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Oral abstracts

In presentation order

Thursday 22 November 2018

1.30 – 2.30pm

Venue: Plenary: New Zealand 3 + 4

Return to work following moderate-to-severe traumatic brain injury

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Background and aim(s):

Returning to work following a moderate-severe traumatic brain injury (TBI) is frequently a definitive goal in community rehabilitation. Research has shown, however, that returning to pre-injury employment can be a challenge, with up to 80% of individuals not working at two years after a moderate-to-severe TBI (Sandhaug et al., 2015). This project evaluated the employment status and work limitations across the first 12-months following TBI.

Method:

A retrospective review was conducted, investigating return-to-work frequency in the first year of recovery following moderate-severe TBI. Demographic and injury characteristics will be discussed.

Result(s):

Of individuals with moderate-to-severe TBI (n = 132), the majority were employed full-time prior to their injury (62.9%; n = 83), while 1.5% worked part-time, 9.8% were retired, 6.8% were students and 18.9% were classified as unemployed or non-earners. At three months, 5.8% of the previously employed individuals achieved full-time employment, 1.45% were working part-time, and 5.8% were underdoing a graded return to work programme. By 12 months, this improved to 23.2% full-time employees, 5.8% part-time and 7.25% completing a graded return to work programme, respectively. The remainder of individuals (n = 44) continued in community rehabilitation or exited the workforce.

Conclusion(s):

Results indicate less than 25% of individuals returned to full-time work one year following moderate-to-severe TBI. This is paramount as results indicate the majority of individuals were working full-time prior to their injury (62.9%), consistent with international research (Foy, 2014). This highlights the difficulty resuming, and importantly, maintaining, work after moderate-to-severe TBI (Van Velen et al., 2009), which likely has marked impacts on quality of life, societal roles, contribution to society and one's sense of purpose. Critically, further research is needed to support this working-age population.

Use of online interventions to improve sleep quality after traumatic brain injury: A pilot study

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Background and aim(s):

Poor sleep quality is common experience for people in rehabilitation, yet access to treatment is limited. This study aimed to explore the feasibility and potential efficacy of online interventions to improve sleep quality following traumatic brain injury.

Method:

Twenty-four participants recruited through concussion services in Auckland and Hamilton were randomised to receive either a cognitive behaviour therapy (CBT, N=12) or an education based intervention (N=12) online. To be included participants needed to have experienced a mild or moderate TBI within the previous 3 and 36 months and report poor

sleep quality (score of ≥ 5 on the Pittsburgh Sleep Quality Index). For both interventions, a new 20 minute module was made accessible via an online link each week, for six-weeks. Outcome assessments conducted pre and post-intervention included the Pittsburgh Sleep Quality Index, actigraphy the CNS Vital Signs online neuropsychological test, the Rivermead Post-concussion Symptoms Questionnaire and Quality of Life after Brain Injury measure.

Result(s):

There were no differences in sociodemographic characteristics between the two groups $p > 0.05$. Participants used the interventions on average twice weekly for an average duration of 10.9 minutes. In comparison to controls, CBT group participants reported significant improvement in overall sleep quality post-intervention ($F = 5.47$, $p = 0.04$), with an effect size of 1.17. There were no significant group differences on objective sleep quality domains, neuropsychological functioning, post-concussion symptoms or quality of life.

Conclusion(s):

Online programmes designed to improve sleep are feasible for use in rehabilitation, with only two participants with visual disturbance experiencing difficulty in using the online programmes. Improvements were observed in both groups but greater improvements in subjective sleep quality identified in this pilot study suggest full scale trials are warranted to determine if online interventions may provide a cost-effective, efficacious and accessible treatment for people within the rehabilitation context.

Wrestling with contradiction between knowledge and experience after mild traumatic brain injury: A mixed methods study

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Background and aim(s):

There is some support for educational interventions after mild traumatic brain injury (MTBI). However the optimal timing and content of these as well as who may benefit from more intensive psychological treatment, still remain unclear. The aim of the present study was to explore the intersection between injury recovery experiences and injury knowledge, in people who had recovered or not recovered from an MTBI, using both quantitative and qualitative methods. We hoped that more in-depth analysis of participant experiences might extend quantitative evidence regarding 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 recovered with those who had not recovered after an 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 detail. We followed threads across the datasets to integrate findings from component methods.

Result(s):

The quantitative analyses revealed clear differences between the two groups in terms of injury recovery understandings and expectations. The qualitative analyses suggested that achieving congruence across knowledge sources was important. By conducting more in depth analysis, tracing threads back and forth between the component datasets, we identified a super-ordinate meta-theme that captured both participants' experiences of wrestling with contradictions between knowledge sources, and the impacts of contradictory knowledge in terms of heightened anxiety, confusion and feelings of invalidation.

Conclusion(s):

The effectiveness of psychoeducation and reassurance after MTBI may be optimised when educational content is tailored to the individual and clinicians 'listen in' not only for the subjective interpretations patients make of information from both formal and informal, internal and external knowledge sources, but also for potential contradiction dilemmas.

Sports Concussion Centre of Excellence: An ACC-funded pilot to provide an integrated sports concussion service

Dr Sarah Bradbury¹, Dr Catherine Capio¹

¹ACC, Wellington, New Zealand

Background and aim(s):

NZ's Accident Compensation Corporation's National Guidelines for Sports Concussion require sports related concussions to be assessed and cleared by a medical doctor. Multi-disciplinary clinics appear to be the best placed to diagnose, treat, and rehabilitate sports-related concussion. However, ACC does not currently have a straight-forward process for funding multi-disciplinary services. For example, vestibular physiotherapy and exercise testing are usually only covered by ACC within concussion services, which are designed for more severe injuries. Starting April 2017, ACC funds a pilot service that provides a free, walk-in service for those with a sport-related concussion.

Method:

In late 2017 an independent process and short-term outcomes evaluation, and a rudimentary cost-benefit analysis of the service were completed. Face-to-face interviews were conducted with the provider's clinical and non-clinical staff, and ACC staff involved in the pilot. Phone interviews were held with a random sample of patients who received treatment through the pilot. The sample accounted for age (under or over 19 years old) and concussion severity (simple or complex). A number of clinical outcome measures were also analysed.

Result(s):

The pilot was implemented all but seamlessly, with minor obstacles related to ACC's processes. Key results across the evaluation showed the pilot: was an accessible treatment facility that provided appropriate early intervention, used evidence-based clinical protocols that are considered international best practice, reduced concussion symptom severity for patients across a range of ages and injury severity, delivered a treatment programme that resulted in most patients with simple concussion requiring only one consultation, received very high satisfaction scores from the vast majority of patients, and provided cost-effective services, relative to existing services (note that only a rudimentary analysis could be employed).

Conclusion(s):

The evaluation found the pilot to be an efficient treatment service that could be implemented in multi-disciplinary clinics across New Zealand's larger centres.

