outcomes measures were statistically worse at baseline compared to CON. There were statistical improvements in measures of global function (MPAI-4) and psychological well-being (DASS-21) compared to CON. Psychosocial function (SPRS-2) and health-related quality of life (EQ-5D) were statistically improved at 3 months compared to baseline.

**Conclusions:** ABI TRS clients demonstrated statistically improved or matched outcomes at 3 months compared to the quasi-CON. The ABI TRS programme sees a clinically diverse range of individuals, and clients generally exhibit superior outcomes following programme completion. These early results indicate benefit in incorporating the ABI TRS programme in the Queensland continuum of ABI services.

## Hoarding and acquired brain injury: an overview and case study

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**Background and Objectives:** Hoarding disorders can result in significant psychological, social and financial consequences. However, the available psychological treatments for hoarding disorders have limited

efficacy. Individuals who present with both hoarding and acquired brain injury (ABI) are even more challenging for clinicians. The aetiology of post-ABI hoarding may be psychological (e.g., trauma and anxiety), cognitive (e.g., disorganisation, impulsivity and amnesic), neurological (e.g., damage to prefrontal cortex) and/or physical (e.g., mobility or dexterity impairments). Much needed empirical and clinical treatment guidance is lacking for this complex dual condition.

**Methods:** Single-case design. A neuropsychology-led intervention was provided over a 4-year period to treat extremely severe post-ABI hoarding and reduce clutter in a 55-year-old man. Primary repeated outcome measures were the Clutter Image Rating Scale and Hoarding Rating Scale.

**Results:** The intervention resulted in improvement hoarding and clutter on both measures, with hoarding reduced to below the clinical cut-off. Qualitatively, the intervention was associated with increased insight and motivation.

**Conclusions:** Treatment of lesser known complex post-ABI conditions may require novel, individualised and sometimes lengthy treatment, however, can be associated with positive outcomes. Further research is required to understand and evaluate interventions for post-ABI hoarding, with a view to the eventual creation of clinical guidelines.

## Enabling hospitals to be more inclusive and responsive to people with cognitive disabilities

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**Background and Aims:** Mainstream service systems need to effectively accommodate the needs of people with disabilities, in order to ensure equity in access and quality of service provision. In this study, we explored the hospital system and people with cognitive disabilities as service users. The study aim was to provide evidence about the processes and practices that enable hospitals to identify and respond to the particular needs of people with cognitive disabilities.

**Method:** The study used mixed methods and was conducted across three health networks. Sixty primary participants were recruited as they commenced a hospital encounter and followed through to discharge. Unstructured non-participant observation (107) and semi-structured interviews (93) were used to collect data about the experiences of patients, those accompanying them and hospital staff involved with them. Information about care processes was extracted from medical files.

**Results:** Almost all encounters (179) began in emergency; 29 of these involved people with pre-existing brain injury. The majority arrived by ambulance (76%) and a family member accompanied 38%. Length of stay in emergency exceeded the benchmark (4 h) for nearly two-thirds of these encounters. Almost half (48%) moved from emergency to a short stay unit or a ward. Qualitative analysis revealed promising strategies and processes within four themes (support, information, collaboration and knowledge) that could be applied across the hospital journey.

**Conclusions:** This study enabled identification of a clear set of strategies to guide the development of hospital practices to improve the care experiences and health outcomes of people with cognitive disabilities.



# Measuring connection and collaboration in rehabilitation: developing a measure of therapeutic relationship

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**Background and Objectives:** Therapeutic relationship may be critical to rehabilitation outcome. However, knowledge advance is hampered by existing measures, which may fail to capture elements relevant to rehabilitation. We aimed to develop a robust measure of therapeutic relationship in rehabilitation.

**Methods:** A programme of work including: (a) a qualitative descriptive study exploring what matters most to the therapeutic relationship for clients ( $n = 15$ ) to inform a conceptual framework; and (b) a measure development process involving a literature search to pool items from existing measures, mapping items against our conceptual framework, and carrying out cognitive interviews with clients ( $n = 13$ ) to determine comprehensibility, acceptability, relevance and answerability of our preliminary item pool.

**Results:** ‘Do the right thing for me’ was the core category, demonstrated in the context of therapeutic encounters where practitioners ‘Connect with me as a person,’ ‘Show me you know how,’ ‘Be my professional’ and ‘Value me and my contribution’. The presence of these aspects was perceived to contribute to hope and a belief in self. This conceptual framework underpinned a preliminary pool of 68 items. We deleted 32 and reworded 8 items in response to feedback during cognitive interviews, resulting in a 36-item measure of therapeutic relationship.

**Conclusion:** A measure more tailored to capture unique and specific aspects of therapeutic relationship in rehabilitation will augment rehabilitation research and provide a reflective tool for practice. Ongoing work includes testing and Rasch analysis with a larger cohort of clients and exploring cultural acceptability for Māori.

## Plenary Session:

# Fatigue management in neurorehabilitation

Fary Khan<sup>1,2,3,4</sup>

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Fatigue is a common symptom in many neurological conditions. Although there are advances in pharmacological and non-pharmacological treatments, fatigue continues to adversely impact patient activities of daily living, ability to work, participatory role and quality of life. The published clinical practice guidelines highlight the significance of diagnosing and treating fatigue as part of the overall rehabilitation

management plan. In current practice, both pharmacological and non-pharmacological interventions are used in combination, encompassing an inter-disciplinary approach.

As the body of research investigating the effect of these interventions is growing, this presentation will provide an update of existing evidence on the effectiveness and safety of different rehabilitation interventions used to manage fatigue in person with neurological conditions (multiple sclerosis, stroke, brain injury and Parkinson's disease) to guide treating clinicians.

## Reducing the incidence and impact of brain injury in New Zealand

Alison Drewry

Specialist Occupational Physician, Accident Compensation Corporation, Wellington, New Zealand

The Accident Compensation Corporation (ACC) began in 1974 and is unique in the world as a no fault, personal accidental injury insurance cover for all New Zealanders and temporary visitors to New Zealand. The scheme removed the right to sue for injury, including 'treatment injury' (often referred to as medical misadventure elsewhere). The scheme is funded by levies across five main accounts: Work, Earners, Non-Earners, Motor Vehicle, and Treatment Injury as well as government contributions. ACC pays the cost of injury investigation, management and rehabilitation including social support, and compensates for lost earnings. ACC's vision is to create a unique partnership with every New Zealander, improving their quality of life by minimising the incidence and impact of injury.

In the year to June 2018, ACC received 1 946 368 new claims, most of which would resolve without significant long-term effects, but about 100 000 people will require more complex rehabilitation input to achieve recovery. ACC research shows a substantial proportion of these will have a brain injury. From an insurer's perspective, better outcomes through improved rehabilitation could potentially reduce a single claim liability of \$10.3 million (severe brain injury in a 25 year old) to \$3.5 million (moderate brain injury in a 25 year old), but the individual and community benefit of a better outcome from brain injury in an 80 year old is even more significant. ACC has several initiatives aimed at reducing the incidence and impact of brain injury through prevention, risk identification, and the provision of effective, coordinated services.

## Measuring outcomes and monitoring progress in the era of evidence-based clinical practice

Robyn L Tate

John Walsh Centre for Rehabilitation Research, Kolling Institute of Medical Research, Faculty of Medicine and Health, The University of Sydney, Australia

Health outcome measurement is a growth industry. Thousands of behavioural assessment instruments, developed for neurological populations alone, are available for diagnosis, prediction and evaluating interventions. The task of selecting the best instrument for the purpose at hand is thus a daunting one for the clinician and researcher. Fortunately, there are guides that make the task easier. This presentation addresses three inter-related themes that inform assessment in neurorehabilitation: First, it reviews current concepts and the status of behavioural assessment in neurorehabilitation. It then examines evidence-based clinical practice as applied to assessment of function, along with methods to benchmark the scientific quality of assessment instruments. Finally, the paper considers the need to move beyond outcome measurement in the neurorehabilitation setting.

## ABSTRACTS – FRIDAY POSTERS

## Young people's experience of the sibling relationship when one sibling has an acquired brain injury

Penelope Analytis<sup>1,2</sup>, Narelle Warren<sup>3</sup> and Jennie Ponsford<sup>1,2</sup>

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**Background and Objectives:** Siblings play a unique role in families, and sibling relationships are usually the longest family relationships people have. In families with a child with acquired brain injury (ABI), siblings play a key role in the rehabilitation of the child with ABI and the family's adjustment. Yet few studies have investigated this relationship. This study explored the sibling relationship in families with a child with ABI from the perspective of young people with ABI and siblings.

**Method:** Semi-structured interviews were conducted with 7 young people with ABI and 11 siblings.

**Results:** Using thematic analysis, four themes were identified: family dynamics, ABI isolation, Love-hate relationship and changing relationship. Family context and post-ABI dynamics contextualised participants' perspectives of sibling relationships. Participants perceived ABI as an isolating experience within the family and among friends. This shaped the experience of the sibling relationship as a source of closeness and support but also distance and conflict. Participants reflected on the changing nature of the relationship over time, with greater understanding of ABI and of practical ways to manage sequelae leading to increased closeness.

**Conclusions:** For these participants, the sibling relationship was experienced as a source of love and support, but also of misunderstanding and conflict. The relationship was seen as continually evolving, as ABI sequelae intersected with young people's development, family contexts and societal responses to ABI. Interventions to increase understanding of the long-term practical and psychological implications of ABI for young people with ABI and siblings may assist in fostering stronger sibling bonds.

## Concussion essentials: Piloting a clinical trial to reduce persisting symptoms following child concussion

Vicki Anderson<sup>1,2,3,4</sup>, Michael Takagi<sup>1,2</sup>, Gavin Davis<sup>1</sup>, Audrey McKinlay<sup>1,2</sup>, Ali Crichton<sup>1</sup>, Stephen Hearps<sup>1</sup>, Cathriona Clarke<sup>1</sup>, Vanessa Rausa<sup>1</sup>, Nicholas Anderson<sup>1</sup>, Kevin Dunne<sup>1,5</sup> and Franz Babl<sup>1,3,6</sup>

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**Background and Objectives:** By the age of 10, one in five children will sustain a concussion and suffer acute post-concussion symptoms (PCS). Most children recover spontaneously, but approximately 40% experience 'persisting PCS' lasting 4 weeks or more. The causes of common PCS can be multi-factorial (e.g., cognitive disruption), thus a multimodal treatment approach is necessary to address them. Concussion Essentials (CE) is a child-specific multimodal treatment programme to facilitate recovery from concussion. The aim of CE is full PCS resolution as measured by the PCS Inventory.

**Method:** To pilot CE, we recruited a sample of nine children who remained symptomatic at 4-week post-concussion. Their recovery was compared to that of our prospective longitudinal cohort that included

identical time points. CE is an 8-week programme, comprised of symptom-specific modules delivered by a multidisciplinary team of paediatricians, neuropsychologists and physiotherapists, with treatment content determined by individual participant symptoms.

**Results:** Nine participants completed the intervention. Paired-sample *t*-tests revealed a significant decline in symptoms ( $p = 0.01$ ) relative to baseline. Furthermore, upon completion of the intervention, 80% had fully returned to school (62.5 at baseline), 80% had fully returned to sport (50% at baseline) and 100% had returned to normal activities (50% at baseline).

**Conclusions:** Preliminary evidence supports the efficacy of CE to reduce PCS in children with delayed recovery post-concussion.

## Support for community integration after brain injury within New Zealand health policy

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**Background and Objectives:** Community integration (CI) is commonly referred to as the ultimate goal of rehabilitation for adults after acquired brain injury (ABI). There has been increasing focus on research aiming to define and conceptualise CI to inform service delivery. Despite this, related outcomes remain relatively poor. Arguably, explicit consideration of CI in relevant health policy may provide impetus for a focus on CI in practice.

**Method:** An integrative literature review was undertaken to critique and synthesise existing frameworks for CI after ABI. Following that, a review and critical comparison of frameworks with current New Zealand health policy was conducted to establish where structural support lays in relation to dimensions of CI.

**Results:** Eight dimensions of CI were identified across current frameworks: a place to live, occupation, addressing risk and vulnerability, community access, adjustment, acceptance, independence and social connection. Support for these components is variable across New Zealand health policy, with most focusing on more discrete indicators of health, such as immunisation, and failing to adequately consider broader social factors. The New Zealand Disability Strategy (2016), however, takes a 'whole of life and long-term approach' to social investment and identifies five particular outcomes that relate directly to CI dimensions.

**Conclusions:** There needs to be more explicit focus on CI as a critical component of health and well-being in NZ health policy. In the meantime, the New Zealand Disability Strategy provides a useful supporting document for the promotion of a broader focus on CI outcomes, such as social connection.

## Combined rehabilitation and glycosaminoglycan treatment improves forelimb function following motor cortex stroke in mice

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**Questions:** Stroke is a leading cause of death and disability worldwide. Post-stroke recovery is always accompanied with rehabilitation; however, most preclinical research does not replicate that. Therefore,

we combined remedial therapy using a pasta matrix reaching task with administration of a novel glycosaminoglycan (GAG), which is a synthetic sugar similar to those found in brain extracellular matrix, to improve motor recovery in a mouse model of stroke.

**Methods:** Mice (2–3 month old) were trained on a pasta matrix paradigm to make 100 reaches in 15 min. Focal stroke was induced by photothrombosis ( $n = 30$ ) to the left motor cortex. Treatment with the GAG compounds (90 ug/ml) was via subcutaneously implanted ALZET minipumps from 3-day post-stroke. Mice were trained on a 3 days on/1 day off schedule on the pasta matrix task beginning 5-day post-stroke. At 1 and 4 weeks, post-stroke mice were tested on the grid walking and cylinder tasks to quantify forelimb impairments. Statistical significance was calculated using a two-way analysis of variance.

**Results:** Stroke mice that received either rehabilitation or GAG treatment only were impaired at 1-week but not 4-week post-stroke on both the grid-walking and cylinder tasks. Stroke mice that received combined rehabilitation and GAG treatment performed significantly better than the stroke rehabilitation only group ( $p = .0255$ ) and showed no differences compared to sham animals at both 1 and 4 weeks.

**Conclusions:** Mice receiving a combination of physical rehabilitation along with chronic GAG intervention resulted in a marked improvement in motor function as early as 1 week following stroke.

## Standardising the management of behaviours of concern in the acute phase of traumatic brain injury

Heather Block

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**Background and Objectives:** Across South Australia's (SA) acute trauma hospitals, there have been inconsistent approaches to identification and management of behaviours of concern (BOC), including variable use of restraints, variable use and doses of medications, and frequent security incidents. This project aims to develop and implement a standardised, best practice protocol for a consistent approach to identify and manage BOC for traumatic brain injury (TBI) patients.

**Method:** A systematic review of evidence in management of BOC in acute TBI was completed, and inter-state benchmarking visits. Local working parties consisting of experts in acute and subacute TBI were formed to develop best practice recommendations for standardised identification and management of BOC in acute TBI.

**Results:** A specific assessment tool and protocol was developed to identify and manage TBI BOC, which has been implemented across SA's acute trauma hospitals. The TBI Behaviour Scale and Record provides an objective TBI specific assessment and recording tool for BOC. The TBI – Management of BOC protocol provides a standardised approach to non-pharmacological and pharmacological interventions based on assessment of behaviours using the TBI Behaviour Scale and Record. An Individualised TBI Behaviour Support Plan has been developed to identify patient's lifestyle factors and can be used to track behaviour triggers, warning signs and individualised management strategies.

**Conclusions:** Evaluation of the TBI protocol, TBI Behaviour Scale and Record and Individualised TBI Behaviour Support Plan is ongoing. A state-wide online staff training resource is in development, and plans for a state-wide TBI database will be developed.

# A systematic review of the evidence relating the management of behaviours of concern in acute traumatic brain injury

Heather Block<sup>1</sup>, Steve Milanese<sup>2</sup>, Stacey George<sup>3</sup> and Felicity Jenkinson<sup>4</sup>

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<sup>4</sup>Northern Adelaide Ambulatory Rehabilitation Services, Northern Adelaide Local Health Network, Adelaide, SA, Australia

**Background and Objectives:** Behavioural problems during acute traumatic brain injury (TBI) present many challenges, which can create a great deal of concern for the patient, family members and healthcare staff. The purpose of this review is to synthesise the published academic literature on the effectiveness of interventions for the management of behaviours of concern (BOC) in patients with acute TBI.

**Method:** The search yielded 4355 articles. After scrutiny, 4331 articles were excluded, leaving 26 studies, including 2 clinical guidelines, 5 systematic reviews, 2 randomised controlled trials (RCTs) and 17 cohort studies. Studies were appraised using the Critical Appraisal Skills Program checklist.

**Results:** Any management strategy being considered should first include an investigation of underlying causes of agitation. Non-pharmacological recommendations: cognitive-behavioural therapy, coping strategies and an anger management course demonstrate moderate effectiveness at managing BOC in acute TBI. It is recommended that restraints should be used minimally and only when medically necessary. Pharmacological recommendations: Beta-blockers have moderate effectiveness at managing BOC in patients with acute TBI; anti-depressants and anti-epileptics have limited effectiveness at managing BOC in acute TBI. There is no strong or consistent evidence for the use of pharmacological interventions for managing BOC other than agitation and aggression in acute TBI, and all recommendations for pharmacological interventions for BOC in acute TBI should be considered with caution.