Venue: Marlborough Rooms 1 & 2

Walking improvements after repeated abobotulinumtoxinA injections and correlation with time since stroke or TBI in adults with lower limb spastic hemiparesis

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Background and aim(s):

Our previous trial (NCT01249404) demonstrated that a single abobotulinumtoxinA (aboBoNT-A; Dysport®) injection improves muscle tone in adults with lower limb spastic paresis (LLS); this descriptive sub-analysis of the open-label (OL) extension (NCT01251367) assesses walking speed (WS), step length (SL) and cadence in these patients after repeated administrations.

Method:

A Phase 3, double-blind (DB), randomised study (single injection: aboBoNT-A 1000U, 1500U, or placebo), followed by an OL extension (≤ 4 cycles: aboBoNT-A 1000U or 1500U). Participants were ambulatory adults with hemiparetic LLS causing gait dysfunction, ≥ 6 months post-stroke or traumatic brain injury. OL extension assessed changes relative to DB baseline (BL) for mean WS, SL and cadence, across four categories (maximal and comfortable; barefoot and with shoes). Data are last treatment cycle with available data (Cycle 3) at Week (W) 12. Post hoc Pearson correlation coefficients by treatment group (aboBoNT-A doses combined) estimated relationships between time since event, and WS improvements.

Result(s):

At Cycle 3 W12, improvements in WS, SL and cadence were observed in all four categories. Mean individual percentage improvements across categories were: WS, +19.7–23.6%; SL, +9.5–13.8%; cadence, +7.2–9.7%. Greatest improvements were for assessments comfortable and barefoot (WS and SL), or maximal and barefoot (cadence). Lesser improvements were observed with shoes versus barefoot (all categories). Correlations between changes in comfortable barefoot WS (improvement from BL) and time since event (measured at BL) were: $r = -0.124$ ($p = 0.037$) and $r = -0.151$ ($p = 0.016$) at Cycle 2, W4 and W12, respectively. For Cycles 1 and 3, correlations had a similar slope (negative r values) but were not statistically significant.

Conclusion(s):

Improvements in WS, SL and cadence were achieved over time in hemiparetic adults with repeated administration of aboBoNT-A. Inverse correlations between time since event and level of WS improvement suggested more recent events were associated with greater improvements in WS.

Comprehensive examination on mobility functions for chronic stroke patients: A case series

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Background and aim(s):

Stroke is one of the leading causes of disabilities in the world, its prevalence in Indonesia has risen significantly over the years. Mobility was shown to comprise 80% of the chief disability in patients in acute and chronic phase. Mobility improvements could be assessed by using Timed Up and Go (TUG) Test, as had been proven previously in stroke patients' follow-up examination. Expanded Timed Up and Go (ETUG) utilizes video recording to analyze individual TUG components, provides information that allows physiatrists to direct focused rehabilitation program to aim for a better functional prognosis.

Method:

This case series aims to show functional mobility measures in three chronic hemiparetic ischemic stroke patients who could ambulate independently, and are compared to 5 healthy males without history of stroke. The patients were recruited from Medical Rehabilitation Department outpatient clinic, TUG tests were recorded using a camera, and was analyzed using a computer program by two examiners. Each subjects were measured for sit-to-stand, gait, turning, and stand-to-sit components in milliseconds.

Result(s):

Time taken to complete the TUG was significantly higher in stroke patients. Turning was seen to be associated with the paretic side. All patients complained of mild to moderate lower extremity pain, but none of this are related to the paretic side. Further analysis revealed that chronic stroke patients had a longer proportion of stand-to-sit time as compared to healthy controls.

Discussion:

ETUG has the ability to analyze specific weaknesses in the patients, be it positional change, gait, or oriented turning. Additionally, the results correlate to the disabilities as classified by WHO International Classification of Function (ICF), namely sitting, changing basic body position, standing, walking short distances, and shifting body's centre of gravity. Therefore, it could be concluded that chronic stroke patients generally are slower in positional change as compared to healthy controls.

Treatment frequency for long-term efficacy of abobotulinumtoxinA injections: A phase 3 study in patients with lower limb spasticity following stroke or traumatic brain injury

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Background and aim(s):

Long-term safety and efficacy of repeated abobotulinumtoxinA (aboBoNT-A; Dysport®) injections in patients with lower limb spasticity (LLS) after stroke or traumatic brain injury have been established, with improvements in walking speed and community ambulation observed during a 12-month open-label study, and no unexpected safety signals (Gracies et al. Neurology 2017). Here, we describe the frequency of repeated aboBoNT-A injections over the open-label study.

Method:

A phase 3, international, double-blind, single-treatment study (NCT01249404) of aboBoNT-A in the hemiparetic lower limb, followed by a 12-month open-label extension study (NCT01251367) with up to four additional treatment cycles, at least 12 weeks apart. Re-treatment was per investigator's clinical judgement based on muscle tone, spasticity measures and other findings. Patients not requiring re-treatment completed the study.

Result(s):

A total of 345 patients entered open-label Cycle 1 and were included in this analysis. In Cycle 1, 38/345 patients withdrew and 307 completed the cycle. After Cycle 1, 10 patients completed the study without subsequent aboBoNT-A injections. After Cycle 2, 22/297 patients withdrew, 275/297 patients completed the cycle and 51 completed the study. Of 224 patients entering treatment Cycle 3, 13 withdrew, 211 completed the cycle and 72 completed the study. Overall, 38.6% (n=133) of patients required three or fewer injections of aboBoNT-A over the course of the 12-month study, 17.7% required two or fewer, and 2.9% required one injection.

Conclusion(s):

The number of injections of aboBoNT-A required to treat muscle overactivity in patients with LLS varied between patients in this 12-month open-label phase 3 study, with almost 40% of patients requiring three or fewer injections based on

physician clinical assessment. Decreased injection frequency may reduce the burden associated with treatment for patients and their caregivers/families

The score of Berg Balance Scale Discriminate Household and community ambulation in patients with stroke: A study of the population admitted to post-acute care programs in Taiwan

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Objective:

To regain the ability of community ambulation is a meaningful goal for stroke patients, however, the study from Fulk et al found that the gait speed values commonly used to determine whether patients were community walkers may overestimate their walking ability and the 6-minute walk test (6MWT) seems to be a better predictor to discriminate the walking ability of household and community than gait speed in stroke patients. The purpose of this study was to investigate the predictive factors associated with community ambulation defined by the distance accomplished in 6MWT.

Methods:

This retrospective cohort study collected the data of patients who entered the Post-acute Care Cerebrovascular Diseases (PAC-CVD) programs. Patients were classified as household (< 205 meters in 6MWT) or community (≥ 205 meters in 6MWT) ambulators at discharge. The independent variables to predict community ambulation were Berg Balance scale (BBS), 5-Meter Walk Test (5MWT), Mini Mental State Examination (MMSE), Mini Nutrition Assessment (MNA) and the demographic characteristics at admission. Multivariate logistic regression was used to identify significant independent variables associated with community ambulation, and receiver-operating characteristic adopted to calculate the cutoff values of admission status.