**Conclusions:** There is insufficient evidence to strongly recommend any one treatment for the management of BOC as a result of acute TBI, and more high-level evidence such as RCTs are recommended.

# The complexities of enacting person-centred practice in stroke rehabilitation

Felicity Bright<sup>1</sup> and David Anstiss

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**Background and Objectives:** Rehabilitation is often described as ‘person-centred.’ Person-centred practice is a common ideal of clinicians and rehabilitation services but is not always evident in practice. This study explored why it can be challenging for clinicians to enact person-centred care in stroke rehabilitation.

**Method:** A qualitative case study of a community stroke rehabilitation service. Data were gathered through semi-structured interviews with five participants in clinical and leadership roles. Data analysis was underpinned by a complexity approach, exploring how practice was influenced by the interactions between actors and systems.

**Results:** Person-centred practice was understood and enacted differently by each clinician, each of whom self-identified as person-centred. Understandings were influenced by each person’s practice ‘genealogy’ (e.g., clinical experience, disciplinary norms) and continued to emerge through interactions with those in the rehabilitation system. At times, person-centred practice was constructed as a series of discrete actions to be performed. Notably, patients, clinicians and the service did not appear to share the same understandings of what constituted person-centred practice. When this were not recognised or attended

to, service requirements, and sometimes the patient, could be seen as problematic. Rarely, if at all, did clinicians reflect that their own practice might not be person-centred.

**Conclusions:** Enacting person-centred practice is complex, influenced by the interactions of different actors and systems. Articulating these complexities may help people critically reflect on practice and open up different approaches to embedding person-centredness in rehabilitation.

## Review and selection of outcome measurement within a complex model of neurodisability provision

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**Background and Objectives:** Outcome measurement should be embedded in neurorehabilitation services to inform and standardise treatment. Selection of outcomes is complicated by the many options available. Brightwater provides neurorehabilitation for a wide spectrum from high care need to short-term community rehabilitation in addition to long-term-supported accommodation.

**Aim:** To determine the most suitable outcome measure for the model of service delivery.

**Method:** A review of outcomes across Brightwater emphasised the need to reconsider ‘best fit’ and highlighted some gaps in measurement. A literature review was conducted to establish the most valid and reliable measures to include Patient Reported Outcomes, Functional Outcomes, Symptom Outcomes and Participation measures. Completion and analysis of outcome measurement was reviewed to improve reporting.

**Results:** An Outcomes Training programme was produced and delivered across the service, providing standardised information about all core and supplementary measures to improve accuracy of reporting and increase awareness of the purpose of outcomes. Outcome measurement is embedded into the service and used to inform and educate families at review meetings and inform goal-setting. A standardised satisfaction of service measure is completed on discharge. Annual in-house formalised reporting on all outcomes is in place.

**Conclusions:** Integration of outcomes in clinical practice aids communication between clients, families and the treating team. Finding the most appropriate measurements creates opportunity for service development and provides stakeholders and funding bodies (e.g., National Disability Insurance Scheme and Department of Health) with reliable and timely information.

## What’s it like to use Twitter after a traumatic brain injury?

Melissa Brunner<sup>1</sup>, Stuart Palmer<sup>2</sup>, Leanne Togher<sup>3,4</sup>, Stephen Dann<sup>5</sup> and Bronwyn Hemsley<sup>2</sup>

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**Background and Objectives:** This study aimed to investigate the Twitter experiences and networks of people with cognitive-communication disability after a traumatic brain injury (TBI).

**Method:** Using mixed methods, the study integrated: (a) quantitative analysis of Twitter networks using computational and manual coding of tweets sent by the participants and (b) narrative analysis of in-depth interviews with the same participants, reflecting on their experiences in using Twitter after their TBI.

**Results:** Six adults with cognitive-communication difficulties arising from a TBI who used Twitter took part in the study. Participants included two males and four females, with an average age of 40 years (range 26–72 years), and half were employed. Participants reported diverse Twitter experiences, with two being experienced users and four being novices. While a variety of purposes drove use, all participants used Twitter to feel connected and included and reported both positive and negative experiences. Engaging in Twitter communities facilitated their higher frequency of tweeting and established feelings of enjoyment and connection. Novice and established users alike were keen to continue using Twitter and eager to learn more but had not received any rehabilitation support for their social media goals.

**Conclusions:** People with TBI use Twitter for connection but approach the, sometimes confusing, platform using trial-and-error to develop their skills. Considering their cognitive-communication disability and increased risk for social media safety incidents, they are likely to require more active integration of social media if they wish to use it during rehabilitation and beyond for safe and enjoyable social connection.

## A new innovation: The benefits of the aphasia New Zealand (AphasiaNZ) charitable trust's community aphasia advisor (CAA) service

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**Background and Objectives:** Aphasia has been described as like being in a library after an earthquake; all of the information is still there, but it is not where it used to be, and it is hard to find what you are looking for. The Aphasia New Zealand (AphasiaNZ) Charitable Trust has, since 2015, been offering a Community Aphasia Advisor (CAA) expert aphasia field-officer service with the aims of reconnecting people with others affected by aphasia; providing information, education and resources; communication strategy training; and ensuring those with aphasia have access to the tools to live a successful life with a communication difficulty.

**Method:** AphasiaNZ is the CAA service across New Zealand's main centres. The roles are filled by eight speech-language therapists and one person living with aphasia. Although the CAA role excludes the provision of therapy or therapeutic interventions, there are distinct advantages of speech-language therapist (SLT) training in this non-clinical role.

**Results:** An in-depth knowledge of the psychosocial consequences of living with aphasia, alongside an ability to facilitate groups and enhance communication opportunities, has resulted in a unique and successful model for providing long-term support to those with and affected by aphasia after stroke, brain injury and brain tumour/disease.

**Conclusions:** AphasiaNZ is the only non-government-funded charity in the world delivering support services to and for people with aphasia in this way. Ongoing viability and accessibility of this innovative and unique service remains in the hands of philanthropic funders to see value in the work we do for those affected by the life-long difficulties and frustrations living with aphasia brings.



# Intervening to improve quality of life several years after traumatic brain injury

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**Background and Aims:** People with severe traumatic brain injury (TBI) commonly experience difficulties affecting relationships, work/study, living independently and participation. Ongoing long-term disability significantly impacts quality of life.

Carin was a decade post-TBI when treatment funding was transferred from an insurer to icare. She had significant cognitive-communication, physical and environmental challenges. Carin's cognitive rigidity was compounded by expectations and restrictions imposed by family.

The aim of this presentation is to outline the positive impact of re-introducing rehabilitation several years post-TBI, from the perspectives of Carin and the treating team.

**Method:** Adopting a person-centred approach, Carin engaged in conversations about her quality of life and future. There was potential to improve cognition, participation and quality of life. Interdisciplinary intervention in context targeted Carin's current priorities and specific functional goals. Services were provided in a highly flexible and collaborative manner.

**Results:** Carin demonstrated improvements in areas including:

- problem-solving ability and flexibility;
- clarity of speech and communication of her daily needs;
- ability and confidence to independently express her own needs and interact socially;
- participation in activities of choice (e.g., study and recreation);
- initiation, motivation and decision-making.

Carin herself identified improvement including: speech clarity, self-expression, confidence, reduced shyness, self-esteem and decision-making. She set further goals to improve independence and quality of life.

**Conclusions:** This case demonstrates gains, identified by the person with TBI and the treating team, achieved through targeted interdisciplinary intervention and person-centred framework, several years post-TBI.

# More than meets the eyes: cerebellar white matter changes and contributions to cognitive dysfunction in frontotemporal dementia

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**Background and Objectives:** Changes affecting the brain grey and white matter in frontotemporal dementia (FTD) are now well established. In contrast, presence and severity of such changes in the cerebellum in this younger-onset dementia remain poorly understood. This study aimed to identify patterns of cerebellar white matter changes and their relations to cognition in the three main FTD syndromes.

**Methods:** Seventy-eight individuals diagnosed with FTD (behavioural-variant (bvFTD): 37; semantic dementia: 17; progressive non-fluent aphasia: 24) were included in this study, along with 31 age-, and sex-matched healthy controls. Study participants underwent whole-brain structural magnetic resonance imaging scan and cognitive assessment. Cerebellar white matter integrity was assessed with tract-based spatial statistics followed by region of interest-based analyses to determine the correlations between cerebellar white matter integrity and cognitive functions.

**Results:** Compared with controls, widespread cerebellar white matter changes were found bilaterally in all FTD subtypes, with the greatest changes found in bvFTD. Significant associations were found between changes in the superior cerebellar peduncle and attention, working memory, language-motor and episodic memory performance. The middle cerebellar peduncle integrity was associated with performance on tasks measuring working memory, language-semantic, episodic memory and emotion processing. Finally, the inferior cerebellar peduncle was associated with attention, working memory, language-semantic, episodic memory and emotion processing.

**Conclusions:** This study is the first to identify distinct patterns of cerebellar white matter changes across the FTD syndromes, which in turn relates to discrete aspects of cognitive dysfunction.

## An economic evaluation of constraint-induced movement therapy implementation: the ACTIVEARM project

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**Background:** Constraint-induced movement therapy (CIMT) is an effective and recommended intervention for arm recovery following brain injury; however, delivery in practice remains poor.

**Objectives:** To investigate the costs and cost-effectiveness of a CIMT implementation package to improve delivery of CIMT programmes for adults with arm impairment after brain injury.

**Methods:** An economic evaluation was conducted within a mixed methods implementation study (ACTIVEARM). A cost effectiveness analysis from the healthcare system perspective was conducted to assess uptake of CIMT in practice and associated arm outcomes following a CIMT implementation package, compared with standard care.

Costs of the CIMT implementation package plus therapist time to deliver CIMT were collected. The primary outcome was the proportion of eligible patients that were offered and received CIMT. CIMT participant outcomes including the Action Research Arm Test (ARAT) were collected as secondary outcomes at baseline, programme completion and 1-month follow-up.

**Results:** The proportion of eligible patients offered CIMT rose from 2% to 56% following delivery of the implementation package. At completion of CIMT, the incremental cost-effectiveness ratio of group CIMT was \$37 per one point of improvement in the ARAT, or \$55 for 1:1 therapy.

The cost of the implementation package was \$31 370. Therapists spent 59 h (range 12.5–159.5 h) delivering a CIMT programme.

**Conclusion:** Therapy teams improved uptake of CIMT in practice with the support of an implementation package that appears to result in cost-effective improvements in arm function.

## Environmental enrichment following prefrontal cortex stroke: good or bad?

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**Objectives:** Depression and anxiety have previously been reported to have a negative impact on stroke recovery. To better translate our preclinical models, we have established a more realistic model of distress that involves removing animals from an standard to an impoverished environment after stroke.

**Methods:** Adult 6-month-old C57Bl/6J male mice were housed for 3 months in a standard environment (SE), prior to receiving a photothrombotic stroke to the prefrontal cortex. Immediately, post-stroke mice were split into three groups ( $n = 15/\text{group}$ ): SE, enhanced enrichment (EE) and de-enriched (DE). Infarct volume and behavioural assessments (motor skills, activity and anxiety, and learning and memory) were carried out 1- and 4-week post-stroke.

**Results:** DE animals had smaller lesion volumes 1 week after stroke; however, no differences in stroke volume between all groups were observed at 4 weeks. Assessment of sham animals confirms that DE induces anxiety at 1 and 4 weeks ( $p < 0.05$ ). Interestingly, assessment of stroke animals revealed the opposite effect: DE animals were less anxious whereas EE animals were more anxious and were less active. We also show that animals in IE perform better on the object location recognition task, whereas animals in EE showed no recovery.

**Conclusions:** We have reliably set up a model to induce stress and assess its impact on stroke recovery; however, our data indicate caution should be taken depending on stroke location so as to not impair recovery.

## Evaluating a falls reduction intervention in older persons' inpatient rehabilitation: does it work in a new context?

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**Background and Objectives:** The 'Safe Recovery' intervention is an evidence-based patient education programme shown to reduce falls in Australian rehabilitation settings. However, translating interventions to different contexts can lead to different outcomes. In this study, we evaluated the effectiveness of the 'Safe Recovery' intervention in reducing the number of falls within four older person rehabilitation wards in New Zealand. In contrast to the original intervention, in this pilot, volunteers worked alongside healthcare professionals to deliver the intervention to address resourcing constraints.

**Method:** Realist methods informed the development of an evaluation study exploring to what extent, and how, the 'Safe Recovery' intervention works. We analysed de-identified process and outcome audit data, staff and patient surveys, and qualitative interviews and focus groups exploring the views of patients, staff and volunteers on their experience of the intervention.

**Results:** An overall evaluative account has been developed outlining how the 'Safe Recovery' intervention works within the New Zealand context and what the key mechanisms of action are. Difficulties in implementing an evidence-based falls prevention intervention in a new rehabilitation setting, and the impact this had on falls and injuries from falls, have been highlighted.

**Conclusions:** There are challenges inherent in implementing and contextualising rehabilitation interventions. The different ways that the ‘Safe Recovery’ intervention has been modified to make it suitable for the specific location and population have been explored, and this will contribute to the ongoing development of the intervention.

## Shifting gears on verbal perseveration: a case study featuring a family-directed positive behaviour support (PBS) approach

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**Background and Aims:** Verbal perseveration is common following traumatic brain injury (TBI) and can cause significant distress for families. Perseverative behaviours have an underlying basis in neurological damage following brain injury, however, can occur at increasing levels when an individual experiences heightened states of arousal. Positive behaviour support (PBS) has been used effectively to support behavioural changes following brain injury, with reported benefits for individuals with verbal perseveration. This case study examines the effectiveness of a family-directed PBS approach in supporting an individual with verbal perseveration following TBI.

**Methods:** A mixed-methods pre-test post-test study was utilised. A PBS plan was developed and implemented for Angus, a 37-year-old with verbal perseveration following TBI. A functional behaviour assessment informed a data-based PBS plan, which was developed and implemented in collaboration with Angus’ mother. This plan included environmental (preventative), skill development and response strategies. Primary outcomes measures included the Overt Behaviour Scale, a frequency measure to record the occurrence of verbal perseveration, and a follow-up semi-structured interview with Angus’ mother.

**Results:** There was a reported reduction in the frequency and intensity of verbal perseveration post-intervention. Following the 4-week education phase, perseverative behaviours were reported to occur on average eight times daily, which then reduced by 3-month follow-up to only once over a 4-day period.

**Conclusions:** This study suggests that a family-directed PBS approach may be feasible in reducing verbal perseveration in individuals following TBI. Further investigation in utilising a PBS approach to support families with verbal perseveration following brain injury is warranted.

## Clinical perspectives on training and delivering a positive behaviour support intervention for people with acquired brain injury: a qualitative study

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<sup>1</sup>Monash-Epworth Rehabilitation Research Centre, Monash University, Melbourne, Australia and <sup>2</sup>Monash Institute of Cognitive and Clinical Neurosciences, School of Psychological Sciences, Monash University, Melbourne, Australia

**Background and Objectives:** Challenging behaviours (CB) are distressing sequelae for individuals with acquired brain injury (ABI) and their families. Positive behaviour support (PBS) is a collaborative

approach to reducing CB and improving quality of life. This study explored clinicians' experiences learning and delivering a 12-month PBS intervention for adults with ABI and their family/carers.

**Method:** Semi-structured interviews were conducted with eight clinicians (neuropsychologists = 4, occupational therapists = 3, speech pathologist = 2, psychologist = 1), with experience in behaviour support ( $M = 10.16$  years,  $SD = 6.71$  years,  $R = 2-22$  years). Interviews were thematically analysed.

**Results:** Three themes were identified regarding the impact of PBS on self, on clients and on working environment. Participants experienced PBS as an approach that aligned with their values and changed their practice, for example, increasing directedness with clients and comfort with their fallibility as clinicians. Participants found PBS deceptively difficult to learn and implement. PBS involved giving clients equal status in the clinician–client relationship. This was challenging when clients had less insight or families were not prepared for the responsibility inherent in such a relationship. Finally, PBS was perceived as difficult to implement in work settings involving high staff turnover or well-established working practices. Recommendations for future implementations included thorough training and supervision and setting of client expectations.

**Conclusions:** PBS is a multifaceted approach that involves personal, clinical and environmental strengths and challenges for clinicians. With increasing interest in PBS as an evidence-based approach for CB after ABI, these findings will inform capacity-building projects for community clinicians.

## Post-traumatic parkinsonism following severe traumatic brain injury: a case report

Kristin Gozdzikowska

Laura Fergusson Trust, Christchurch, New Zealand

**Background and Objectives:** While evidence is building regarding increased risk of future development of Parkinson's disease following repeat or severe traumatic brain injury (TBI), development of post-traumatic parkinsonism as a symptom of TBI is rarely discussed in clinical practice. The present case describes clinical presentation of Parkinson-like symptomology following a significant TBI.

**Method:** Retrospective case report following trial of dopaminergic medication (e.g., amantadine) using a clinically based withdrawal design (ABAB).