Results:

There were 67 participants included in this study, and 19% (n=13) of them regained the ability of community ambulation at discharge. In the multivariate analysis, admission BBS was identified as the only significant predictor for community ambulation (P= .019) and the odds ratio (OR) was 1.07 (95% confidence interval [CI], 1.01 - 1.13). The optimal cut-off scores of admission BBS was 29 (sensitivity 62%, specificity 87%) and the area under the ROC curves for admission BBS scores in discriminating household and community ambulators at discharge was 0.77 (95% CI, 0.60 - 0.94).

Conclusions:

The admission scores of Berg Balance Scale could be used to predict the community walking ability at discharge.

Venue: Marlborough Room 3

A retrospective study of the changes of the pharyngeal Diameter in Dysphagic Patients with Stroke

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Background and aim(s):

Dysphagia is a critical condition which can be caused by weakness of pharyngeal constrictor muscles that increases the risk of aspiration, leading to serious pneumonia. This study aimed to create a new tool for evaluating if there is alleviation or deterioration in dysphagia, using the changes of the pharyngeal diameter at rest in chronologic sequence in dysphagic patients with stroke.

Method:

We used the term “pharyngeal diameter at rest” as an average value of the 2 lengths measured at the middle of the second and third cervical vertebral bodies using a lateral neck radiograph in 13 patients with dysphagia after ischemic or hemorrhagic stroke who had video fluoroscopic swallow studies (VFSSs). The patient group had the VFSSs in the acute and subacute stage (poststroke 16.5 ± 7.2 days) and the chronic stage (poststroke 89.8 ± 68.8 days). We analyzed the correlation between the changes of the pharyngeal diameter and the changes of the penetration aspiration scale (PAS) and dysphagia outcome and severity scale (DOSS) over time retrospectively, using a paired t-test as a statistic tool.

Result(s):

The linear correlation between the changes of the pharyngeal diameter and the PAS values was significant for the stroke group ($r = 0.558$, $p < 0.05$). The changes of the DOSS scores, however, did not have statistical significance with the ones of the pharyngeal diameter.

Conclusion(s):

This study showed that the more positive or negative the changes of the pharyngeal diameter were, the more improving or worsening the changes of the PAS values were at each variable. The pharyngeal diameter could be useful to evaluate whether alleviation or aggravation of dysphagia occurred following stroke. We need to examine more patients with dysphagia to see if strong correlations exist between this “new” index and the PAS & DOSS values.

Rehabilitation outcomes of patients with chronic kidney disease, haemodialysis and strokes

Dr Shrikant Pande¹

¹*Changi General Hospital, Singapore, Singapore*

Background and aim(s):

To study rehabilitation outcomes of strokes with chronic kidney disease and haemodialysis.

Method:

Retrospective data analysis with IRB approval from Rehabilitation medicine department, Changi General Hospital.

Result(s):

37 consecutive patients with chronic kidney disease stage 4 and above or haemodialysis along with stroke were analysed. Minimum follow up period of 1 year. Of the 37 subjects, 7 were on HD and rest with CKD stage 4 and above at the time of stroke. The mean eGFR on admission was $21.3(5-44)$ and haemoglobin $11.9(9,18)$, urea $12.1(3.8,26)$, albumin $29.9(15,39)$.

NIHSS score: significant decrease was observed from admission to post discharge, ($p < 0.001$; Wilcoxon signed rank test). [Median (range) score on admission 6 (2, 19), Median score on discharge 4 (1, 17)].

FIM motor score: significantly increased between admission to discharge ($p < 0.001$; Wilcoxon signed rank test) Median score on admission 31 (13, 87) Median (range) score on discharge 50.5 (13, 91).

FIM cognition score: increased significantly between admission and discharge ($p = 0.046$; Paired t-test) Mean score on admission 24.6 (5,35), Mean score on discharge 26.6 (5, 35).

Median number of recurrent admissions was 6 (range 1 to 50). Number of days in hospital after discharge: median of 48 (range 2 to 291).

Older age, longer hospital stay and lower eGFR were all significantly related to mortality ($p < 0.05$). Lower haemoglobin level was of borderline significance ($p = 0.051$).

Multivariable Cox regression analysis: age, length of hospital stay and haemoglobin level were found to have a significant independent relationship with mortality.

Conclusions:

Despite significant improvement in FIM scores, reduction in dependency level, the mortality in these patients remains high. Rehabilitation strategies need to be redirected towards renal complications and recurrent admissions rather than focusing only on initial rehabilitation.

Post-stroke seizure; do the locations, types and managements of stroke matter?

Dr Shrikant Pande¹

¹*Changi General Hospital, Singapore*

Background and aim(s):

To identify prevalence of post-stroke seizures and its association with stroke type, location, treatment modalities among the patients admitted to stroke rehabilitation facility from government restructured hospital in Singapore.

Method:

Retrospective analytic study of consecutive patients admitted to inpatient stroke rehabilitative (June 2008 to May 2017). Patients were labeled as post stroke seizure during initial admission, outpatient follow-ups or subsequent admissions, diagnosed clinically or together with EEG by neurologists or rehabilitation physician.

Inclusion: inpatients admission with stroke, follow up of 6 months and more.

Exclusion: patients with known epilepsy, central nervous system infection or tumour, previous neurosurgical procedure, and failed follow up for at least 6 months.

SingHealth Institutional Review Board approved the study.

Results:

Total of 722 patients (female 38%) with mean age of 64 were included for study. 48 (6.64%) patients found to have post stroke seizure during follow up of 6 to 108 months.

Seizure were significantly higher in patients with haemorrhagic stroke (42%, $p = 0.010$), partial anterior circulation syndrome (PACS) among ischemic strokes (27%, $p = 0.025$), patient underwent neurosurgical procedure post stroke ($p < 0.001$), patient with lower activated partial thromboplastin time (APTT) (mean 25.6, $p = 0.015$) and used levodopa (21%, $p < 0.001$).

Independent predictors for seizures are neurosurgical intervention (OR=6.2, 95%CI: 2.9-13.1, $p < 0.001$), APTT (per unit increase) (OR=0.86, 95%CI: 0.76-0.98, $p = 0.028$) and underlying ischemic heart disease (IHD) (OR=2.2, 95%CI: 1.08-4.60, $p = 0.029$).

Conclusion:

Post stroke seizure incidence from our study is 6.64%. Due to increased incidence of seizure, Stroke patients with underlying IHD, neurosurgical procedure, and low admission APTT need careful monitoring.

One-in-five older stroke survivors received no post-acute rehabilitation, yet reported high levels of depression and poor quality of life at 12-months: an exploratory analysis from the AVERT trial

Lilian Carvalho¹, Karen Borschmann^{1,2}, Rosy Walters^{1,2}, Janice Collier¹, Julie Bernhardt^{1,2}, on behalf of the AVERT collaboration team

¹Stroke Theme, Florey Institute of Neuroscience and Mental Health, University of Melbourne, Heidelberg, Australia, Melbourne, Australia, ²NHMRC Centre for Research Excellence in Stroke Rehabilitation and Brain Recovery, Melbourne, Australia, Melbourne, Australia

Background and aim(s):

Post-acute rehabilitation is recommended for all stroke survivors with ongoing symptoms, yet inequity in access to rehabilitation is an international issue. The AVERT trial provided an unique opportunity to explore between-country variability in rehabilitation service use for older people and their outcomes.

Describe post-acute rehabilitation pathways for people of retirement age (≥ 66 years) within 3-months post-stroke in diverse international regions, and explore 12-month outcomes of participants who received no rehabilitation.

Method:

Participants from 3 geographic areas: Australia/New Zealand (Aus/NZ), United Kingdom (UK) and Malaysia/Singapore (SE-Asia) were included. Data on post-acute discharge destination and community therapy within 3-months of stroke were analysed to define four rehabilitation pathways: inpatient rehabilitation only (IPR), community rehabilitation only (CR, in-home or outpatient), IPR followed by CR, or no rehabilitation. A descriptive analysis was completed to identify participants' distribution within pathways, and to summarise important clinical outcomes at 12-months: depression (Irritability Depression and Anxiety-IDA), disability (modified Rankin Scale-mRS), quality of life (Assessment of Quality of Life-AQoL).

Result(s):

1436 participants were included (age 77.5 (IQR 72.1-82.6), NIHSS 7 (IQR 4-12)). Participants were discharged to Home (n=578/40%), IPR (n=715/50%), supported accommodation (n=47/3%) or died in hospital (n=91/6%). 21% (n=305) of all participants received no rehabilitation (age 75.5 (IQR 70.8-80.9), NIHSS 4 (IQR 2-6)). The most common pathway in Aus/NZ was IPR followed by CR (n=316/36%). In UK, Home with CR (n=129/29%), or without CR (n=112/25%) were most common. In SE-Asia, participants most commonly received no rehabilitation (n=43/40%). At 12-months, 39% (n=119) of participants who received no rehabilitation reported high rates of depression, 29% (n=87) reported low QoL and 19% (n=58) had moderate to severe disability (mRS 3-5).

Conclusion:

Provision of post-stroke rehabilitation for people aged ≥ 66 years varied between regions. For participants who received no rehabilitation within the first 3-months, high rates of depression, low levels of QoL and ongoing disability were observed across all geographic regions.

Factors affecting the survival in post stroke patients

Dr Shrikant Pande¹

¹Changi General Hospital, Singapore, Singapore

Background:

To study of post-stroke survival and its association with stroke type, location, comorbidities among the patients admitted to stroke rehabilitation facility from government restructured hospital in Singapore.

Methods:

Retrospective analytic study of consecutive patients admitted to inpatient stroke rehabilitative (June 2008 to May 2017).

Inclusion: inpatients admission with stroke, follow up of 6 months and more.

Exclusion: incomplete records, lost follow ups.

SingHealth Institutional Review Board approved the study.

Results:

Total of 722 (Female: 38%) patients met the selection criteria, with average age of 64 years (19-97), of which ischemic strokes were 531(74%) and 191 (26%) were haemorrhagic strokes. With the median follow up period of 50 months (minimum 6 months, maximum 9 years), 173 (24%) patients died during this period.

Age, ischaemic heart disease (IHD), atrial fibrillation (AF) and renal dysfunction were found to be independent predictors of mortality: age [HR = 1.06 (1.05,1.08); p<0.001 (per one year increase in age)], abnormal kidney function [HR = 1.83 (1.30, 2.57); p=0.001], IHD [HR= 1.70 (1.21, 2.40); p=0.002], AF [HR= 1.48 (1.03, 2.14); p=0.033].

Conclusion:

Age, underlying IHD and AF adversely affect long term survival in post stroke patients. Poorer survival in post stroke patients with renal dysfunction including chronic kidney disease and dialysis could be as a result of complications associated with dialysis itself. Proactive anticoagulation in patients with AF and appropriate care of IHD and those with chronic kidney diseases may help to improve post stroke survival outcomes

Goal Achievement Scaling (GAS) method in general inpatient rehabilitation population: The association between individual goals' difficulty, importance, and degree of achievement

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Background and aim(s):

The Goal Achievement Scaling (GAS) method is a patient progress measure which involves setting personalised goals of various degrees of difficulty and importance. There is a lack of understanding of the relationship between difficulty, importance, and degree of achievement of individual goals in general inpatient rehabilitation population.

We hypothesized that there is an association between individual goals' degree of achievement, difficulty and importance. The aim is to investigate this association.

Method:

A prospective study conducted in a general rehabilitation unit in a tertiary referral metropolitan hospital, enrolling cognitively intact patients regardless of their diagnostic stream. Patients determined the nature of goals and their importance, and therapists determined the goals' difficulty. Associations were investigated using random effect ordinal logistic regression modelling (patients as random effects) and estimated with common Odds Ratio (cOR) of achieving higher value of outcome with corresponding 95% confidence intervals.

Result(s):

100 participants were recruited, median age 63 years (IQR 54-72), 53% male. Diagnostic streams: 16% amputees, 27% musculoskeletal, 20% neurological, 23% other/deconditioning, 14% spinal. 359 individual goals set: physical 205 (57.1%), functional 122 (33.98%), combined 23 (6.41%), other 2 (2.51%). Adjusting for type of goal and patient-level factors, the difficulty of goals increases with their importance (medium vs low: cOR=3.27 (95%CI:1.04-10.26; p=0.043), high vs low: cOR=3.34 (95%CI:1.12-9.95); p=0.031). Adjusting for difficulty, type of goal and patient-level factors, more important goals have higher common odds of being better achieved (medium vs low importance cOR=2.92, 95%CI: 0.97-8.81; p=0.06, high vs low importance cOR=3.21, 95%CI: 1.11-9.26; p=0.031). Adjusting for importance, type of goal and patient-level factors, more difficult goals have lower odds of being well achieved (very difficult vs not difficult cOR=0.04, 95%CI: 0.01-0.76; p=0.03).

Conclusion(s):

Patients' involvement in goal setting ensures articulation of goals' importance, which is associated with higher degree of goal achievement.