**Results:** A 46-year-old male suffered a significant diffuse axonal injury with multiple orthopaedic injuries following a motorcycle accident. He remained minimally conscious 3 months following his injury, then commenced intensive rehabilitation. His daily functioning raised concern of Parkinson-like symptoms, including bradykinesia, abulia, low vocal volume, rigidity, decreased step length, dysphagia and slow processing. A short course of dopaminergic medication (e.g., amantadine) was trialled for 8 weeks, then ceased. Due to notable reduction in functional ability, it was resumed 1 week later. Objective outcome measures, clinical observation and patient/family report will be reported.

**Conclusions:** This case describes the presence of Parkinson-like symptoms as a primary feature of severe TBI. As evident in the literature, 'dopaminergic neurons may suffer axonal injury . . . to long-distance axonal projections that are vulnerable to the deforming forces generated by the acceleration and deceleration of the brain during trauma.' Ongoing research is indicated to further understand and raise awareness of risk factors, assessment criteria and intervention for post-traumatic parkinsonism following severe TBI.

## Physical outcomes for people admitted to an adult brain injury rehabilitation unit: a cohort study

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**Background and Objectives:** Few studies report on physical outcomes after traumatic brain injury (TBI) and even less during inpatient rehabilitation. This study aimed to report on the physical outcomes and physiotherapy interventions delivered during inpatient rehabilitation for adults sustaining TBI.

**Methods:** A cohort study using prospectively collected clinical data of consecutive admissions to the Liverpool Brain Injury Rehabilitation Unit between 1 July 2000 and 30 June 2013. Data on demographics, injury details and physiotherapy outcomes were extracted.

**Results:** There were 757 admissions over the 13-year period of which 690 (91%) were TBI. Demographic information was consistent with usual TBI presentation (80% male; average age 36 (SD15); 56% motor vehicle related; 53%  $\geq 1$  orthopaedic injury). Median length of stay was 52 days (interquartile range 28 to 129), and  $>70\%$  had a posttraumatic amnesia duration of  $>28$  days. On admission, a minority of patients could stand up (27%), walk independently (26%), climb stairs (37%) or run (6%) and 45% recorded upper limb dysfunction. Gait (82%) and standing balance retraining (80%) were the most common interventions addressing function, and 74% received additional therapy through a circuit class group. On discharge, performance on all functional tasks had improved with 70% of patients able to walk  $\geq 1$  m/s, the speed for community ambulation. Most patients (90%) were referred for physiotherapy on discharge.

**Conclusions:** Patients who sustain a TBI present with significant physical limitations that have shown to improve during inpatient rehabilitation. This study has also highlighted the need for ongoing physiotherapy in long-term management.

## 'I just let it ring now': maintaining friends after a right hemisphere stroke

Ronelle Hewetson<sup>1</sup>, Petrea Cornwell<sup>1</sup> and Laura Morell<sup>1</sup>

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**Background and Aims:** People with acquired brain injury (ABI) experience change in friendships with concerning frequency. Maintenance of relationships has been identified as pivotal in satisfaction with quality of life (QoL) following ABI. Smaller social networks and fewer friends are reported by people with aphasia, and cognitive-communication disorder (CCD) secondary to traumatic brain injury. CCD also arises after right hemispheric (RH) stroke; however, long-term maintenance of friendship is not known.

**Method:** Change in relationships with friends, as experienced by someone with a RH stroke, was reported by 38 people with first-onset RH stroke (participant) and 38 family members (proxy) on the Sydney Psychosocial Reintegration Scale (SPRS-R). Between group differences in the frequency of reported change in friendships as well as participant-proxy agreement were calculated based on the presence or absence of CCD. Comments made during the telephone administration of the SPRS-R were thematic analysed.

**Results:** Changes in friendships were reported by 15 proxies (39%) and 6 participants (16%). There was a greater frequency of reported change in relationships with friends by proxies for people with CCD (52%,  $n = 13$ ) compared to proxies of participants without CCD (7%,  $n = 1$ ). Inter-rater agreement

was only fair in the group with CCD ( $\kappa = 0.38$ ). Reduced motivation to remain in contact, an altered communication style, and physical impairments were noted as potential reasons for the loss of friendships.

**Conclusions:** The impact of social participation restriction on QoL makes relationship maintenance a crucial goal of rehabilitation for people with CCD post-RH stroke.

## Development of an english-language version of a Japanese iPad application to enhance person-centred goal-setting in rehabilitation – with implications for indigenous communities

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<sup>3</sup>Department of Occupational Therapy, Kitasato University, Kanagawa, Japan

**Background and Objectives:** Person-centred goal-setting is considered core to the rehabilitation process but is difficult to implement in practice for a variety of reasons. This study aimed to develop an English-language version of a Japanese iPad application designed to facilitate share decision-making around goal-setting in rehabilitation: ‘Aid of Decision-making in Occupational Choice – English’ (ADOC-E).

**Methods:** Phase 1: Delphi methods to reach consensus, with a group of 12 expert occupational therapists from 4 countries (UK, USA, Australia and New Zealand) on the text and images in ADOC-E. Phase 2: Testing correct recognition of images in ADOC-E by rehabilitation and disability service users ( $n = 25$ ; age 20–95 years; Mini-Mental State Exam 13–30).

**Results:** Four Delphi rounds were required to reach consensus on the content of ADOC-E, ending with 100 items covering daily activities and social roles. Ninety-five percent (95/100) of ADOC-E items were correctly identified by over 80% of participants with either unprompted or prompted recognition. Images were less like to be correctly identified (and were more challenging to represent in a single image) if they focused on goals at the level of social participation.

**Conclusion:** While a few of the more abstract concepts in ADOC-E (related to complex social roles) were less likely to be correctly recognised by all participants, the text and images ADOC-E were deemed to be fit for purpose overall and ready for future clinical testing. We are now working on a new co-designed version of ADOC tailored for Māori and Pacific people in New Zealand.

## The future of bariatric care in TBI: can we cope with the load?

Julia Averill<sup>1</sup> and Helena Lister<sup>1</sup>

<sup>1</sup>ABI Rehabilitation, Auckland, New Zealand

**Background and Objectives:** Obesity in New Zealand has become an important health concern with 5.5% of adults having a body mass index of higher than 40.0. At acquired brain injury rehabilitation, this presents a challenge in an area of already complex rehabilitation to ensure healthcare provision is both effective and safe for staff and clients.

**Method:** A case review of a bariatric traumatic brain injury (TBI) client initiated a quality improvement project within our rehabilitative service to improve future care of bariatric clients with a TBI in line with

current best practice guidelines. Accident Compensation Corporation bariatric care guidelines were reviewed, but little advice exists for the management of bariatric client specific to TBI rehabilitation. Gaps in service delivery for bariatric clients include access to suitable equipment and appropriate environmental setup.

**Results:** Recently, we provided rehabilitation for a client with a severe TBI characterised by confusion, challenging behaviour, non-weight-bearing status, premorbid mobility and respiratory issues. Rehabilitation was further complicated by a 167-kg weight, which required four people to transfer plus specialised equipment to manage the safe working load. The discharge process was also extended by 3 months over the Australasian Rehabilitation Outcomes Centre (AROC) benchmark due to these complications.

**Conclusion:** Additional consideration is required for all clients with bariatric care needs prior to admission including their mobility level, brain injury severity and rehabilitation potential. An interdisciplinary-team approach is necessary for planning, preparation and provision of suitable rehabilitation for all bariatric care needs following a TBI with additional emphasis on environment and equipment.

## ABSTRACTS - SATURDAY 5<sup>TH</sup> MAY

### Concurrent Sessions

# How to session: How to set structured goals for management of patients on prolonged disorders of consciousness (PDOC)

Lynne Turner-Stokes

King's College London, London, UK

**Synopsis of session:** Goal-setting forms the cornerstone of management in rehabilitation programmes but can be time-consuming in busy settings. One solution is the development of structured goal sets from which to select the relevant goals for a given individual. Patients in Prolonged Disorders of Consciousness (PDOC) (i.e., vegetative and minimally consciousness states) are unable to engage in goal-setting. A structured approach is appropriate, as a common set of tasks often needs to be addressed by the team. However, there is little published in the literature to guide this approach. The use of a structured goal set for these routine tasks can provide a useful checklist to ensure they are completed. A limited set of 5–6 personalised goals can then be developed in parallel with the family to reflect their individual priorities. This session will present the development of a structured goal set for assessment and management within a specialist inpatient PDOC programme. It will explore the application of goal attainment scaling alongside other measures to evaluation programme outcomes.

**Learning objectives:** After attending this session, delegates will feel confident in setting goals for the assessment and management of PDOC patients, and in the use of goal attainment scaling to monitor outcomes for this unusual group of patients.



# How to session: identifying and mitigating risks when providing therapy services to people with acquired brain injury in the national disability insurance scheme

Libby Callaway<sup>1,2</sup>, Sue Sloan<sup>1,3</sup> and Jan Mackey<sup>4</sup>

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**Synopsis of session:** The National Disability Insurance Scheme (NDIS) is a major disability reform in Australia, changing the way services are funded for, and purchased by, people with acquired brain injury (ABI). With initial scheme roll-out, issues have emerged for both NDIS service providers and scheme participants, which may compromise participant outcomes. They include emerging (and rapidly changing) scheme design; issues with planning quality and expertise specific to ABI; imbalance in funding allocation and fragmentation of services across core and capacity building supports; gaps within individualised funding models and system interfaces; and workforce capacity issues. For service providers, issues may include a gap between participant expectations and funding allocation for therapy; views that provision of core supports can deliver therapy outcomes without supervision; the impact of scheme processes on the working relationship of the participant and therapist; an extended range of regulatory and legal requirements for the delivery of therapy supports and reliance on external regulators and existing consumer law mechanisms to manage grievances. This 60-min 'How To' session will outline both these risks and potential mitigation strategies for health professionals and scheme participants within the NDIS. The role of the new NDIS Quality and Safeguarding Commission will also be discussed. Case studies of real-life scenarios will be provided.

**Learning objectives:** By the end of this session, participants will be able to:

- (1) understand current risks that exist within the NDIS for both service providers and scheme participants;
- (2) identify strategies to mitigate these risks, while delivering outcome-focused capacity building supports; and
- (3) consider the work of the new NDIS Quality and Safeguarding Commission.

## Plenary Session

# Music, mindfulness and positive psychotherapy after brain injury

Jonathan Evans

University of Glasgow, UK

In this presentation, Jonathan Evans will discuss two strands of his work on the rehabilitation of mood and cognition after brain injury. The first strand focuses on the application of principles of positive psychology in the improvement of well-being after brain injury. The development and initial evaluation of Positive Psychotherapy for ABI Rehabilitation (PoPsTAR), along with ongoing work evaluating the use of 'character strengths' in goal-setting, will be described. The second strand of the presentation will describe the recent work on the use of music listening and mindfulness in improving cognitive recovery following stroke. There is evidence that music listening may improve recovery of cognition early post-stroke, and results of the MELLO trial, which combined music-listening with mindfulness exercises, will be discussed.

# Mana Tū: indigenous people ‘taking charge’ of living with long-term conditions

Matire Harwood

University of Auckland, New Zealand

For the majority of long-term conditions, there are significant ethnic inequities with Māori, the indigenous people of New Zealand, and Pacific peoples, most affected. The incidence, hospitalisation and disability rates for the most common long-term conditions are increasing in New Zealand, as are ethnic disparities. Achieving equity in health and disability outcomes requires a comprehensive and determined approach to ensure we ‘measure it, understand its risk factors, develop valid and efficient approaches to screening and diagnosis, and develop and implement culturally specific interventions for prevention and treatment.’ Primary health care is key but to date much of the focus for primary care funders, planners and providers has been on doctor and nurse-led interventions with mixed results for Māori and Pacific peoples.

A Kaupapa Māori programme to improve outcomes for people living with long-term conditions, and their whanau, and delivered in the community, was developed by primary and secondary clinicians, rehabilitation and kaupapa Māori researchers and providers, health literacy experts and people living with long-term conditions. Given the burden, and what appeared to be inertia in service development, a kaupapa Māori programme for type 2 diabetes – Mana Tū – was prioritised by the group. Mana Tū, meaning ‘to stand with authority,’ is a mana-enhancing programme that supports people with poorly controlled type 2 diabetes to ‘take charge’ of it and its associated conditions.

The presentation will describe the Kaupapa Māori methodology used in the development of Mana Tū, key components of it and preliminary findings.

## Concurrent Sessions

### Short-term outcomes of children with abusive head trauma 2-year post-injury: a retrospective review

Sarah Badger<sup>1</sup>, Mary-Clare Waugh<sup>2</sup>, Jan Hancock<sup>2</sup> and Karen Burton<sup>2,3</sup>

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**Background and Objectives:** Abusive head trauma (AHT) can be a debilitating condition for children who survive. Using a retrospective medical record review, this study describes the short-term developmental outcomes post-injury of children with AHT and identifies predictors of poorer outcomes.

**Method:** Children with AHT before their fourth birthday who presented to a tertiary paediatric hospital in NSW, Australia and who received follow-up by the hospital’s rehabilitation department for 12- to 24-month post-injury were included in this review. Data were collected on hearing, vision, gross motor, fine motor, speech and language, cognition, play, adaptive skills, behaviour and personal-social skills, in addition to a global measure of outcome for 85 children.

**Results:** Children had a mean age at injury of 4.2 months and mean follow-up of 20 months. Global assessment found 42% of children had a good recovery, 34% had a moderate disability and 24% had a severe disability. Of those for whom there were data, more than 50% had abnormal cognition, behaviour and personal social skills, while more than a third had abnormal speech and language, neurological signs on last assessment, vision, play skills, gross motor and fine motor. Factors that predicted poorer prognosis

across all developmental domains included breathing difficulty, paediatric intensive care unit admission, longer length of hospital stay and lower Glasgow Coma Scale on presentation.

**Conclusions:** This highlights the substantial number of children who have abnormal development in the short-term post-AHT and assists in identifying those who require extensive long-term follow-up.

## ‘You only get one brain’: an exploratory retrospective study on life after adolescent traumatic brain injury

Therese Mulligan<sup>1</sup>, Suzanne Barker-Collo<sup>1,2</sup>, Alice Theadom<sup>2,3</sup> and on behalf of the BIONIC Research Group

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**Background and Objectives:** Worldwide, adolescents present a greater risk of sustaining a traumatic brain injury (TBI) than other groups. However, to the author’s best knowledge, relatively little is known about recovery following TBI sustained during this particular time in development. This study used a qualitative methodology to explore how sustaining a TBI during adolescence might impact upon a young person’s long-term psychological well-being as they adjust to adulthood, and what might support recovery.

**Method:** The sample contained 13 adolescents who experienced a mild-to-moderate TBI during recruitment into the BIONIC TBI incidence study (March 2010–Feb 2011). They were each interviewed 6 to 8 years after the incident TBI.

**Results:** Thematic analysis produced three primary themes: (1) Following their TBIs, many participants experienced changes in thinking, migraines and/or fatigue, which lingered through adolescence into adulthood. (2) Such changes impacted participants’ sense of involvement in school, work, friendships and hobbies to produce frustration, sadness and/or anxiety. (3) Support from family and friends and information from knowledgeable professionals were important, plus maintaining awareness of how to stay well long term.

**Conclusions:** Recovery from a TBI sustained during this crucial stage of development may be more complex than previously indicated by some quantitative studies. Cognitive and physical problems may persist to impact various life domains for the adolescent and, later, during adulthood, to affect psychological well-being. Supports that improve understanding of what to expect following an injury, encourage involvement from family and peers, and promote awareness of what is needed to maintain wellness may aid recovery.

## Using a single-case experimental design to evaluate the effectiveness of therapeutic horse riding for children and young people experiencing disability

Rachelle Martin<sup>1</sup>, William Taylor<sup>1</sup>, Lois Surgenor<sup>2</sup>, Fiona Graham<sup>1</sup>, William Levack<sup>1</sup> and Neville Blampied<sup>3</sup>

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<sup>3</sup>Department of Psychology, University of Canterbury, Christchurch, New Zealand

**Background and Objectives:** Therapeutic horse riding (THR) uses horses and horse-related activities to improve the health of young people who experience disability; however, its benefits across the full range of

health domains, and particularly the impact on participation outcomes, are not well known. This study aimed to evaluate the effectiveness of a 20-week THR intervention using a single-case experimental design (SCED).

**Methods:** We used a randomised, multiple-baseline SCED ( $n = 12$ ) to quantitatively evaluate in which riders, and to what extent, changes in balance, functional performance, social responsiveness, quality of life and participation outcomes occurred. Analysis of data included analysis of individual participant responses (i.e., visual analysis, descriptive nonparametric approaches, analyses considering baseline stability) and between participant responses (i.e., modified Brinley plots, estimation of effect sizes).

**Results:** Social participation outcomes in settings beyond THR showed the most consistent change across participants. However, when taking baseline trends into account, only two participants demonstrated a clinically meaningful change in self-identified participation goals. Results from this study provide preliminary evidence that being involved in a THR intervention may improve participation outcomes for some children and young people who live with the experience of disability.

**Conclusions:** Findings suggest that THR can positively impact on social participation for children experiencing disability and contributes to an emerging body of evidence exploring participation outcomes as a result of THR. Improvements in participation in home, school and community settings are significant given participation is considered to be a fundamental rehabilitation outcome.