Friday 23 November 2018

1.00pm – 3.30pm

Marlborough Room 1 & 2

Designing an exercise-based rehabilitation program for patients with pulmonary hypertension - review of current evidence, and design of a study protocol

Dr Karen Chia^{1,2,3}, Dr Christine Shiner^{2,3}, Dr Peter Wong^{1,2}, A/Prof Eugene Kotlyar^{2,3}, A/Prof Craig McLachlan², A/Prof Steven Faux^{2,3}

¹Coffs Harbour Health Campus, Coffs Harbour, Australia, ²University of New South Wales, Sydney, Australia, ³St Vincent's Hospital Sydney, Darlinghurst, Australia

Background and aim(s):

Pulmonary arterial hypertension (PAH) is a condition characterised by elevated pulmonary arterial blood pressure, associated with dyspnoea, right heart failure and ultimately death. Exercise is now recommended for patients with PAH, but there are concerns regarding safety and uncertainty about the intensity and type of exercise that should be used. This study aimed to review current evidence for exercise training in PAH, and use these findings to design an evidence-based trial protocol.

Method:

We conducted a structured review of all relevant literature published between 1976-2016 related to “pulmonary hypertension”, “exercise training” and/or “rehabilitation”. Review findings were used to inform design of a randomised controlled trial protocol, currently being implemented at multiple sites to examine the effect of an outpatient rehabilitation programme on haemodynamics and cardiac right ventricular function in patients with PAH.

Result(s):

18 studies were identified, exploring a range of exercise interventions. Meta-analyses identified that exercise training can significantly improve six-minute walk distance by a comparable magnitude to current PAH pharmacotherapies. Exercise training was also associated with improved quality-of-life, mood, increased strength, reduced dyspnoea and fatigue. Intensive programs that incorporated aerobic exercise, strength training and respiratory muscle training resulted in the greatest gains. No serious adverse events were reported, suggesting that supervised exercise programs are safe for this population. Findings from a single study suggest that improved haemodynamics and right heart function may be mediating exercise-induced improvements, but further research is needed. On the basis of these findings, a multidisciplinary 12-week outpatient specialist PAH rehabilitation program was designed.

Conclusion(s):

There is mounting evidence that supervised exercise-based training can significantly improve endurance, peak oxygen consumption, haemodynamics and skeletal muscle function in PAH. The current trial will examine whether this can be successfully delivered via an accessible outpatient model, and how multidisciplinary rehabilitation input improves patient outcomes.

'Staying strong on the inside and outside' to keep walking and moving around: Perspectives from Aboriginal people with Machado Joseph Disease and their families from the Groote Eylandt Archipelago, Australia.

Ms Jennifer Carr¹, Ms Joyce Lalara², Ms Gayangwa Lalara², Ms Libby Massey², Mr Nick Kenny², Mrs Kate Pope², Professor Alan Clough³, Associate Professor Anne Lowell⁴, Associate Professor Ruth Barker¹

¹College of Healthcare Sciences, James Cook University, Cairns, Australia, ²Machado Joseph Disease Foundation, Alyangula, Australia, ³Community-based Health Promotion and Prevention Studies Group, College of Public Health, Medical and

Background and aim(s):

Machado Joseph Disease (MJD) (spinocerebellar ataxia 3) is a hereditary neurodegenerative disease causing progressive ataxia and loss of mobility. It is the most common spinocerebellar ataxia worldwide. Among Aboriginal families of Groote Eylandt and related communities across Australia's Top End, MJD is ~ 100 times more prevalent than anywhere else in the world. This study explored lived experiences of individuals and families with MJD to determine what is important and what works best to keep walking and moving around.

Method:

A collaborative qualitative exploratory study was undertaken, drawing from constructivist grounded theory methods for data collection and analysis. Semi-structured in-depth interviews were conducted with individuals with MJD (n=8) and their family members (n=4) from the Groote Eylandt Archipelago, where ~ 1500 Aboriginal people live. Interviews were led by local Aboriginal research partners in participants' preferred language(s).

Result(s):

Walking and moving around were important to families as it allowed them to do what mattered most to them in life. 'Staying strong on the inside and outside' (physically, mentally, emotionally, spiritually) was perceived to work best to keep walking and moving around as long as possible. 'Exercising your body', 'having something important to do', 'keeping yourself happy', 'searching for good medicine', 'families helping each other' and 'going country' contributed to staying strong inside and outside.

Conclusion(s):

In this first study exploring lived experiences of MJD in Australia, maintaining mobility as long as possible is paramount. Strategies perceived to work best address physical and psychological needs in an integrated manner. Mobility is important for very different reasons, for different people and at different times along the MJD disease continuum. Services designed to support families with MJD need flexibility to provide individualised, responsive and holistic care.

We asked our staff – ‘What is your experience of working in a cancer rehabilitation unit?’

Associate Professor Andrew Cole^{1,2}, Dr Najwa Reynolds¹, Professor Christopher Poulos^{1,2}, Dr Bruce Walmisley^{1,2}

¹*HammondCare, Greenwich Hospital, Greenwich 2065, Australia,* ²*University of New South Wales, Kensington 2052, Australia*

Background and aim(s):

At the same time as studying the lived individual narratives of cancer survivors in rehabilitation, we interviewed members of the multidisciplinary team, to investigate narratives of their experience of working with cancer survivors, which may be perceived as quite stressful by professionals working in other areas of rehabilitation.

Method:

We undertook in-depth individual interviews and focus group discussions with a purposive sample of 16 staff members of the Jacaranda Cancer Rehabilitation Unit at Greenwich Hospital. They included multiple representatives of medical, nursing and each of the allied health disciplines working in the multidisciplinary team. We elicited positive and negative subjective responses, considering the narrative of their work experiences, both with patients and other professionals in the team. Data from semi-structured interviews and focus groups were analysed using Interpretative Phenomenological Analysis (IPA).

Result(s):

Individual team members reported a very broad range of professional experience, ranging from multiple decades of work in rehabilitation, to other staff being recent graduates.

Staff reported significant work challenges, with many patients having complex multidimensional medical and physical problems, and related functional issues. The diagnosis of cancer itself placed significant stresses on patients and their families, requiring extensive social and psychological support from all team members.

Whilst staff reported these challenging experiences, they also reported great satisfaction in seeing individual patients come to acceptance of their cancer trajectory, holistic healing, enhanced personal independence and renewed hope for better quality of life after rehabilitation.

Conclusion:

Qualitative review of staff experience in a multidisciplinary cancer rehabilitation team provides a rich source of information of direct relevance to each individual in the team, as they work together with cancer survivors. It complements information obtained from cancer patients treated by that team within the same time frame.

Movin' and groovin' to the beat: The place of music therapy in an outpatient Parkinson's Disease group program

Ms Tanya Silveira¹, Dr Anuka Parapuram¹, Ms Anna Barlow¹, Ms Elise Helfensdorfer¹

¹*MetroRehab Private Hospital, Sydney, Australia*

Background and aim(s)

Literature has established the benefit of music therapy in Parkinson's Disease (PD), focused on movement, speech and wellbeing. Music therapy is a novel approach within the private hospital outpatient setting in Australia. Therefore, the purpose of this program was to examine the efficacy of music therapy in an outpatient PD group program.

Method:

2-6 outpatients attending the PD program were invited to attend the weekly 20-minute music therapy group. The interdisciplinary team (Music Therapist; Exercise Physiologist; Rehabilitation Physician; Allied Health Director) identified innovative methods to facilitate the synchronisation of movement to music whilst accounting for the variation in abilities. Using auditory cuing and musical support, participants engaged in practise of chest opening, weight shifting, single leg stance, heel strike, arm swing, marching and walking. Video examples of the sessions will be shown. Participants were also invited to offer verbal feedback about their engagement and progress in the program.

Results:

By breaking down the movement into smaller components and then coupling this with auditory cuing, participants were encouraged to work on the specificity of their movement. When utilising familiar songs for various exercises, participants were motivated and engaged, observed to smile, sing loudly and laugh with one another whilst simultaneously achieving accurate movement. Participants also demonstrated the ability to engage in dual tasks when they had previously expressed a lack of confidence in this area. The videos demonstrate the carryover of this movement to music practise into gait.

Conclusion(s):

It was feasible and of benefit to include an interdisciplinary music therapy group to support movement retraining as part of a PD outpatient program.

Investigating the effect of Functional Electrical Stimulation+iPad-based music therapy on arm recovery after stroke; protocol for a Randomised Control Trial

Ms Tanya Silveira¹, Dr Jeanette Tamplin¹, Dr Simone Dorsch²

¹*University Of Melbourne , Melbourne, Australia*, ²*Australian Catholic University , Sydney, Australia*

Background and aim(s):

Literature highlights the need for innovative ways to motivate stroke survivors to engage in task-specific and repetitive exercise during arm rehabilitation. Music therapy has a unique role in stroke rehabilitation through its ability to address multiple goals simultaneously. Previous research suggests that stroke survivors referred to music therapy for arm rehabilitation must have some level of functional arm activity in order to participate in instrument playing. Therefore, it is important to find a way in which to include stroke survivors with a very weak arm in therapeutic music making. This randomised control trial (RCT) will examine the effect of Functional Electrical Stimulation (FES) with iPad-based music therapy on arm recovery of stroke survivors. This RCT seeks to identify changes in functional outcomes of the paretic upper limb as well as wellbeing outcomes.

Method:

This multi-site RCT will take place at five participating hospitals in Sydney, Australia. Using block randomisation, 40 participants will be allocated to usual care only or usual care plus FES+iPad-based music therapy for four weeks. Upper limb functional measures (Motor Assessment Scale, Manual Muscle Tests, the Nine-hole Peg Test, pinch and grip dynamometry) and self-reported wellbeing questionnaires (Depression, Anxiety and Stress Scale, and Stroke Self-efficacy Questionnaire) will be administered at three time points (pre and post intervention and at three months follow up) by a blinded assessor. Participants in the music therapy condition will also be interviewed about their experience of the intervention on completion (at 4 weeks).

Result(s):

Ethics approval has been granted and data collection will commence shortly.

Conclusion(s):

This combined approach has the potential to engage stroke survivors with a very weak arm in more self-directed upper limb rehabilitation and provide opportunities for non-verbal self-expression.

Data and outcomes framework for moderate-severe TBI developed by a Collaborative

Ms Christine Howard Brown¹, Dr Max Cavit, Ms Claudia Wyss, Mr Brendon Tod, Ms Terina Ruru

¹ACC, Wellington, New Zealand

Background and aim(s):

A service provider-initiated and ACC-sponsored Collaborative was established in the Auckland Region aimed to improve the client journey for people with moderate-severe traumatic brain injury (TBI). The Collaborative includes cultural representatives, consumers, funders, service providers and non-government organisations who meet at least quarterly. A work stream of the Collaborative was established to develop an outcomes framework that could be used to improve the rehabilitation journey for people with moderate-severe TBI.

Method:

The Collaborative worked in sub-groups to identify a framework and measures. This included literature searches, development of a white paper and receiving expert advice. Methods to implement were dependent on the measures selected. For example, partnering with USPEQ (a branch of CARF International, a global accreditor) to develop a patient reported experience measure, completing privacy threshold assessments, developing teaching and learning resources, and testing on a small scale before wider implementation.

Result(s):

The Institute of Medicine Six Domains of Health Quality (IOM6) was selected, and measures were identified for each domain. The Collaborative has been progressively testing the utility of measures and how they can be used to inform improvements such as shortening times transitioning between services. Learning is also enabled by gathering client reported data about their experience and outcomes of rehabilitation.

Conclusions:

The Collaborative approach appears to be an effective means to identifying meaningful outcome measures. The work completed thus far, include identifying, selecting and testing measures that can be used to inform service improvements and future commissioning models.

Venue: Marlborough Room 3

Changes in the health-related quality of life for children with cerebral palsy of different motor severities

Professor, PhD, MD Chia-Ling Chen^{1,2}, MD Chung-yao Chen^{3,4}, Professor, PhD Hsieh-ching Chen⁵, PhD Lin-Ju Kang^{1,2}, MD Chia-ying Chung^{1,4}, MD Wen-Chung Tsai¹

¹Physical Medicine and Rehabilitation, Chang Gung Memorial Hospital, Taoyuan, Taiwan, ²Graduate Institute of Early Intervention, Chang Gung University, Taoyuan, Taiwan, ³Physical Medicine and Rehabilitation, Chang Gung Memorial Hospital-Keelung, Keelung, Taiwan, ⁴School of Medicine, Chang Gung University, Taoyuan, Taiwan, ⁵Department of Industrial and Management, National Taipei University of Technology, Taipei, Taiwan

Background and aim(s):

Cerebral palsy (CP) not only affects movement and posture, but also accompanies cognition, speech, or social problems. These problems further cause limitation in health related quality of life (HRQOL) in children with CP. This study aims to investigate the changes of HRQOL outcomes in various dimensions for children with CP of different motor severities.

Method:

Sixty children with CP (2-7 years) were enrolled and classified into two groups based on the Gross Motor Function Classification System (GMFCS) levels: GMFCS levels I, II, III, and IV-V. HRQOL outcome was assessed by the parent-proxy report of Pediatric Quality of Life Inventory (PedsQL) at baseline and 6-month follow-up. PedsQL includes 4 scale scores (physical, emotional, social, and school functioning) and 3 summary scores (physical health summary, psychosocial summary, and total scale scores). Change scores were calculated as (pedsQL score at follow-up - pedsQL score at baseline). ANOVA was used to compare the HRQOL changes in various dimensions among different GMFCS groups.