## Session 10

# Patient-reported outcomes of usability and enjoyment of using digital devices in rehabilitation as part of the AMOUNT (Activity and MObility UsiNg Technology) randomised controlled trial

Leanne Hassett<sup>1,2</sup>, Maayken van den Berg<sup>3</sup>, Heather Weber<sup>3</sup>, Sakina Chagpar<sup>1</sup>, Siobhan Wong<sup>1,4</sup>, Annie McCluskey<sup>2,5</sup>, Karl Schurr<sup>5</sup>, Maria Crotty<sup>3</sup> and Cathie Sherrington<sup>1</sup>

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**Background and Objectives:** Few studies have investigated patient impressions of using digital devices as part of rehabilitation.

**Aim:** To determine if participants perceived devices as enjoyable and easy to use and which factors were associated with these ratings.

**Methods:** A process evaluation within the AMOUNT randomised controlled trial including 149 participants (54% neurological health condition limiting mobility; mean age 70 (SD18)) randomised to the intervention group. A physiotherapist tailored prescription of devices including exergames, activity monitors and handheld computer devices to target mobility limitations and increase physical activity. Physical Activity Enjoyment Scale (PACES; 18–126) and System Usability Scale (SUS; 0–100) were measured at 3 and 26 weeks, with higher scores indicating more enjoyment and better usability. Regression analysis determined associations between self-reported ratings with demographic, baseline and trial primary outcomes.

**Results:** At 3 and 26 weeks, participants perceived device use as enjoyable (mean PACES: 95.5 (SD23.2); 98.3 (SD20.8)) and rated usability above average (mean SUS: 72.2 (SD18.7); 78.0 (SD17.4)). Enjoyment and usability were positively related to previous technology use ( $p \leq .02$ ) and younger age ( $p \leq .03$ ). Better cognition (Mini Mental State Examination) was positively associated with usability ( $p < .04$ ) but not enjoyment. Mobility and physical activity associations were mixed. Usability and enjoyment were associated with each other, even after adjusting for other factors ( $p < .01$ ).

**Conclusions:** Tailored prescription of digital devices enables enjoyment and ease of use for people undertaking rehabilitation. Previous technology use, age and cognition should be considered when prescribing devices in rehabilitation.

## Perspectives on the use of telerehabilitation for delivering community-based support to individuals with an acquired brain injury

Tamara Ownsworth<sup>1</sup>, Deborah Theodoros<sup>2</sup>, Louise Cahill<sup>2</sup>, Atiyeh Vaezipour<sup>2</sup>, Ray Quinn<sup>3</sup>, Melissa Kendall<sup>3</sup>, Wendy Moyle<sup>1</sup> and Karen Lucas<sup>4</sup>

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**Background:** There is limited research on the use of telerehabilitation platforms in service delivery for people with acquired brain injury (ABI), especially technologies that support delivery of services into the home.

**Aims:** To (a) identify the use of telerehabilitation platforms by clinicians and clients of an ABI outreach service, and (b) explore their perspectives of and needs and preferences for remote service delivery using a videoconferencing platform (Queensland Health Telehealth Portal).

**Method:** In this qualitative study, semi-structured interviews were conducted with clinicians from an ABI outreach service, individuals with ABI and their family members. Interview transcripts were analysed thematically as guided by the Technology Acceptance Model.

**Results:** An interim analysis involving 15 participants identified the following key themes: (1) understanding the service and user context (e.g., ABI case management model, statewide community focus, individualised and goal-directed); (2) perceived usefulness of telerehabilitation (e.g., potential cost-effectiveness, accessibility, enhanced personal connection and interaction within the home environment); (3) potential problems associated with telerehabilitation (e.g., technical and connectivity issues; limited access to appropriate technology); and (4) attitude towards and intention to use telerehabilitation.

**Conclusions:** Perceptions of the use of telerehabilitation platforms to provide services in the home were largely positive, although a pilot trial of feasibility was recommended. Insight into the potential barriers and challenges can guide development of strategies to enhance successful uptake of telerehabilitation into service delivery.

## Utilising telehealth to deliver neuropsychological rehabilitation services to rural patients with stroke: development and evaluation of a novel pilot programme

Renerus Stolwyk<sup>1,2</sup>, Lauren Arthurson<sup>3</sup>, Dominique Cadilhac<sup>4,5</sup>, Joosup Kim<sup>4,5</sup> and Kathleen Bagot<sup>4,5</sup>

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**Background and Aims:** Over two-thirds of survivors of stroke exhibit cognitive and/or mood impairment, yet only 6% of Australian rural inpatients with stroke have access to psychological services. The aim of this pilot programme was to develop, implement and evaluate a novel teleneuropsychology rehabilitation service.

**Method:** Neuropsychology services were provided to a rural inpatient stroke rehabilitation unit from a metropolitan clinic hub, via telehealth, 1 day per week over a 12-month period. Patients received comprehensive assessment of cognition, mood and behaviour in addition to cognitive rehabilitation and psychological interventions. An education programme and consultation service to assist clinicians with management of patient neuropsychological impairments was also provided.

**Results:** Compared to a pre-implementation control period, screening rates improved significantly from 42% to 90% for cognition and 19% to 88% for mood during teleneuropsychology implementation. Provision of specialist neuropsychological services rose from 0% to 71% for assessment and 0% to 61% for therapy. Setting of interdisciplinary goals increased from 23% to 43% relating to cognition and 10% to 55% for mood. Median waiting times for neuropsychology consultation was 7 days. Eighty-nine percent of patients and 95% of clinicians reported being satisfied with their teleneuropsychology consultation. Preliminary economic simulations indicate that teleneuropsychology services can be delivered for approximately half the cost of an equivalent counterfactual face-to-face model of service provision.

**Conclusions:** Preliminary data provide initial support for the feasibility, acceptability, effectiveness and efficiency for this potentially world-first teleneuropsychology rehabilitation service. Key enablers and barriers to teleneuropsychology implementation and delivery will be discussed.

## What role does social media have in rehabilitation after a traumatic brain injury?

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**Background and Objectives:** The aim of this study was to investigate the experiences and perspectives of health professionals working in traumatic brain injury (TBI) rehabilitation on the use of social media by people who have a TBI.

**Method:** Two focus groups were conducted with health professionals working in TBI rehabilitation services invited to take part. A topic guide was used to guide discussions that were audiotaped, transcribed verbatim and summarised, and then transcripts and summaries were analysed qualitatively.

**Results:** In total, 11 health professionals (4 males and 7 females) participated. Disciplines or roles represented included speech pathology, occupational therapy, nursing, rehabilitation case management, recreational therapy and service management. Participants discussed concerns about vulnerability, risk of exploitation and reputation management for people using social media after a TBI. They perceived their role was to protect people with TBI from harm, either through imposing restrictions on social media use or else addressing problems as they occurred. Participants also considered the potential for simulated online environments to teach risk 'management'. They wanted specific guidance regarding how to address social media during rehabilitation, as most did not actively engage with social media themselves.

**Conclusions:** TBI rehabilitation health professionals recognised several benefits to people with TBI using social media, including reducing social isolation, creating friendships, maintaining relationships and connection to community. However, their overall concern regarding potential risks of social media and their lack of knowledge could mean that they do not move to pro-actively address social media use as a part of TBI rehabilitation.

# Person-centred approaches to future technology for rehabilitation

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**Background and Objectives:** Technology is frequently lauded as important to the future of healthcare, with projections of rising service demands, perceptions technology could reduce delivery costs, and likely as technology is often equated with innovation. The right role for technology is to catalyse a focus on more person- and family/whānau-focused approaches to rehabilitation.

**Method:** Examples of person-centred technologies in rehabilitation will be discussed, drawn from research undertaken by the presenter and colleagues as well as design concepts of future technologies that are beyond what is possible today. In this context, the presentation will explore best practice in this area.

**Results:** Technological innovation in rehabilitation requires a focus on the context of end users—both service users and clinicians—what drives them, their desired outcomes, and a clear-eyed understanding of how difficult it is to shift current behaviour. New technologies have the potential to support a more person- and family/whānau-focused approach to rehabilitation, but this is not inevitable and indeed service changes could move things in the opposite direction. Mobile and online technologies have the potential to enhance the effectiveness of rehabilitation services but all too frequently research in these areas has not translated into tools available and actually delivered within clinical services.

**Conclusions:** Rehabilitation service innovations that incorporate technology—and indeed all service innovations—should incorporate a person- and family/whānau-centred approach as an explicit intended result from the outset. Research and innovation work in rehabilitation must be sharply focused on implementation to ensure service users experience improved outcomes.

## The application of wearable technology to guide therapy and to refine interpretation of non-verbal communication in a non-speaking client illustrated by a case study: James

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**Background and Objectives:** For the non-verbal client, establishing their needs can be extremely difficult. This case exemplifies the application of the Fitbit® (Fitbit Inc, San Francisco, USA), using its heart rate (HR) function as an immediate indicator of client well-being. The objectives were to demonstrate that HR can provide a useful differential measure of patient comfort, effort as well as demonstrate that feedback from the Fitbit® can be used by the client, therapists and carers to facilitate communication and therapy outcomes.

**Method:** This single case involved James, a 32 year old, who had suffered a profound acquired brain injury 11 years before. James has no speech or gestures and communicates with whole body responses that can be misinterpreted and frequently lead to withdrawal of input. Five categories of HR range were first determined for James, with two levels; 65–79 beats/min and 80–94 beats/min, identified as being ideal for participation in therapy. Videos were taken of James in different states and played to care givers to

then identify which HR range represented each video. They were then talked through processes to ‘read James’ using the HR ranges for James and their associated descriptors as part of their training.

**Results:** Carers were most likely to confuse the therapeutic range as distress response. HR information did assist with correct interpretation.

**Conclusions:** Caregivers were found to be more likely to confuse James’ effort to participation with his negative response without HR information. HR is a potentially helpful adjunct in determining James level of well-being and capacity to engage.

## Development of a concussion digital health tool: HeadCheck

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**Background and Objectives:** Digital technology is being used to bridge the gap between the healthcare and the community. There are over 300 000 health smartphone applications, yet most are not evidence-based or medically regulated. In line with digital health development best practice, we aimed to develop a mobile application to increase access to evidence-based, developmentally appropriate guidance around the recognition and management of childhood concussion to increase the standard of concussion information in the community.

**Method:** A multidisciplinary team of concussion experts, design-thinking and Information and Communication Technology (ICT) development specialists and key industry partners translated current gold-standard concussion recognition tools and clinical management strategies into a community-facing user-friendly mobile application. The app also incorporates a symptom-driven psycho-education component to help parents manage their child’s recovery following concussion. HeadCheck was released in May 2018 and has undergone usability and feasibility testing in both community and clinical populations.

**Results:** The HeadCheck app is freely available on the Australian iTunes and Google Play stores, has been downloaded over 22 000 times and assisted with the assessment of 4500 head knocks. HeadCheck is not considered a medical device. Usability data and uptake rates suggest that HeadCheck is a useful tool for the community.

**Conclusions:** HeadCheck helps parents and coaches recognise concussion, assess whether medical attention is required and manage the child’s safe return to school, play and organised sport. Input from a multidisciplinary team of clinicians, researchers, software developers and industry partners is key to ensuring the development of evidence-based, user-friendly digital technologies that addresses a need in the community.

## Integrated apartments for people with disability: individual experience and outcomes

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**Background and Aims:** People with severe acquired brain injury (ABI) and high support needs often have limited housing choice and are forced to live in inappropriate settings such as residential aged care. The



National Disability Insurance Scheme has a \$700 million annual recurrent budget for Specialist Disability Accommodation for people with very high support needs. This research explored the experiences and outcomes of people with severe ABI who moved into apartments within a mainstream development. This model has 10 apartments for people with disability peppered throughout a larger residential development. An additional unit provides a base for disability support workers to provide 24-h on call support.

**Method:** The study uses a mixed method longitudinal design measuring pre-move baseline and tenant outcomes at 6 and 18 months post-move. Eight primary participants with severe brain injury and their close others participate in semi-structured interviews and complete quantitative measures at each time point. The outcome measures cover six outcome domains: function, support needs, autonomy and choice, well-being, social connection and community participation.

**Results:** Participants made gains across several domains, and progress was dependent on the tenant's specific goals. Four people became independent with transfers; tenants also made significant gains in personal care and domestic tasks. Qualitative data showed a high level of support for a new model of housing and support that enables more independence and autonomy.

**Conclusions:** Providing rigorous data on tenant outcomes is critical to securing ongoing investment in new housing desperately needed for 12 000 people with disability across Australia.

## The integration of telehealth into a community-based interdisciplinary brain injury service

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**Background and Objectives:** Telehealth is an efficient, cost-effective means of delivering health services, and there is emerging evidence of its use within brain injury rehabilitation. Integration of telehealth into a service requires identification of resources/equipment needs, service users and client and staff characteristics. The objectives of the current project were to integrate telehealth within a new community-based brain injury service, with an aim to increase intensity and improve access to community rehabilitation.

**Method:** A change management approach was used to identify specific service requirements and staff and client training needs. This included literature review of current evidence-based practice, review of discipline-specific ethical guidelines, review of client considerations, and benchmarking and consultation with hospital-based telehealth services. Clinician knowledge, experience with telehealth, barriers and facilitators were also examined.

**Results:** Telehealth was successfully integrated into the service. Staff feedback identified common barriers, which included staff perceptions and confidence, client access, plus practical support requirements for clients and clinicians. A local training package was developed and delivered to address these needs and service processes established. Client access to rehabilitation improved. Common clinical uses now include: cognitive and communication rehabilitation, rural/remote outreach, psychosocial support and interdisciplinary group participation.

**Conclusions:** Telehealth was successfully integrated into a community brain injury service. This new mode of service delivery enabled greater access to rehabilitation. Ongoing staff and consumer feedback will be sought to continue developing and maintaining the service.

# Social communication assessment for clinical practice: a review of innovative standardised tools and discourse assessment methods

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**Background and Objectives:** Social communication assessment after traumatic brain injury (TBI) is multifactorial and can be challenging in speech pathology clinical practice. Difficulties include the paucity of TBI-specific standardised assessment instruments designed for speech pathology use, and limited knowledge and uptake of discourse assessment methods clinically. This paper aimed to review recent research literature reporting on the use of innovative social communication assessment tools and discourse assessment methods to guide evidence-based clinical practice.

**Method:** In a search of electronic databases (MEDLINE, Embase, PsycINFO and CINAHL) and by hand, literature was sourced relating to TBI and assessment of social/cognitive communication, pragmatics and discourse over the past 15 years. Data were extracted on assessment type (standardised/non-standardised) and areas assessed, and on aspects of discourse including genre, sampling, stimulus task, analysis type and purpose of assessment stated in the study.

**Results:** Several promising measures were found in the literature, including eight standardised assessment tools, two screening tools, two discourse assessment protocols and a range of novel discourse elicitation tasks and procedures, including those incorporating electronic and digital methods. Discourse tasks were described that appeared feasible for clinical use. Based on recommendations within studies, we report on the clinical utility of these in relation to purpose of testing (e.g., for return to work readiness, intervention outcome measurement).

**Conclusion:** Innovative measures described in the literature appeared suitable for different aspects of assessment, depending on the purpose of assessment and stage of recovery. We suggest these measures could form part of a clinical 'toolkit' for assessment of social communication after TBI.

## Recommendations to support cognitive-communication recovery during subacute and early community rehabilitation following severe traumatic brain injury (TBI)

Elise Elbourn<sup>1</sup>, Belinda Kenny<sup>1</sup>, Emma Power<sup>2</sup>, Cynthia Honan<sup>3</sup> and Leanne Togher<sup>1</sup>

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**Background and Objectives:** Current guidelines for cognitive-communication disorders offer little information relating to timing and allocation of speech pathology services across the stages of rehabilitation following severe traumatic brain injury (TBI). This project aimed to develop evidence-based service and clinical recommendations to guide rehabilitation services during the first year post-injury.

**Method:** Recommendations were derived from a longitudinal prospective cohort study ( $n = 57$ ) examining discourse recovery at 3-, 6-, 9- and 12-month post-severe TBI. A standardised and norm-referenced narrative discourse task was analysed with main concept analysis (MCA), which measures gist accuracy and

completeness. Performance was compared to a matched control sample. Linear mixed methods were used to model the discourse recovery process, while also accounting for pre-injury, injury and post-injury factors.

**Results:** Discourse recovery was observed across 12 months, with peak recovery periods between 3 and 6 and 9 and 12 months. TBI group performance was significantly below controls at 12 months. Two recovery subgroups were identified: Improved and Slow to Recover. MCA was sensitive for identifying three-monthly change. Years of education and post-traumatic amnesia (PTA) duration were identified as significant covariates, while the presence of aphasia significantly altered the recovery model.

**Conclusions:** Recommendations highlight the need for speech pathology services to be engaged, as part of an interdisciplinary team, at least during the first year post-severe TBI to support ongoing discourse recovery. Factors that may inform clinical prognosis up to 1 year include years of education, PTA duration and aphasia. MCA with the Cinderella narrative is suggested as a sensitive discourse measure.

## Remediation of cognitive-communication disorders following acquired brain injury using telerehabilitation: a pilot study

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**Background and Objectives:** According to the Australian Institute of Health and Welfare (AIHW), acquired brain injury (ABI) affects approximately 25 000 Australians annually. The need for rehabilitation services is great and often unmet. People living in regional, rural and remote communities, in particular, can face major barriers to accessing timely and appropriate rehabilitation. In response to this issue, information and communication technologies are increasingly being used to provide rehabilitation over distance, to people with ABI and their families. The aim of this research is to identify whether or not a therapy programme to treat cognitive-communication difficulties (CCDs) can produce changes in function in people with ABI, when delivered via telerehabilitation.

**Method:** A repeated measures design, consisting of a pre-, post-, and follow-up schedule (ABACA) – where A is an assessment period (conducted online), B is the intervention (conducted online) and C is the 4-week follow-up period, was conducted. Eight participants with CCDs were recruited consecutively from outpatient services from tertiary brain injury rehabilitation departments. Outcome measures administered included the Functional Assessment of Verbal Reasoning and Executive Strategies (FAVRES), Profile of Pragmatic Impairment in Communication, LaTrobe Communication Questionnaire, Self-Awareness of Deficits Interview, Goal Attainment Scaling, and Participant Telerehabilitation Satisfaction Questionnaire.

**Results:** Participants short- and long-term improvements in cognitive-communication functioning following completion of the CCD treatment programme will be outlined. The barriers and facilitators participants experiences when accessing online delivery of the CCD programme will also be discussed.

**Conclusions:** This study identified that the implementation of CCD treatments via telehealth, although not without its challenges, is a valid service delivery option.

## What do SLTs think about aphasia therapy?

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**Background and Objectives:** Aphasia therapy is a core component of speech language therapy clinical practice. However, anecdotal reports suggest that aphasia therapy sometimes gets prioritised below other speech-language therapist/multidisciplinary team needs and that speech-language therapists (SLTs) are not always able to utilise the range of therapies available. This research project investigated the opinions of currently practicing SLTs/speech-language pathologists about aphasia therapy, including the challenges of providing aphasia therapy, the positives and the types of aphasia therapy currently being used.

**Method:** A questionnaire was distributed through social media networks to SLTs across the world. The questions included a range of demographic, multiple choice and open questions.

**Results:** The majority of respondents were evenly split between those working in New Zealand ( $n = 43$ ), Australia ( $n = 44$ ) and USA ( $n = 44$ ). Fifty percent of respondents reported that they would definitely actively engage in aphasia therapy with patients as part of their day-to-day clinical practice. Thirty-five percent reported that they would probably engage in aphasia therapy with patients, but that other SLT/MDT needs might take priority. Ten respondents reported that they probably would not engage in aphasia therapy. Full analysis of the data will be reported on in the presentation.

**Conclusions:** This research has shown that not all patients with aphasia who might benefit from aphasia therapy are likely to be receiving the input that they need. This research also identified that only a narrow range of aphasia therapy techniques are being frequently used, but that the respondents wanted to be able to provide a wider range of therapy options.

## The lived experience of communication changes caused by MND in people with MND and their family and friends: a scoping review

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**Background and Objectives:** The majority of people with motor neurone disease (MND) will experience communication impairment as the disease progresses, affecting themselves and the people with whom they communicate. To better meet the needs of patients with MND and their family and friends, understanding their perspectives of living with, and adjusting to, communication difficulties is essential. A scoping review was conducted to collect and interpretively synthesise the available literature to generate an understanding of the lived experience of communication impairment in MND from the perspectives of people with MND and their family and friends.

**Methods:** The Arskey and O'Malley scoping review framework was used. Full-text journal articles were identified through searches of PubMed, Embase, CINAHL and Scopus databases and hand searching of journals. Relevant studies were extracted and methodological quality evaluated.

**Results:** Of 1685 articles identified, 11 met the inclusion criteria: 8 qualitative and 3 quantitative studies. No study primarily focused on the lived experience of communication changes associated with MND. The experience people with MND and their family and friends had of communication interactions within the lens of the disease were summarised by three themes: (1) communication effectiveness, (2) impact of communication changes, and (3) connectedness.

**Conclusion:** These data confirm that communication changes related to MND have potentially negative psychosocial impacts on both the person with MND and their family and friends. Further investigation into the communication changes people with MND and their family and friends experience is needed to inform best speech pathology management practices of MND.

## Objective clinical methods for evaluating the severity of discourse disorders and predicting psychosocial outcomes following severe traumatic brain injury (TBI)

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**Background and Objectives:** Objective clinical methods for evaluating the severity of discourse disorders and predicting how these disorders might impact on psychosocial outcomes are currently lacking. This project aimed to develop clinical methods to support discourse assessment with the view to guiding speech pathologists with goal-setting at the International Classification of Functioning, Disability and Health (ICF) activity and participation level.

**Method:** Clinical methods were derived from a longitudinal prospective cohort study ( $n = 57$ ) examining discourse disorders at 3- to 6-month post-injury and psychosocial outcomes at 12 months. Instruments included a narrative discourse task with Main Concept Analysis (MCA) and the Sydney Psychosocial Reintegration Scale – 2, incorporating work/leisure, relationships and living skills domains. Mild, moderate and severe discourse categories were determined from standard deviation intervals. Linear regression was utilised.

**Results:** Discourse impairments were evident in 85% of the cohort at 3 months and 66% at 12 months. An MCA score of 45 was identified as the cut-off for determining impaired performance, with mild scores between 25 and 44, moderate between 6 and 24 and severe ranging from 0 to 5. Early discourse scores at both 3 and 6 months were found to significantly predict psychosocial outcomes at 12 months, explaining up to 32% of the variance.

**Conclusions:** The clinical methods explored support identification of discourse disorders and three levels of discourse severity; mild, moderate and severe, which can help to monitor discourse recovery. The regression equations can aid prediction of psychosocial outcomes at 1 year from early discourse scores, guiding goal-setting across the domains of work/leisure, relationships and living skills.

## Telerehabilitation and acquired brain injury (ABI): an online high-intensity behavioural speech intervention using real-time videoconferencing and store and forward functionality

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**Background and Objectives:** Telerehabilitation provides an alternative mode of service delivery to traditional face-to-face models of care. Usual models of care are typically unable to support levels of treatment intensity required to optimise experience-dependent plasticity responses following acquired brain injury. Technology-enabled rehabilitation provides a novel means of facilitating high-intensity treatments.

The objective of this study was to investigate the feasibility of delivering the Be Clear intensive speech treatment programme online, and the acceptability of this intervention to end users.

**Method:** A within-subjects design examined the effects of treatment in eight adult participants with non-progressive dysarthria. Intensive online speech intervention involved daily 1-h videoconferencing sessions, 4 days per week, for 4 weeks. Recorded speech samples and qualitative outcome measures pertaining to everyday communication were analysed across three time points: pre-treatment; post-treatment and 3-month post-treatment. Participant satisfaction was evaluated following treatment.

**Results:** Provisional data analysis ( $n = 4$ ) revealed generalised increases in post-treatment summary scores on the Dysarthria Impact Profile, the Communication Effectiveness Index-Modified and Communicative Participation Item Bank. These improvements in quality of life domains were largely mirrored by post-treatment improvements in speech intelligibility, when rated by naïve listeners. All participants reported high levels of satisfaction with the treatment environment, treatment effectiveness, accessibility and overall acceptability.

**Conclusions:** Preliminary findings indicated that an intensive online dysarthria treatment was feasible and acceptable to participants. Positive treatment effects involved improvements in conversational speech intelligibility, increased communication participation and effectiveness, and positive psychosocial adjustment to dysarthria. Practical issues around internet-driven interventions will be explored.

## Social simulation: a cognitive mechanism associated with impaired social knowledge in the behavioural-variant of frontotemporal dementia

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**Background and Objectives:** Behavioural-variant frontotemporal dementia (bvFTD) is a progressive neurodegenerative disorder characterised by pronounced social dysfunction and cognitive deficits, including memory. We previously demonstrated that the capacity to mentally simulate atemporal scenes, a process suggested to rely on episodic memory, is impaired in bvFTD. Here, we used a novel approach to determine whether social simulation is disproportionately disrupted in bvFTD.

**Method:** About 23 bvFTD and 20 healthy controls completed a mental simulation task involving imagining social (e.g., busy restaurant) and non-social (e.g., forest) scenes. Scene descriptions were scored for contextual detail. All participants completed a comprehensive neuropsychological battery and the Social Norms Questionnaire (SNQ) to assess social knowledge.

**Results:** A significant main effect for group ( $p < .001$ ) revealed bvFTD patients produced fewer contextual details than controls across conditions. Furthermore, a significant group by condition interaction ( $p = .035$ ) revealed bvFTD patients performed significantly worse on social ( $M = 17.67$ ,  $SD = 5.19$ ), compared to non-social ( $M = 18.94$ ,  $SD = 5.41$ ) simulations. There was no significant difference between social ( $M = 23.45$ ,  $SD = 3.00$ ) and non-social ( $M = 22.80$ ,  $SD = 2.74$ ) simulations in controls. bvFTD participants less able to identify a break in social norms, on average, performed significantly worse on social simulation (Break ScoreSNQ,  $r = -.52$ ,  $p = .023$ ), but there was no association with non-social simulation ( $r = -.21$ ,  $p = .231$ ).

**Conclusions:** This study identified disproportionate deficits in the ability to simulate social scenes in bvFTD. Furthermore, the inability to simulate social scenes appears to be associated with impaired knowledge of social norms. These findings expand our understanding of the cognitive mechanisms associated with social behaviour.

# Managing adults with cognitive-communication disorders following traumatic brain injury in community settings across Australia and New Zealand

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**Background and Objectives:** Speech pathologists play an integral role when providing rehabilitation to adults with cognitive-communication disorders (CCDs) following traumatic brain injury (TBI). However, little is known about how services for this population are being implemented in community-based settings. The aim of this study was to identify the current clinical practices of speech pathologists when managing this caseload.

**Method:** An in-depth online survey was completed by 46 speech pathologists across Australia and New Zealand. Quantitative data collected were analysed using descriptive statistics.

**Results:** All speech pathologists reported taking a functional approach when providing treatment and routinely incorporated education (82%) and compensatory strategies (74%). Factors considered to facilitate client adherence to speech pathology recommendations included: client awareness of CCDs, clear rehabilitation goals and supportive significant others. The main strengths of the community-based services included utilising multidisciplinary team approaches that were goal-centred and client-focused.

**Conclusions:** The results of the study highlight that a variety of approaches are implemented when managing adults with CCDs in community settings. Further research is required to identify the perspectives of people with TBI regarding community-based rehabilitation and how future speech pathology services can be optimised.

# How to session: participant-led videos: how to support people with cognitive-communication changes following an acquired brain injury to 'voice' their meaningful goals, express their needs and desires in their own words and lead the creation of a training video for their support workers

Cathy Bucolo and Carolyn Finis

Summer Foundation, Melbourne, VIC, Australia

**Synopsis of session:** Many people with acquired brain injury (ABI) are unable to tell the people around them how they feel or what they want to happen 'in the moment,' during any given daily situation, due to the changes in their cognitive-communication capacity. To address this need, the Summer Foundation obtained a grant under the Innovation Workforce Fund to co-design, pilot and evaluate the idea of supporting people with disability to make their own training videos for their support workers. The evaluation found that the process enabled people to have choice and control, set their own goals and direct their supports. This 'how to' session will take clinicians through each of the steps to not only support a person

with ABI to make their own training video for their support workers, but to also find their 'voice' and uphold their right to choice and control over their lives.

**Learning objectives:** Participants will:

1. be familiar with a suite of practical, free resources available online to use to support people with disability to make their own participant led videos;
2. be able to complete all the steps involved in supporting someone to lead the making of their own training video;
3. have practical examples of what to say, what to do and templates to use, to support the process of making a participant led video.

## How to session: answering to the call for action from practitioners in response to family violence

Elizabeth Pritchard<sup>1</sup>, Caroline Fisher<sup>2</sup> and Withiel Toni<sup>2,3</sup>

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**Synopsis of session:** Family violence is often an antecedent to traumatic brain injury (TBI) and a complicating factor for patients/clients in presenting to acute services. However, health professionals do not always consider this global health issue in assessment or treatment scenarios. Recent studies have identified gaps of practitioner knowledge in understanding and addressing family violence in health, social and justice sectors. Many healthcare workers have received little training in family violence and are not confident in their skills in working effectively in this area.

This session will briefly describe the causality and contributing factors of family violence, demonstrate the links with TBI, and workshop action-based questions to develop a personal/service plan to better assist clients who are experiencing family violence.

**Learning objectives:** (1) To create a list of factors that may indicate potential family violence situations; (2) To initiate conversations about the link between family violence and TBI; (3) To identify an action plan to share with the team on how to improve understanding, and what to do when family violence is (a) suspected or (b) confirmed.

## How to session – how to build capacity for meaningful consumer engagement in rehabilitation research

Johnny Bourke<sup>1,2</sup>, Jo Nunnerley<sup>1,3</sup> and Hamish Ramsden<sup>1</sup>

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**Synopsis of session:** Consumer engagement aims to involve people with the lived experience of disability as equal partners alongside researchers in the research process. Meaningful consumer engagement can validate the expertise of people living with disability and increase the overall integrity of research. However, there is little guidance to help researchers and consumers adopt consumer engagement and



integrated knowledge translation (IKT) methods. This session will provide attendees with an understanding of the steps they can take to engage and legitimise consumer knowledge and add value to their research. The presenters will cover key issues and processes for conducting and disseminating research using a consumer-engaged approach, with facilitated discussion leading to recommendations. Importantly, presenters also include a consumer and a researcher regarding their respective experience of being involved in the consumer engagement process. Attendees will also be provided with handout resources describing tools and strategies for adopting consumer engagement techniques.

**Learning objectives:**

1. Increase awareness of the value that the lived experience of disability can bring to rehabilitation research.
2. Describe how consumer engagement and IKT can occur throughout the research continuum.
3. Provide practical examples of techniques used to engage with, and build research capacity in, the disability community.

## Implementation of constraint-induced movement therapy in public health: the ACTIVEARM project

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**Background:** Constraint-induced movement therapy (CIMT) is an effective intervention for arm recovery following brain injury. Despite strong evidence, few people receive CIMT in practice.

**Objective:** To establish if CIMT programmes can be translated into practice and sustained over 2 years across multiple public health services in Australia.

**Method:** A before-and-after study was conducted across nine therapy teams.

**Intervention:** Teams received a CIMT implementation package including a 2-day training workshop, regular audit feedback about their practice, poster reminders, support and mentoring from a community of practice.

**Data Collection:** Medical record audits were conducted at baseline and three-monthly intervals up to 18-month post-delivery of the implementation package, providing feedback to teams about CIMT delivery. Staff focus group interviews at baseline and post-intervention explored CIMT knowledge, attitudes and organisational barriers.

**Primary Outcome:** The proportion of eligible patients that received CIMT.

**Results:** Baseline file audits (T1,  $n = 172$ ) found 40% of patients were eligible for CIMT but few were offered or provided CIMT ( $n = 2$ , <2%). File audits post-CIMT implementation at 3 months (T2,  $n = 149$ ), 6 months (T3,  $n = 155$ ), 9 months (T4,  $n = 158$ ) and 12 months (T5,  $n = 164$ ) showed improvements in screening, with more eligible people offered (between 51% and 61%, T2–T5) and receiving CIMT (between 27% and 33%, T2–T5). The results of file audits at 18 months (T6) and sustainability of practice change (follow-up, T7) will be presented.

**Conclusion:** Nine therapy teams overcame an evidence-practice gap and delivered CIMT more routinely.

## CIRCuiTS cognitive remediation trial in orange, NSW

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**Background and Aims:** Many people with schizophrenia experience cognitive impairments, difficulties with activities of daily living, poor self-esteem and quality of life. Current ANZCP practice guidelines for schizophrenia recommend cognitive remediation therapy (CRT). Our team in Orange has recently completed an implementation trial of the CIRCuiTS CRT programme. We aimed to examine aspects of feasibility, acceptability and outcomes of the CIRCuiTS programme in our local context.

**Method:** Our implementation trial was conducted in the inpatient and community mental health contexts within the Western NSW Local Health District. A mixed qualitative and quantitative design involved participants and staff members completing measures of cognitive functioning, functional independence, goal attainment, self-esteem and quality of life at commencement, completion and at 3-month follow-up. Participants and therapists provided their views of their experience of the CIRCuiTS programme.

**Results:** More than 50 adults with schizophrenia commenced CIRCuiTS during this trial. Most participants reported they enjoyed using the programme and made excellent progress towards their goals. Those who completed the programme made significant gains in the domains of attention, memory and independence in key aspects of daily living.

**Conclusions:** Overall, the CIRCuiTS CRT programme appears feasible, acceptable and has contributed to very promising outcomes in both the inpatient and community mental health contexts, in Orange. Efforts are in progress to implement the programme more widely.

## Regulating emotion following traumatic brain injury: preliminary results from a repeated biofeedback treatment study

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**Background and Aims:** While difficulties regulating emotion are almost ubiquitous after traumatic brain injury (TBI), remediation techniques are limited. Heart-rate variability (HRV) is a physiological measure of emotion regulation and can be modified using biofeedback training. We have previously found that biofeedback can mediate response to an anger induction in healthy participants and individuals with TBI respond similarly to biofeedback as healthy controls. The aim of the current study was to evaluate the efficacy of repeated biofeedback training for improving emotion regulation following TBI.