Result(s):

At baseline and follow-up, children with good GMFCS levels had better scale scores and summary scores in all dimensions except the emotional functioning than those with poor GMFCS levels ($p < 0.05$). Children with GMFCS level I had better changes in the physical functioning and physical summary than those with poor GMFCS levels ($p < 0.05$). However, there were no significant differences in the emotional, social, and school functioning, and psychosocial summary and total scale scores among different groups. ($p < 0.05$).

Conclusion(s):

The GMFCS levels were associated with HRQOL changes in physical dimensions in children with CP. Children with mild CP had better changes in the HRQOL in the physical dimension than those with severe CP. These findings may allow clinicians to early predict the changes in HRQOL outcomes for these children simply based on GMFCS level

Predictors for motor speech control in children with cerebral palsy: a longitudinal study

Professor, PhD, MD Chia-Ling Chen^{1,2}, MS Chia-Hui Chen¹, MD Chia-ying Chung^{1,4}, MD Katie P. Wu^{1,4}, Professor, PhD Hsieh-ching Chen⁵

¹Physical Medicine and Rehabilitation, Chang Gung Memorial Hospital, Linkou, Taoyuan, Taiwan, ²Graduate Institute of Early Intervention, Chang Gung University, Taoyuan, Taiwan, ³Physical Medicine and Rehabilitation, Chang Gung Memorial Hospital-Keelung, Keelung, Taiwan, ⁴School of Medicine, Chang Gung University, Taoyuan, Taiwan, ⁵Department of Industrial and Management, National Taipei University of Technology, Taipei, Taiwan

Background and aim(s):

Children with cerebral palsy (CP) may have motor speech problems. This study aims to identify potential predictors for motor speech control in children with CP.

Method:

Fifty-five children with CP (3-12 years) were enrolled. Six potential predictors were identified at baseline: age; sex; CP subtype; gross motor function classification system (GMFCS) level; manual ability classification system (MACS) level, and speech function (Peabody Picture Vocabulary Test (PPVT)). Motor speech control outcome was measured by modified

Verbal Motor Production Assessment for Children (mVMPAC), including global motor control (GMC), focal oromotor control (FOC), and sequencing (SEQ) areas, at 6-month follow-up.

Results:

Regression analyses showed MACS and GMFCS levels predicted for GMC ($r^2=0.52$, $p<0.001$). MACS levels and PPVT predicted for FOC ($r^2=0.65$, $p<0.001$). MACS levels, PPVT, and age together predicted for SEQ ($r^2=0.70$, $p<0.001$).

Conclusions:

Our findings suggest that motor, especially fine motor, and vocabulary functions are associated with motor speech control in various domains in children with CP. Furthermore, age is related to sequencing motor control.

Update from the New Zealand Cerebral Palsy Register

Dr Anna Mackey¹, **Dr Nichola Wilson^{1,2}**, Alexandra Sorhage¹, Prof N. Susan Stott^{1,2}

¹Paediatric Orthopaedics, Starship Child Health, Auckland, New Zealand, ²Dept of Surgery, Univeristy of Auckland, Auckland, New Zealand

Background and aim(s):

The New Zealand Cerebral Palsy Register (NZCPR) was established in 2015, with a national Governance group and an opt-off consent process since 2016. The Register objectives are to facilitate service planning, identify inequities in health care across regions and ethnicities, in addition to determining accurate information on prevalence of cerebral palsy (CP) in NZ. The aim of this study is to report on Register ascertainment to date, ethnic diversity and regional engagement, and strategies to increase Register utility.

Method:

Participants included consented individuals registered with the NZCPR by May 2018. Descriptive statistics were calculated from self-identified ethnicity and district health board locality and then compared to national Census data (2013).

Result(s):

The NZCPR currently has 739 registrations. A cohort of 634 people (86%) are within the 0-19 year age band (mean age 11 years; SD 4.5 years; n=369 male). For the 0-19 year age group 20% of NZCPR participants identified as Maori, 61% as Other (includes NZ European), 10% Pacific Island, 8% Asian; 2% Not available. This compares with NZ ethnicity rates for 0-19 year age group of 20% Maori; 59% Other (includes NZ European); 11% Pacific; 10 % Asian (2013 Census). Participant's from 19 of the 20 District Health Boards are represented on the NZCPR, but currently 65% of are from the Auckland metro region.

Conclusion:

There is scope for more targeted strategies to boost Maori recruitment, while keeping in mind that the variance in rate of CP by ethnicity in NZ is unknown. The NZCPR is continuing to incorporate the Treaty principles, with a Maori representative sought for our National Advisory Board and working with regional Maori health advisors. Participation outside of Auckland is limited to date, with additional strategies required, including regional consultation, promotion and identifying barriers for health professionals and participants

Active participation in sport for individuals with multiple sclerosis.

Moira Smith¹, Bridee Neibling¹, Associate Professor Gavin Williams², Professor Melanie Birks¹, Associate Professor Ruth Barker¹

¹James Cook University, Townsville, Australia, ²University of Melbourne, Melbourne, Australia

Background and aim(s):

Multiple sclerosis (MS) is commonly diagnosed in young adulthood at a time of prime participation in an active lifestyle involving sport, employment and family life. Exploration of the experience of participating in sport, for individuals in the early stages of MS, is necessary to identify how to maintain or introduce an active lifestyle. The aim of this study is to explore the experience of participation in sport with individuals with MS.

Method:

A qualitative descriptive study utilising three focus groups was conducted with individuals living in northern Queensland, Australia with a diagnosis of MS. Individuals with an Expanded Disability Status Scale score of 0-4, indicating full ambulation, were included. The sporting experience, together with enablers and barriers to participation was explored. Data were analysed thematically using NVivo software.

Result(s):

Sixteen individuals, fourteen female and two male with a mean age of 41 years (\pm SD 11) participated in the study. Most participants were undertaking sport, for example running, cycling, boxing, dancing and squash. Independence was a key driver for sport, with a view that it would maintain mobility and enable social participation. Barriers to sport encompassed personal and environmental factors such as fear, cost, family constraints and tropical temperatures. Individuals' support strategies to negotiate barriers and facilitate activity were often developed through experience rather than formal advice or support. Access to a health professional with knowledge in MS in relation to sport/exercise was perceived to be beneficial but was however, uncommon.

Conclusion:

Sport was considered to be important for maintaining independence and facilitating an active lifestyle for people in the early stages of MS. Personalised advice and direction from professionals towards suitable exercise were recommended, particularly in the early stages of the disease.