**Method:** Fifty adults with severe TBI were randomly allocated to receive either biofeedback treatment or to waitlist control. Treatment consisted of 6 × 1.5-h biofeedback training sessions, whereby participants were taught to breathe at their resonant frequency. Outcomes were changes in HRV-related physiological responses to an anger-induction procedure, symptoms of general-emotional well-being, together with self-reported symptoms of depression, anxiety and sleep disturbances.

**Results:** Participants in the biofeedback treatment reported significantly fewer sleep disturbances, greater positive mood, together with reduced negative feelings of emotion and symptoms of depression at follow-up. There was also a trend for physiological changes at rest following biofeedback. Biofeedback did not seem to affect objective and subjective response to anger provocation.

**Conclusion:** HRV biofeedback training is a feasible technique following TBI, with biofeedback generalising to improved symptoms of general emotional well-being, psychological distress and sleep disturbances. These changes do not seem to transfer to a laboratory-based emotional provocation task. HRV biofeedback training may therefore represent a novel technique for mediating emotional difficulties following injury.

## Community rehabilitation: increasing independence regardless of time since acquired brain injury

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**Background and Objectives:** Rehabilitation is not consistently recommended following acquired brain injury (ABI). Providing a programme of rehabilitation to improve independent living skills could have long-term impact.

**Aim:** To determine if gains made by people with an ABI undergoing community rehabilitation were impacted by time between injury and admission.

**Method:** The Mayo-Portland Adaptability Inventory-4 (MPAI-4) and Functional Independence Measure/Functional Assessment Measure (FIM+FAM) were collected on admission and yearly review for  $n = 92$  clients. Analysis was stratified by time since injury: <1 year ( $n = 36$ ), 1–2 years ( $n = 34$ ) and >2 years ( $n = 22$ ). Total and subscale scores were analysed using parametric statistics with boot-strapping (sample size  $n = 1000$ ). Between group differences were tested one-way analysis of variance with *post hoc* Bonferroni correction, and within group differences were tested using paired *t*-tests.

**Results:** The total cohort made significant gains in MPAI-4 Total ( $p < .01$ ), Ability ( $p < .01$ ), Adjustment ( $p < .01$ ) and Participation ( $p < .01$ ). Significant gains were made in FIM+FAM Total ( $p < .01$ ), Motor ( $p < .01$ ), Cognitive ( $p < .01$ ) and Extended Activities of Daily Living ( $p < .01$ ). People admitted <1 year post-injury made the greatest amount of change, all changes were statistically significant ( $p < .01$ ). The 1- to 2-year post-injury cohort made the second greatest amount of change, improving significantly in all subscales ( $p < .02$ ) excluding Adjustment. The >2-year post-injury cohort made the least amount of change, although made statistically significant gains in all FIM+FAM subscales ( $p < .05$ ) and Participation subscale ( $p < .01$ ).

**Conclusions:** Regardless of time between injury and admission, people made functional and cognitive improvements. Rehabilitation is effective at increasing independence of people at any time following ABI.

## 'Listening in' for uncertainty during recovery from mild traumatic brain injury: a mixed methods study

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**Background and Objectives:** Our objective was to explore the recovery experiences of people who had or had not recovered from a mild traumatic brain injury (MTBI), using both quantitative and qualitative

methods. We hoped that more in-depth analysis of participant experiences might extend quantitative evidence regarding the impacts of early educational interventions on recovery from MTBI.

**Method:** This is a cross-sectional case-control study using concurrent quantitative and qualitative methods. The quantitative component was a descriptive case-control study comparing participants ( $n = 76$ ) who had or had not recovered after MTBI, across demographic and psychological variables. A subset of participants ( $n = 10$ ) participated in a semi-structured interview to explore experiences of recovery in more depth. We followed threads across data sets to integrate findings from component methods.

**Results:** Quantitative results identified a range of differing recovery expectations across the two groups, but the qualitative results suggested participants regardless of recovery status, searched for a coherent understanding of their recovery. By conducting more in-depth analysis, tracing threads back and forth between component data sets, we identified a super-ordinate meta-theme that suggested conflicting knowledge from different sources increased uncertainty, creating potential for distress and feelings of invalidation, especially for those who had not recovered from their injury.

**Conclusions:** The effectiveness of psychoeducation after MTBI may be optimised when educational content is tailored to the individual. 'Listening in' for subjective interpretations made of information from formal and informal, internal and external knowledge sources may be helpful, especially when conflicting information creates uncertainty and confusion about recovery expectations.

## Co-design, pilot and evaluation of participant-led videos to train support workers

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**Background and Objectives:** This study evaluated a novel project that set out to co-design, pilot and document a process for working with National Disability Insurance Scheme participants to produce participant-led training videos (PLVs). The videos aim to inform disability support workers about how the person with disability wants to be supported.

**Method:** The study used semi-structured interviews to document multiple perspectives and obtain quantitative and qualitative data from 14 participants: 5 primary participants, 5 close other supporters and 4 staff facilitators. Primary participants included 4 men and 1 woman. They all had acquired brain injuries with resultant cognitive and communication impairments and very high support needs. Participants were interviewed twice - 1 week and 4 months after the production of the videos.

**Results:** All participants reported high levels of satisfaction with the PLV process. The usefulness of the approach was also highly endorsed. Primary participants and their supporters recommended the video production process for others with an average rating exceeding 8 on a 10-point scale. Thematic results revealed the importance of people with disability having a voice and taking control in directing their lives, personal growth through participation and engagement, and feeling validated through the experience.

**Conclusions:** The production and use of PLVs has much potential to improve the delivery of support and maximise outcomes by enabling people with cognitive and communication impairments to have choice and control, set their own goals and direct their supports.

# Peer support following traumatic brain injury: efficacy and impact of client-led group programmes

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**Background and Objectives:** Individuals with chronic traumatic brain injury (TBI) can have difficulty in adapting to social situations, undermining self-confidence and worsening the cycle of isolation. Furthermore, therapists are often unable to fully meet the needs of individuals recovering from TBI. Social peer-mentoring groups are emerging in international best practice; an innovative support service known as the 'Reconnect Programme' has been implemented and refined for greater than 10 years but has yet to be evaluated for its functional impact.

**Method:** The Reconnect Programme is a group-based, client-led programme for individuals with chronic TBI to participate in meaningful activities, develop positive relationships and receive peer-mentoring and support. A subset of group participants ( $n = 10$ ) and family members ( $n = 10$ ) participated in semi-structured qualitative interview to assess impacts of these peer groups on quality of life, mood, knowledge and social support.

**Results:** Peer support and opportunities may aid in building relationships with others who share common goals and challenges. A safe, supported environment to practice skills may maximise participation in the areas of life important to the individual. Specific design, benefits and limitations of the peer support programme will be discussed.

**Conclusions:** This patient-centred, evidence-based programme may provide a template for functional, holistic intervention for community-residing individuals with chronic TBI. Consistent with existing research, engagement between consistent participants, supported opportunities and funding to access such groups are likely key in peer support group success.

# 'If there's an official term called supported decision making, I have no clue': experiences of rehabilitation professionals in supporting decision-making participation for adults after ABI

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**Background and Objectives:** The right to exercise choice and control underpins contemporary models of rehabilitation and disability service provision. For people with acquired brain injury (ABI), decision-making participation requires access to support and strategies to maximise participation. Previous research has identified the pivotal role that rehabilitation and disability support professionals play in shaping a person's decision-making opportunities. The aim of this study was to understand the experiences of community-based professionals who support decision-making participation for adults with ABI.

**Method:** A qualitative research design underpinned by a constructivist paradigm was adopted. Data included semi-structured in-depth interviews with 15 community-based professionals working across public and private rehabilitation services and disability case management. Data were analysed using several approaches including open and focused coding, thematic analysis, diagramming and memoing.

**Results:** Professionals described a commitment to maximising the participation of their client but reported few opportunities for training or reflection to support them to do so. Support was instead shaped by a range of factors including disciplinary boundaries and ways of working, workplace expectations and culture,

personal values and experiences, and individual relationships with clients. For many, risk continued to provide a dominant narrative that underpinned their approach to and engagement in the process.

**Conclusions:** This study is the first to explore the experiences of community-based rehabilitation professionals supporting adults with ABI in making decisions about life after injury. The findings highlight that, despite a growing emphasis on supporting decision-making participation, professionals report a range of challenges in being able to do so.

## 'I really try to plug into the person': strategies used by clinicians to build and nurture the therapeutic alliance in community brain injury rehabilitation

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**Background and Objectives:** A positive therapeutic alliance is associated with superior outcomes in the psychotherapeutic and more recently in the neuro-rehabilitation literature. This study explored clinicians' experience of the therapeutic alliance, particularly focusing on the strategies they used when working together with individuals with acquired brain injury (ABI) and their significant others during community rehabilitation.

**Method:** A constructivist, qualitative methodology using grounded theory analysis techniques was used. Participants were 12 clinicians across disciplines from a community rehabilitation service. In-depth interviews were conducted with each participant and transcribed verbatim. Transcripts were progressively analysed using an iterative process of constant comparison.

**Results:** All participants valued the therapeutic alliance. Strategies covered a range of areas such as getting to know individuals, being person-focused and -driven, creating safety and trust, using good communication, interpersonal behaviours and a positive approach, using active self-reflection, and applying an understanding of ABI. They also spoke of strategies relevant for different phases of rehabilitation and for managing periods of strain in the alliance.

**Conclusions:** Clinicians considered the therapeutic alliance to be vital during rehabilitation and described active use of a range of strategies to optimise it. Further research is needed to understand the key components of the alliance, how it might positively influence rehabilitation outcomes and identify key facilitators relevant for staff training to inform its effective development and maintenance.

# Cognitive fatigue in chronic fatigue syndrome: comparisons with individuals with multiple sclerosis and healthy individuals

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**Background and Aims:** Chronic Fatigue Syndrome (CFS) is a debilitating condition characterised by persistent debilitating fatigue. However, whether the experience of fatigue in CFS is similar to other fatiguing illnesses is not known. This study compares changes in self-reported fatigue and performance on a sustained attention task over a single testing session in individuals with CFS to individuals with multiple sclerosis (MS) and healthy individuals.

**Method:** About 33 CFS, 52 MS and 37 healthy participants were assessed twice on the Conners Continuous Performance test (CPT) over a 2.5-h session. A visual analogue scale for fatigue was administered at baseline, and immediately following each CPT administration. A fatigue self-efficacy scale assessed perceptions of fatigue management.

**Results:** There were no group differences on the Conners task at Time 1. However, while commission errors remained consistent across time for CFS participants, there was an increase in commission errors for MS, and a trending reduction of commission errors for healthy participants. Whereas omission errors and reaction time increased across time in CFS participants, these remained consistent for the MS and healthy participants. Self-reported fatigue was highest and increased at a more rapid rate, in CFS participants across time, relative to MS and healthy participants. Fatigue self-efficacy was moderately to strongly related to self-reported fatigue in CFS participants. This relationship was small-to-moderate in CFS and healthy individuals.

**Conclusions:** The experience of fatigue and perceptions of how fatigue can be capably managed is different across individuals with CFS and MS. The results provide important information for targeted fatigue treatment in these individuals.

# Recalibrating hope in the year after stroke: a call to move beyond 'realistic' hope

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**Background and Objectives:** Hope is an important resource after stroke. Hope sustains people through uncertainty, while specific hopes, such as a hope to return to normal, can motivate them. However, clinicians are often concerned this will lead to distress and disappointment and privilege what they consider 'realistic hopes.' This study explored how people hope, and what they hope for, in the year after stroke.

**Method:** This is a longitudinal interpretive description study. Interviews were completed with four people with aphasia at 3- and 12-month post-stroke. Data were analysed using content analysis.

**Results:** Most people were in a process of reconstructing their lives, (re)engaging in social activities and developing an image of a possible future at 12 months. They actively recalibrated early post-stroke hopes by reflecting on past progress, current function, and what might be possible and desirable in the future. They developed 'new' hopes that were meaningful and seemingly achievable. Others struggled to see a possible future. They hoped that 'things will be good,' a mantra that sustained them through uncertainty. Social

supports, a sense of progress, engagement in meaningful activities and interactions appeared crucial in helping people (re)develop hopes for their future.

**Conclusions:** Hope was protective and productive. An early focus on what clinicians consider ‘realistic’ may threaten the protective function of hope. Rather than pushing patients to identify ‘realistic’ hopes, this research suggests clinicians could instead focus on creating an environment that supports patients to gradually recalibrate their hopes for the future.

## The impact of primary brain tumour on subjective cognitive functioning and associations with psychological distress

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**Background:** In the general cancer population, subjective cognitive functioning (SCF) is typically more closely related to psychological distress than objective tests of cognitive function. Individuals with tumours located in the central nervous system demonstrate high rates of objective cognitive impairment and report significant psychological distress and poor SCF. However, the factors related to SCF after brain tumour have received little attention. This study aimed to compare the SCF of adults with brain tumour and healthy controls, controlling for psychological distress, and to investigate factors associated with SCF.

**Method:** Participants were 65 people with primary brain tumour (age: 22–75 years; 46% benign; 18% low-grade; 36% high-grade) and 65 age- and sex-matched controls. Participants completed the Brief Test of Adult Cognition by Telephone, Functional Assessment of Cancer Therapy – General, Functional Assessment of Cancer Therapy – Cognitive Function, Depression Anxiety Stress Scales and Generalised Anxiety Disorder-7.

**Results:** Participants with brain tumour reported significantly poorer SCF than controls ( $p < .001$ ), after controlling for anxiety. Poorer SCF was significantly related to lower objective cognitive functioning, fatigue, pain, treatment-related side-effects, anxiety and depression ( $r = .34-.55$ ;  $p < .01$ ). Regression analyses identified that anxiety accounted for significant variance in SCF (i.e., 8–15%) after controlling for objective cognitive function and physical symptoms ( $p < .001$ ).

**Conclusions:** Individuals with brain tumour experience poorer SCF than healthy controls after accounting for anxiety. Although SCF is related to multiple factors after brain tumour, the unique influence of anxiety highlights the need for psychological interventions to support individuals to manage the everyday cognitive effects.

## Selection bias associated with eyetracking research in traumatic brain injury

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**Background and Objectives:** Data quality underlies the validity of all research. There are no standard criteria for eye tracking data, and few sources examine characteristics that affect validity. This study examined characteristics associated with tradeoff between eye tracking data quality and selection bias in traumatic brain injury (TBI) research.



**Method:** Participants were 56 adults with complicated mild-to-severe TBI, 69 healthy comparisons (HC) providing full effort and 49 healthy adults coached to simulate TBI (SIM). A comprehensive neuropsychological battery included tests linked to eye tracking and response time biometrics. Analyses examined percent valid datapoints (PVD) and several eye tracking variables across five conditions of inclusion: no restriction, 50%, 60%, 70% and 80% PVD.

**Results:** Correlations among PVD and eye tracking variables were higher for the rigorous (80%) standard than the sequentially lower cut-offs; however, increasing the PVD criterion did not affect the groups equally. At a 50% criterion, frequency of exclusion between the groups was equivalent, but by the 80% criterion, TBI (46%), HC (20%) and SIM (21%) differed significantly. Within severe TBI, PVD was inversely related to cognitive function, but not age, estimated premorbid Intelligence Quotient (IQ) or use of corrective lenses. SIM showed inverse correlation between PVD and estimated IQ.

**Conclusions:** Selection bias is an important consideration in TBI research using eye tracking. Exclusions disproportionately affect participants with TBI as the criterion becomes increasingly rigorous. Liberal inclusion criteria minimise selection bias at the cost of measurement precision. Researchers can test for robustness of their findings by examining multiple forms of inclusion criteria.

## Early intervention for cognitive-communication reading comprehension deficits after ABI: initial results

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**Background and Objectives:** Reading comprehension (RC) deficits following acquired or traumatic brain injury (ABI, TBI) can impact independence and participation in the community, and participation in therapy across the rehabilitation continuum. Early RC rehabilitation may affect participation and independence with activities requiring reading, both during rehabilitation and upon return home.

**Method:** An emergent multi-phase mixed-methods design was used to develop an evidence-based intervention for early RC rehabilitation. This involved identifying: the evidence base, service delivery factors, clinical practice and consumer experiences. The intervention was investigated via an experimental multiple-baseline single-case-study design for three participants (P) <3-month post-onset (P1-ABI; P2 and P3-TBI).

**Results:** A multiple-strategy intervention was developed. Visual, cognitive (content) and metacognitive strategies were taught via a mastery-based, hierarchical treatment. Pre-post assessment on the Gray Oral Reading Test demonstrated improved RC for all participants; RC-age was maintained at follow-up for P1 and P2 only. A treatment effect was demonstrated via multiple-baseline data for P1 and P3. Client perceptions of communication skills pre-post intervention will also be presented (Latrobe Communication Questionnaire).

**Conclusions:** The cognitive-communication RC intervention shows promise as an early RC intervention for adults with ABI/TBI, and further evaluation with larger participant numbers is required.

# Interactions during occupational therapy brain injury rehabilitation groups: a descriptive video analysis

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**Background and Objectives:** Participation in groups is an integral part of everyday life, spanning family, social and cultural groups, productive and leisure groups. Understanding group dynamics is important for quality of life, as is an understanding of the impact ill-health and injury can have on group participation. This study aimed to understand and describe the interactions occurring in inpatient occupational therapy brain injury rehabilitation groups to inform recommendations for group facilitation

**Method:** Video-recordings of four occupational therapy groups were taken. Twelve adults with brain injury who participated in the groups and four group facilitators consented to the study. Video recording enabled naturalistic observation of interactions occurring during the groups. The data were analysed using a qualitative descriptive approach.

**Results:** Interactions were predominantly initiated by group facilitators and occurred between facilitators and individual participants rather than between peer participants. Interactions were also shaped by the nature of the group activities. Group facilitators in brain injury rehabilitation face a challenge to balance enabling activity participation and encouraging peer interactions. To encourage peer interaction, group facilitators used a number of strategies including: knowledge of group participants, activity choice, and physical positioning of group members.

**Conclusions:** During structured activity-based inpatient rehabilitation groups, participants with traumatic brain injury may focus predominantly on achieving the goal of the group activity rather than initiating peer interactions. Despite this, it may be the case that the shared experience of doing an activity together, rather than the amount or intensity of direct peer-to-peer interactions assisted with the development of relationships.

## ABSTRACTS – SATURDAY POSTERS

# A longitudinal investigation of dysarthria recovery over 2 years following severe traumatic brain injury

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**Background and Objectives:** Communication disorders such as dysarthria are common following traumatic brain injury (TBI). Long-term outcomes associated with TBI and dysarthria are poor yet little is known about the recovery of dysarthria post-injury. This study aimed to explore the nature of change in dysarthria over the first 2 years following severe TBI, and the relationship between speech rate and information processing speed.

**Methods:** Twenty-five participants with severe TBI and mild-severe dysarthria completed a standardised assessment battery at 3-, 6-, 12- and 24-month post-injury. The outcome measures were the Frenchay Dysarthria Assessment (FDA-2), speech rate from a discourse speaking task and information processing speed index scores from neuropsychological assessments. Non-parametric and parametric statistics were used to compare assessment scores across the four time points. Correlational statistics were employed to analyse the relationship between speech rate and information processing speed.

**Results:** Significant changes were reported for lip ( $p = .04$ ) and laryngeal control ( $p = .001$ ), as well as intelligibility in words ( $p = .04$ ), sentences ( $p = .001$ ) and conversation ( $p = .02$ ) over 2 years with the greatest improvement reported during the first year post-injury. There was no significant correlation between speech rate and information processing speed.

**Conclusions:** Deficits of lip and laryngeal function, and intelligibility are most responsive to recovery, while impairments of speech rate, and respiratory, palatal, and tongue function are the most persistent. Clinicians should consider using targeted interventions to address individual dysarthric deficits during the first 2 years following severe TBI.

## Theoretical model development explaining how peer support improves health outcomes for people with spinal cord impairment: a realist approach

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**Background and Objectives:** Peer support improves rehabilitation experiences and health outcomes for individuals with newly acquired spinal cord impairment (SCI). However, specific mechanisms of effect by which peer support improves outcomes are not well understood. This research aimed to develop a theoretical model explaining how contextual factors and mechanisms of effect impact on health outcome change for people with newly acquired SCI.

**Method:** Within a realist research framework, we used an iterative process to develop a theoretical model proposing in which situations, how, why, and for whom peer support improves health outcomes. This process included reviewing SCI peer support literature and service documentation alongside focus groups and interviews with peer support providers using realist interviewing strategies. A proposed programme theory was developed and then refined in response to feedback gathered from further focus groups.

**Results:** The developed model suggests that peer support actively promotes the experience and practice of belonging, autonomy and competence, while also supporting the development of optimism and adaptive coping. The context in which peer support is provided and the manner in which it is offered may be as important and what is provided and by whom, with relational and physical spaces in which peer support occurs impacting on whether key mechanisms are facilitated.

**Conclusions:** Understanding how interventions might exert their effect is essential for service development, evaluation and implementation. The developed conceptual framework will inform the ongoing development and evaluation of peer support services for people with newly acquired SCI within New Zealand.

## Positive participation, therapeutic landscapes and personal agency as active ingredients in rehabilitation interventions: therapeutic horse riding as an example

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**Background and Objectives:** Therapeutic horse riding (THR) is a complex intervention using horses and horse-related activities to improve health in children and young people experiencing disability. Evaluating the effectiveness of THR is made complex by a lack of clarity about ingredients, and mechanisms of treatment effect. This research evaluated the effectiveness of a THR intervention by exploring what works for which riders, in what contexts, to what extent and how.

**Methods:** Within a critical realist framework, we undertook three phases of research using a mix of methods and culminating in an analytical synthesis in which findings from all three phases were integrated into one overall evaluative account. Using context–mechanism–outcome (CMO) configurations, we paid specific attention to contextual factors and mechanisms of change impacting on health outcome change for riders.

**Results:** Synthesised findings suggest that THR is accessible and allows for meaningful participation for children experiencing disability; riders experience THR as a context that promotes their capacities and strengths, and THR provides opportunities for a broad range of learning experiences with the child as active agent within the intervention.

**Conclusions:** This research proposes an explanatory theory regarding relationships between contextual factors and mechanisms of effect that contribute to changes in health outcomes as a result of THR. Findings from this research may be applied more broadly within rehabilitation by highlighting the need to prioritise meaningful participation, the importance of context in optimising health outcomes, and the importance of enhancing opportunities for agency within rehabilitation service provision.

## Improving functional independence and quality of life for clients with an acquired brain injury undergoing community rehabilitation using assistive devices for toileting

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**Background and Objectives:** Activities of daily living for many individuals with an acquired brain injury (ABI) are highly dependent on staff intervention. Minimising involvement of staff through the use of assistive toileting devices may be beneficial in facilitating independence and improving the quality of life of these individuals. Objectives were to investigate, review and trial technology to support people to toilet more independently, identify opportunities for change in current practice and determine any changes in quality of life for individuals using assistive toileting devices.

**Method:** A study of  $n = 16$  clients with an ABI undergoing community rehabilitation. Data were collected using outcome measures monitoring changes in independence (Functional Independence Measure and Functional Assessment Measure) and quality of life (Quality of Life after Brain Injury) pre- and post-implementation of toileting devices. The data analysis will involve  $t$ -tests that will compare pre- and post-implementation scores on these measures to look for a statistically significant difference.

**Results:** This study offers a multidisciplinary approach to continence and toileting management, specifically for those individuals with an acquired brain injury. This is significant in understanding practitioner role within the realm of continence and toileting, and recognising the importance of assistive devices in optimising independence and quality of life within this complex practice area.

**Conclusion:** It is anticipated that this study will highlight the importance of organisation wide toileting and continence assessments for clients, staff and families; continence management plans and reviews of policies and procedures.

## Early action appraised: stakeholders' perspectives on early pilot ABI transitional rehabilitation in Queensland, Australia

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**Background and Objectives:** The Acquired Brain Injury Transitional Rehabilitation Service (ABI TRS) is a 5-year pilot programme established in response to an identified unmet need in the continuum of acquired brain injury rehabilitation services (BIRS) in Queensland. To determine the impact of ABI TRS on community re-integration, a mixed method evaluation is in progress. This study presents qualitative data from key stakeholders, including service users, family members, BIRS staff and an external referral agency. The interviews had a two-fold purpose: (1) to explore the perspectives of clients and family members regarding their ABI TRS experience and (2) to examine the process of implementing a new service within an existing service continuum.

**Method:** Semi-structured interviews were conducted in two groups: (1) key stakeholders within BIRS and the National Injury Insurance Scheme Queensland and (2) consented ABI TRS clients and family members between 3- and 6-month post-discharge from the ABI TRS programme. Interviews were digitally recorded and transcribed verbatim. Thematic analysis based on the framework method was conducted.

**Results:** Analysis identified several broad themes relating to the effectiveness of the service model in addressing unmet need within a complex population. Identified enabling factors included availability of funding, quality of management and clinical staff, and the home-based rehabilitation focus.

**Conclusions:** Introducing a new service model within an existing service continuum serving a complex population is a challenging process. Preliminary qualitative outcomes indicate the ABI TRS is negotiating this process successfully from the perspectives of other health professionals and service users, and positively impacting outcomes for clients and families.

## Developing a video resource for pressure injury prevention education in spinal cord injury

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**Background and Objectives:** Around 130 New Zealanders experience a Spinal Cord Injury (SCI) every year. Secondary health conditions present a significant burden for people with SCI and incidence of

pressure ulcers among people with SCI is high, with estimates ranging from 25% to 66%. An educational gap remains as how to provide information on pressure injury care to people living with SCI. The aim of this project was to create a knowledge translation tool focused on pressure injury prevention that could be accessed by a range of stakeholders, including people with SCI, their whanau, and health professionals.

**Method:** Drawing on a consumer-informed research prioritisation exercise, on past research undertaken with people with SCI in New Zealand, and in consultation with a range of stakeholders including people with SCI, whanau and health professionals, topic areas were developed related to the prevention and management of pressure injuries in SCI.

**Results:** Thirteen high-quality videos were produced which explored different aspects of pressure injury prevention through illustrating the consequences of having a pressure injury and mitigation strategies.

**Conclusions:** Utilising diverse educational material to mitigate the detrimental consequences of secondary conditions of SCI is essential for health promotion. The integration of consumer expertise and experiences with peer-reviewed research can broaden health knowledge creation. This knowledge translation project is a successful example of including the perspectives of consumers to create a health promotion tool aimed at the prevention of pressure injuries in SCI.

## Spasticity management: challenge and experience

Manjula Ricciardi

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Spasticity is a condition in which certain muscles are continuously contracted. This contraction causes stiffness or tightness of the muscles and can interfere with normal movement, speech and gait. Spasticity is usually caused by damage to the portion of the brain or spinal cord that controls voluntary movement. Spasticity is a common symptom after stroke, arising in about 30% of patients, and usually occurs within the first few days or weeks. BoNT-A, one of the most potent biologic toxins known to man, acts by blocking neuromuscular transmission via inhibiting acetylcholine release.

BoNT-A treatment in post-stroke upper and lower limb spasticity is a safe and effective procedure to decrease muscle tone and increase the range of motion. More recent studies are demonstrating the importance for the rehabilitation therapist intervention to work alongside the physician to create more positive and significant effects on active function.

Daily stretching exercise is the key for the long-lasting benefits. BoNT-A injections, ultrasound-guided technique, performed by a physician in combination with physiotherapy and outcomes measurements are used to improve upper and lower limb function in stroke patients with spasticity in the clinical setting. We would like to share our challenge and experience in the management of spasticity in a multidisciplinary clinical setting.

## Application of generalisation principles in rehabilitation following brain injury

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**Background and Objectives:** Cognitive rehabilitation interventions are known to be both task- and context-specific, requiring implementation of generalisation strategies to promote independence across activities and environments for individuals with acquired brain injury (ABI). While many participant-identified

goals in residential rehabilitation settings target establishment of routines that are proposed to be maintained in the community, little is known about factors that promote routine sustainability. The objectives of this study are to explore daily routine maintenance of three participants with ABI from a transitional living service and to explore interventions that promote generalisation of daily routines from this setting to home.

**Method:** This case series will describe evidence-based generalisation strategies implemented to promote maintenance of routines for participants with severe ABI. Pre- and post-intervention outcome data will be presented, including goal attainment and both objective and subjective reports of daily routine maintenance post-discharge.

**Results:** Outcome data indicated that self-care tasks were maintained into the community, while sustainability of home maintainer roles was more variable, with family adopting some of these responsibilities following discharge. Contributing factors for successful maintenance of routines at follow-up included access to formal carer supports, and ongoing application of a structured weekly schedule supported by family.

**Conclusions:** Development of cognitive rehabilitation plans that promote generalisation of strategies across contexts is essential to maintain positive routines following ABI. Social supports are an important component to achieving sustainability of routines following discharge from residential rehabilitation and therefore, the role of family in community rehabilitation appears key to understand for rehabilitation clinicians.

## Stroke education as a part of rehabilitation process

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**Background:** Patients values and choices in stroke rehabilitation often differ from the prescribed rehabilitation strategy based on the objective clinical assessment.

**Method:** Two hundred and five stroke patients underwent a comprehensive neuropsychological evaluation. All of them demonstrated deficits in at least one cognitive domain (specifically in verbal memory, task switching and calculation). Nevertheless, 73% of the sample preferred physical to neuropsychological treatment in their rehabilitation plans since they lacked the understanding of meaning and purpose of cognitive interventions. The School of Stroke was established providing patients and their caregivers with relevant information, psychological support and short series of cognitive workshops. All materials were based on principles of active interaction, problem- and feedback-based approach and personalisation as the key factors of successful adult learning. The first part of the school was dedicated to patients' caregivers to explain the basic mechanisms of stroke and interactively discuss rehabilitation strategies. The second part was conducted directly for stroke patients. It was represented by regular in-hospital movie club meetings, brain recovery seminars, team-building training and collective cognitive games.

**Results:** Ninety-five percent of patients and their caregivers reported on a more informed rehabilitation approach, decreased anxiety, and a stronger feeling of encouragement leading to reduced complications and more focus on personal well-being.

**Conclusions:** The present report reviews some currently available materials on stroke, its psychological outcomes, patient's and clinician's knowledge needs and gaps, as well as possible ways to address it with use of applicable learning theories and already developed techniques for education in a clinical context.

# Using CIRCuiTS cognitive remediation therapy to improve the functioning of adults with schizophrenia

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**Background and Aims:** Current practice guidelines for schizophrenia recommend cognitive remediation therapy (CRT). Our team in Orange, NSW, has recently completed an implementation trial of the CIRCuiTS CRT programme. This web-based programme was developed at Kings College London. This poster aims to outline some of the key learnings from our implementation trial within the Western NSW Local Health District and show the steps others can follow to enable implementation of the programme.

**Method:** A mixed quantitative and qualitative design involved participants completing measures of cognitive functioning, functional independence and goal attainment at commencement, completion and at 3-month follow-up. Participants and therapists provided their views of their experience of the CIRCuiTS programme.

**Results:** More than 50 adults with schizophrenia commenced CIRCuiTS during this trial, working with 1 of 7 trained and credentialed therapists. Participants who completed the programme made significant functional gains and made excellent progress towards their goals. Therapists identified and discussed their key learnings and ways CIRCuiTS contributed to their practice in mental health rehabilitation.

**Conclusions:** Overall, the CIRCuiTS CRT programme was feasible, acceptable and has contributed to very promising outcomes in both the inpatient and community mental health contexts, in Orange, NSW. Steps to enable implementation of the CIRCuiTS programme, including therapist credentialing, are outlined.

# The impact of sleep and fatigue on social cognition in multiple sclerosis

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**Background and Objectives:** Multiple sclerosis (MS) is a unique heterogeneous condition characterised by neural inflammation, axon demyelination and cortical atrophy which often results in difficulties with cognition (deficits in processing speed, complex attention, executive function and memory), and social cognition (emotion recognition and theory of mind). Recent meta-analyses demonstrate that social cognition can be impaired in people living with MS; however, factors underlying this impairment are currently being investigated. This study aimed to examine the relationship that social cognition has with sleep quality, daytime sleepiness and fatigue.

**Method:** A total of 51 participants with MS completed The Awareness of Social Inference Test – Short (TASIT-S), assessing emotion recognition and sarcasm detection. Participants also completed the Modified Fatigue Impact Scale, Pittsburgh Sleep Quality Index and the Epworth Sleepiness Scale.

**Results:** MS participants were impaired on TASIT-S. There were variable moderate positive relationships detected between TASIT-S, various domains of sleep quality, and fatigue. No relationships were detected in control participants.

**Conclusions:** This study indicates that total sleep quality, and to a lesser extent, fatigue, is a possible contributor of deficits in social cognition in people living with MS.



# Attention and communication following TBI: making the connection through a meta-narrative systematic review

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**Background and Aims:** Communication difficulties are one of the hallmark characteristics of adults following traumatic brain injury (TBI). A difficulty that incorporates multiple aspects of cognition and language. This review explores the relationship of attention and communication following TBI and aims to connect the two through telling the story of how attention and communication have evolved over time within the scope of TBI. Review of theories and specific constructs of these two skills are explored.

**Method:** A meta-narrative systematic literature review was completed.

**Results:** Sixty-three articles were included in the review. The disciplines that populated the review articles included, but not limited to, 36.5% SLP, 23.8% psychology and 7.9% collaboration of neuropsychology and SLP. Of the papers that were reviewed 10.8% explored and supported theories of attention related to executive functioning effecting communication. Specific levels of attention were mapped onto specific communication skills with the corresponding year and authors to create a timeline and narrative of these concepts.

**Conclusions:** Communication involves all aspects of attention. These simple ideas are difficult to separate, and seen within this review there is redundancy, repetition and conflicting thoughts about what specific communication skills are affected by specific attentional abilities. In the large majority of literature, the concept of 'general attention' is used to describe how attention impacts communication. Equally the concepts of 'social communication' 'discourse' or 'language' are used to link with attention. This review will begin to answer the question of how does attention interact or facilitate effective communication following TBI.

## Hypoxic brain injury post-intensive rehabilitation: are clients and families ready for discharge?

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**Background and Aims:** A gap in service delivery was identified in transitioning and discharge planning clients following inpatient rehabilitation for hypoxic brain injury (HBI) in New Zealand. Anecdotally, inequalities have been reported in community-based services, to the detriment of clients' long-term outcomes. Further data are required to improve seamless service delivery.

**Method:** Acquired brain injury (ABI) rehabilitation therapists completed structured phone interviews gathering qualitative feedback from client/family members to review 'how they are coping after leaving ABI.' This information was analysed with the aim of improving services for future clients with HBI.

**Results:** Five family/clients provided experiential feedback. 80% discharged home and 20% discharged to a residential facility; 40% felt prepared; 40% had adequate supports set-up prior to discharge; and 20% of people found life easier, 40% as expected, and 40% harder than expected after discharge from ABI Rehabilitation; 60% of families found alternate support services. Themes that emerged: positive family support, social changes in the family system and social participation.

**Conclusions:** Families reported that overall therapy supports following discharge were inadequate or non-existent and felt under prepared for family members' return home. Education and information provided while at ABI Rehabilitation was excellent, they still felt overwhelmed and underprepared when discharge

occurred. The results found that seamless service delivery was poor and varied depending on location, funding source and service availability. An unexpected finding was the need for therapists to provide additional support and arrange referrals to meet identified gaps. To address these issues, ABI Rehabilitation has initiated discharge planning from admission.

## A series of single-case experiments evaluating a novel massage therapy for chronic lower back pain

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**Background and Objectives:** Gravity relief mobilisation (GRM) is a novel manual therapy treatment that facilitates non-volitional movement. In the massage practice of the researcher, GRM appeared to have short-term benefit for musculoskeletal pain after transient increases of pain. This study evaluated if GRM is an effective component of a massage therapy intervention for chronic low back pain (CLBP).

**Method:** Five individuals with CLBP were recruited into Single-Case Experiments (SCEs). Participants were randomised to a baseline (control) phase of 3–7 weeks then crossed into a 13- to 14-week intervention phase with 10–13 treatments. Participants completed Ecological Momentary Assessments (EMA) identifying low back pain (LBP) locations, pain intensity of LBP locations (numerical rating scale), and pain interference using an online tool.

**Results:** Four participants completed all phases. One participant withdrew during the intervention phase due to transient pain increases. EMA compliance rates were high, and sufficient data were collected for analysis. Participant 1 did not improve. Participants 2 and 5 had reduced LBP intensity and pain interference, with large effect sizes (phi values of  $>1$ ). Participant 4 experienced small-to-moderate reduction in LBP intensity and pain interference (phi values of 0.24 (0.16–0.58),  $p = 0.2$ ; and 0.7 (0.36–0.93),  $p < 0.001$ ).

**Conclusions:** GRM shows potential as an effective component of a massage therapy intervention for CLBP, with favourable effect on mean pain intensity of LBP locations, and pain interference, but may not be tolerated by all individuals. SCE design with data capture via online tools is a practical approach for evaluation of complex therapeutic interventions.

## Interdisciplinary goal planning in early rehabilitation: exploring three different techniques

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**Background and Objectives:** Use of goal-setting and goal planning processes with clients in brain injury rehabilitation is considered best practice and is recommended in Australian national rehabilitation standards. Numerous models exist; however, barriers to goal planning following acquired brain injury (ABI) include clinician factors (e.g., knowledge and confidence) and client factors (e.g., insight, motivation, awareness, cognition and communication skills). Rehabilitation clinicians face daily decisions regarding how to best engage clients in goal planning, including in early rehabilitation where client awareness and engagement can vary.

**Method:** This study occurred within a service delivery quality enhancement framework within the Acquired Brain Injury Transitional Rehabilitation Service (ABI-TRS). The ABI-TRS provides interdisciplinary

rehabilitation within an ICF framework for adults with ABI transitioning home from hospital. Traditional goal-planning processes were identified as not effectively meeting the needs of all clients and clinicians. Three different goal-planning processes were established and trialled within ABI TRS: values-based, lifestyle mapping and traditional goal-setting. Clinician reflections on the different models, client characteristics and clinical reasoning were captured via focus group discussions.

**Results:** Three case studies will be presented that highlight the goal-planning models. Qualitative information from the focus groups will also be presented, including clinician experiences with client characteristics and goal planning in practice.

**Conclusions:** A variety of tools have enabled goal planning within ABI TRS with a wide range of clients; clinicians' confidence in choosing tools to facilitate client engagement in goal planning has increased across the service.

## Veterans rehabilitation strategy

Stephanie Slater

Veterans' Affairs, Wellington, New Zealand

**Background and Objectives:** Veterans' Affairs funds support for veterans of the New Zealand Defence Force with qualifying operational service. In 2014, the new Veterans' Support Act made it possible for Veterans' Affairs to focus on offering not just financial compensation but also rehabilitation. In response to this new act, Veterans' Affairs have developed a rehabilitation strategy. The objective was to meet the unique needs of those who have served.

**Method:** We developed our programme by listening to veterans, working together with other agencies and looking at international evidence.

**Results:** A rehabilitation strategy that is veteran-centric, integrated, collaborative and trusted which will deliver practical support and assistance to the men and women who need it so that they can be well and independent and achieve the best they can for themselves, their Whānau, and their communities.

**Conclusion:** This presentation will provide an overview of Veterans' Affairs, the Veteran Rehabilitation Strategy and a summary of possible impacts of having been on operational service and the transition into civilian life. Case studies will provide an insight into possible joint working and additional resources Veterans' Affairs can provide to honour those who have served.

## Adjusting to changes in sense of self after traumatic brain injury

Signe Wiingard, Siobhan Palmer, Nic Ward and Kristin Gozdzikowska

Laura Fergusson Trust, Christchurch, New Zealand

**Background and Objectives:** Many individuals with traumatic brain injury (TBI) present with emotional distress relating to perceived changes in role and identity post injury. Myles suggest the 'Self-as-Context' process in Acceptance and Commitment Therapy (ACT) provide a safe place towards acceptance of functioning and self-concept post-injury. This may facilitate adjustment and development of emotional flexibility, a hallmark of the ACT framework.

**Method:** A 'Self-as-Context' intervention was implemented in adults following TBI ( $n = 4$ ) who presented with distress related to dilemmas around self-identity. Psychological flexibility was evaluated pre- and post-intervention with the Acceptance and Action Questionnaire – II (AAQ-II) and AAQ – Acquired Brain Injury

(AAQ-ABI). The AAQ-II assesses flexibility relating to the acceptance and avoidance of thoughts and feelings. The AAQ-ABI expands on this as a validated measure in injury-related distress. In addition, the individuals ( $n = 4$ ) participated in a focus group to reflect on their perception of ACT interventions.

**Results:** The development of acceptance and self-concept may aid in building mental flexibility following TBI. The use of 'Self-as-Context' interventions may enable individuals with TBI to detach from concrete issues around loss of identity (e.g., the conceptualised self) and develop more flexible, personally-meaningful frameworks of post-injury identity. Quantitative and qualitative outcomes will be discussed.

**Conclusions:** Literature around application of ACT approaches in TBI populations is growing. These pilot results indicate potential for use of the 'Self-as-Context' process for emotional adjustment and self-acceptance after TBI.

## Dysphagia following moderate-to-severe traumatic brain injury

Katherine Williams and Kristin Gozdzikowska

Laura Fergusson Trust, Christchurch, New Zealand

**Background and Objectives:** Dysphagia as a result of traumatic brain injury (TBI) is under-researched as compared to other neurologic impairments, such as stroke. This is concerning given the significant negative impact limitations in eating and drinking have on quality of life. Thus, this study aims to explore the relationship between severity and characteristics of TBI against reflexive cough and instrumental evaluation of oropharyngeal dysphagia.

**Method:** A retrospective review was conducted of individuals ( $n = 10$ ) admitted into intensive residential rehabilitation following moderate-to-severe TBI across a 4-year timeframe. Individuals must have completed reflexive cough testing and a videofluoroscopic swallowing study (VFSS). Measures include Glasgow Coma Scale (GCS), instrumental results, and diet at admission/discharge.

**Results:** Participants were aged 35.8 years on average ( $SD = 14.7$ ); GCS on admission was 5.5 ( $SD = 3.9$ ). Injury type included diffuse axonal injury (30%), subdural haemorrhage (40%), and other (30%). 90% of patients were nil by mouth with alternate nutrition on admission; 90% failed initial reflexive cough testing. Only 60% demonstrated aspiration on VFSS. All participants were discharged on soft or normal texture diet following an average of 63.4 days of rehabilitation ( $SD = 42.6$ ).

**Conclusions:** Research on dysphagia in TBI is complicated by the multifaceted nature of this sensorimotor skill, reliant on functioning central and peripheral systems. Existing measures validated in stroke, such as reflexive cough testing, may have poor sensitivity in this population. Ongoing research is indicated to develop appropriate dysphagia screening, assessment and intervention standards for this heterogeneous population.

# Establishing a framework to improve the management of client and families' perception and expectation of recovery after an acquired brain injury within a community-based residential rehabilitation setting

Adelene Yap

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**Background and Objectives:** Understanding the nature of acquired brain injury (ABI), potential recovery and sequelae, and recognition of grief, inter-relationship with adjustment and loss are some factors that impact client and family expectations in any rehabilitation programme. The challenge is to manage perceived unmet needs and support recovery and acceptance.

**Method:** A 2017 report on interviews conducted on 13 families revealed discrepancies between their expectations of client's recovery and the rehabilitation programme. A literature review was conducted to analyse previous research on managing expectations in similar settings. A revised framework was developed addressing the themes identified.

**Results:** The framework resulted in changes from the onset of pre-admission.

1. A pre-admission diagnostic report was created to communicate to families/clients a predicted length of stay, severity of injury and disability using objective tools.
2. Introduced pre-admission meeting to discuss programme expectations.
3. Included 'client stated goals' during goal-setting and created a 'goal bank' of specific, measurable, achievable, realistic, timely (SMART) goals.
4. Creating a Welcome Booklet and provision of written resources.
5. Evidence-based outcome results used to inform clinical practice and shared with families to communicate rehabilitation changes.

**Conclusion:** This framework has the potential to promote clearer understanding of recovery through rehabilitation, avoiding mismatched expectations.

To determine the effects of the framework, a satisfaction survey is recommended on discharge.

## TBI at ABI: trends over the past 3 years

Tony Young and Nina Andreas

ABI Rehabilitation, Auckland, New Zealand

**Background and Objectives:** ABI Rehabilitation has held the Accident Compensation Corporation (ACC) contract for moderate-to-severe traumatic brain injury (for clients aged 16 years and over) inpatient rehabilitation for the North Island and Upper South Island. Referrals originate from 16 of the 20 District Health Boards (DHBs) in New Zealand, representing about 85% of the population. This provides an opportunity to analyse the data and determine what learnings can be made from this.

**Method:** Retrospective data analysis ( $n = 737$ ) was conducted for all discharges under the ACC Traumatic Brain Injury Residential Rehabilitation contract over a period of 3 years. Data were analysed to review and compare length of stay (LOS), gender, mechanism of injury, age, ethnicity and discharge destination.

**Results:**

- 27% are female (40% falls, 38% motor vehicle accident (MVA), 9% assaults) and 73% are male (36% MVA, 30% falls, 20% assaults).
- 44% are 34 and under.

- Māori make up 23%.
- Of the 15–24 age group, 54% had an MVA, whereas of the 75+ age group, 79% had a fall.
- The average LOS at ABI Rehabilitation was 45 days; however, women tend to stay longer (52 versus 42 days).
- Age group representing the highest average LOS was the 75+ (74 days) for males and 25–34 (65 days) for women.
- Sports injuries show the shortest average LOS (26 days), whereas non-traumatic injuries have the longest (137 days).

**Conclusions:** The results indicate that there are patterns and some consistency to the data we are seeing over the years. Using this, information will assist with service development, education and targeted prevention campaigns.

## Visual care plans to enhance communication and efficiency

Ben Wassell, Angelo Angeles, Tony Young and Janne Moore

ABI Rehabilitation, Auckland, New Zealand

**Background and Objectives:** Clients within ABI Rehabilitation present with a variety of support needs. The current method for sharing this information among staff has been through individualised, written care plans (WCP). WCP comprise of multiple pages of information which staff are required to review several times a day to ensure safe client management. ABI Rehabilitation's objective was to develop a more efficient method of sharing this important client information.

**Method:** A working group explored the possibility of transforming the written information into a visual care plan (VCP). The aim was to increase ease of use, reduce time to review and maintain patient safety. This was trialled in a clinical setting over a 6-week period.

To determine effectiveness, staff were timed locating five pieces of specific client information from the WCP followed by five pieces of similar information on the VCP. In addition, subjective feedback was collected.

**Results:** Ten staff members were included in the time trial. The average length of time, when using the original WCP, was 339 seconds compared to 111seconds for the VCP – a saving of nearly 4 min per staff to find out five pieces of care information. Although consensus among staff was increased ease of use, efficiency and improved confidence in client management, there were some issues reported.

**Conclusions:** The use of a VCP has the potential to share information safely and more efficiently among staff. The VCP was popular among staff and saves time, allowing more time to provide services for clients.

## Enhancing early engagement for transitions to community

Tony Young<sup>1</sup>, Nina Andreas<sup>1</sup> and Christine Howard-Brown<sup>2</sup>

<sup>1</sup>ABI Rehabilitation, Auckland, New Zealand and <sup>2</sup>Accident Compensation Corporation

**Background and Objectives:** Traumatic brain injury providers, clients and funders participating in a collaborative indicated there are delays in receiving community rehabilitation following discharge from residential rehabilitation. This was contributing to a lack of continuity of rehabilitation for clients. A pilot was commenced in May 2017 to improve continuity of rehabilitation and client experience.

**Method:** A change to enable a residential rehabilitation provider to make direct referrals for community-based rehabilitation was made. Baseline and prospective data were collected to measure service timeliness and cost.

**Results:** Baseline data (August 2014–January 2016) showed a median of 14 days between discharge from ABI Rehabilitation (Auckland) and commencement of community-based rehabilitation. As at November 2017, this had reduced to 2 days. During the same period, there was a reduction in weekly compensation payment days (from 173 days to an average of 92 days) indicating an improvement in rehabilitation timeliness.

**Conclusions:** A new system for making direct referrals from residential rehabilitation to community rehabilitation services has significantly reduced delays for clients receiving community-based rehabilitation. These changes are in line with best practice for improving the client experience. There has been earlier engagement by community rehabilitation services resulting in enhanced handover processes and cost savings. It is likely that these changes may also translate to enhanced experiences for the client.

## Dual-tasking training improves cognitive functions in patients with mild traumatic brain injury

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**Background and Aims:** Cognitive and motor impairments following traumatic brain injury (TBI) are common for patients and can lead to decreased functional activity in everyday life. The purpose of this study was to determine potential values of cognitive-motor dual-task training as special tool for rehabilitation of TBI patients.

**Method:** TBI patients ( $25.1 \pm 6.2$ ) with mild trauma and 20 healthy age-matched volunteers were investigated. All participants of this study carried out cognitive and postural tasks separately and concurrently (dual task). Complex study (EEG, stabilography, clinical scales – FIM, MPAI, MMSE, Berg scale) was used for estimation of their functional activity.

**Results:** In healthy persons, increase of slow spectral bands (delta-theta) at the left hemisphere was observed, while the cognitive tasks were performed. The increase of EEG coherence for fast spectral bands (alpha, beta) was shown during postural tasks performance. In TBI patients, the poor performance predominantly of cognitive tasks was accompanied by decreased EEG coherence at the left hemisphere for slow spectral bands. EEG hypersynchronisation for fast spectral bands was observed when postural tasks were performed. Stabilographic data demonstrated an increase of velocity of centre of pressure fluctuations at TBI patients in comparison healthy subjects. The improvement of cognitive tasks performance was observed while dual-task training was included at the rehabilitation programme of TBI patients. These changes accompanied by increase of EEG coherence predominantly for slow spectral bands at the left hemisphere.

**Conclusions:** This study provides support for possible benefit of dual-tasks training in rehabilitation standards of patients with mild trauma.

# Sex differences in emotional self-awareness and emotional clarity

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**Background and Objectives:** Sex differences following traumatic brain injury (TBI) have been reported for both emotion recognition and empathy. Alexithymia is another aspect of social cognition commonly impacted by brain injury, affecting up to 60%. It is a condition characterised by difficulty experiencing, identifying, describing and differentiating one's own feelings. This study aimed to examine differences in alexithymia for men and women with and without TBI.

**Methods:** Participants were matched by age and sex and included 60 adults with and without TBI. Participants completed the Toronto Alexithymia Scale-20 (TAS-20) as part of a larger study.

**Results:** Participants with TBI had significantly higher scores on the TAS-20 than healthy controls (HCs), indicating more difficulty with alexithymia,  $p < .001$ . Both men and women with TBI were more alexithymic than their HC gender peers,  $p < .001$ . Within the HC group, females were less alexithymic as evidenced by significantly lower scores than males ( $p = .007$ ). Scores for men and women with TBI did not differ,  $p = .698$ .

**Conclusion:** Both men and women with TBI showed impaired functioning in their emotional self-awareness and clarity compared to male and female HCs. However, the sex-advantage found for women in the HC group disappeared when comparing sex differences in alexithymia after TBI. Given cultural beliefs and expectations that women have greater emotional proficiency than males, the reduction in their emotional awareness and clarity may more greatly impact their psychosocial outcomes and should be an important focus in intervention.