A survey of falls in people with dystonia

Dr Lynley Bradnam^{1,2}, Ms Melani Boyce², Associate Professor Victor Fung³, Dr Neil Mahant³, Dr Florence Chang³

¹Waikato Institute Of Technology, Hamilton, New Zealand, ²University of Technology Sydney (UTS), Sydney, Australia,

³Department of Neurology Westmead Hospital, Sydney, Australia

Background and aim(s):

Dystonia is a chronic and sometimes progressive neurological disorder affecting different parts of the body causing abnormalities in movement and function. The impact of dystonia on physical activity and participation is unknown and there are few systematic studies of balance and falls in this population. A survey was conducted with the aim to investigate whether people with dystonia experienced functional deficits, have reduced balance confidence, fear falling or actually fall.

Method:

An online survey of people with dystonia was conducted. Respondents were asked to complete demographic information, three questionnaires (the Falls Self-Efficacy Scale International [FES-I], the Activities-based Balance Confidence Scale [ABC] and the Functional Disability Questionnaire [FDQ]), and to report and describe any falls sustained during the previous six months.

Result(s):

Thirty nine percent of the 122 respondents reported falling in the previous 6 months and 65% of fallers were diagnosed with dystonia not affecting the lower limbs. Fallers reported lower falls self-efficacy and balance confidence with higher functional disability. Both falling scales correlated with self-reported functional disability. Linear regression analysis for falls prediction revealed the variables FES-I and FDQ accounted for almost 30% of the reported falls. Age, sex, duration of illness, botulinum toxin injections, time since injection, psychoactive medication or the ABC did not significantly impact on falls.

Conclusion:

This survey indicates that fear of falling and balance confidence are impaired in people with dystonia and that this may impact on activity and function and translate into actual falls. Further investigation into balance, function and falls in this population is required.

Preliminary results from an observational study of functional screening tests in cervical dystonia

Ms Melani Boyce^{1,2}, Prof Colleen Canning³, Dr Neil Mahant¹, Dr Florence Chang¹, A/Prof Victor Fung^{1,3}, Prof Arianne Verhagen², Dr Lynley Bradnam⁴

¹Westmead Hospital, Westmead, Australia, ²University of Technology Sydney, Sydney, Australia, ³The University of Sydney, Sydney, Australia, ⁴Waikato Institute of Technology, Hamilton, New Zealand

Background and aim(s):

The effect of an abnormal head position for people living with cervical dystonia on balance and gait is not fully understood. The aim of this study is to examine upper and lower extremity motor function in people with cervical dystonia and to collect prospective number of falls in this population.

Method:

Thirty adult participants with idiopathic cervical dystonia who display no other musculoskeletal or neurological conditions affecting the limbs, and can walk unaided, will be included in this observational study. Participants will be assessed on a battery of physical and cognitive assessments including the Toronto western spasmodic torticollis rating scale (to assess dystonia severity), the miniBEST test, the functional gait assessment, the four square step test, the figure of 8 walk test, the box and block test and the Montreal cognitive assessment. Participants will also complete the following questionnaires: falls self-efficacy scale international, the activities based balance confidence scale, and the incidental and planned exercise questionnaire. Participants will complete a prospective falls diary for six months to examine the incidence of falls in people with cervical dystonia. Data will be analysed using descriptive statistics to determine mean values and confidence intervals for each variable. Where possible, data will be compared to normative values in older adults or other neurological disorders for each test using one sample t-tests with the norm as the comparator value.

Results:

Preliminary results from the first participants will be reported.

Conclusion:

This study will identify whether people with cervical dystonia experience balance, gait or functional deficits, informing further research into the impact of cervical dystonia on function and participation. Outcomes will be used to improve physiotherapy assessment and treatment for this population.

Disability sports: From rehabilitation to paralympics - the evolving nature of classification systems

A/Prof JAGDISH MAHARAJ¹ Head of Classification, Sports Technical Committee & International Classifier Athletics & Shooting, International Paralympic Committee. University of Sydney/Lourdes Hospital, Dubbo, Australia

Background and aim(s):

After the Second World War sport was used as a mode of rehabilitation for the injured returned servicemen and women. As the participation grew, for fair competition, a system of classification was required to accommodate the spectrum of disabilities and sporting abilities. Since then classification has become an integral part of the Paralympic Movement with development of evidence-based sport specific classification systems.

Method:

A review and update on the evolution and model of classification systems within the Paralympic Movement is presented having particular reference to recent developments and certain sports specific classification research.

Result(s):

Over the years, classification in the Paralympic Movement has dynamically changed from an initial medical-base to now a sports specific functional model with specified eligible impairments based on the International Classification of Functioning, Disability and Health (ICF) framework. Paralympic sports are engaged in developing evidence-based sports specific classifications for their athletes. There is a conceptual framework to introduce objective measurements for classification assessments, and move the functional assessment process from competition into a laboratory-based out-of-

competition activity. The International Paralympic Committee is committed and working towards zero classification at future major para-sports events like the Paralympic Games.

Conclusion(s):

There has been a huge paradigm shift in the classification systems for the Paralympic Movement and associated sports. All new classification systems are required to be researched evidence-based sports specific. This will include major changes for the athletes, coaches, officials and spectators.

The effect of identity-focused songwriting intervention on mood and psychological wellbeing post neurotrauma: A randomized controlled trial

Dr Young-eun Lee¹, Professor Felicity Baker¹, Dr Jeanette Tamplin¹, Associate Professor Nikki Rickard², Professor Jennie Ponsford², Dr Peter New^{3,4}

¹The University Of Melbourne, Melbourne, Australia, ²Monash University, Melbourne, Australia, ³Caulfield Hospital, Melbourne, Australia, ⁴Kingston Centre, Melbourne, Australia

Background and aim(s):

Individuals with Acquired Brain Injury (ABI) and Spinal Cord Injury (SCI) face unique identity challenges associated with their physical and cognitive limitations, higher comorbid depression, and reduced subjective wellbeing. Therapeutic songwriting has recently shown efficacy as a means of reconstructing fractured post-traumatic identities in individuals following neurotrauma. This randomized controlled trial examined the effects of a targeted songwriting intervention on self-concept, psychological wellbeing and mood in early neurorehabilitation.

Method:

47 participants aged 18 to 85 with ABI or SCI 1) during inpatient rehabilitation, or 2) in the early period following inpatient rehabilitation were allocated to either a six-week therapeutic songwriting intervention (n = 31) or standard care (n = 16). Measures of self-concept, depression, anxiety, emotion regulation, psychological wellbeing were collected pre-, mid-, and post-intervention.

Result(s):

Analyses showed no significant changes between the songwriting and the standard care group on self-concept over time. However, the songwriting group reported significantly higher levels of psychological wellbeing ($p = 0.04$; $\eta^2 = 0.14$), and lower levels in emotional suppression ($p = 0.02$; $\eta^2 = 0.15$) between pre- and post-intervention than the standard care group and significantly lower levels of depression ($p = 0.02$; $\eta^2 = 0.15$) between pre- and mid-intervention, significantly lower levels in negative affect ($p = 0.04$; $\eta^2 = 0.04$) and significantly higher levels in psychological wellbeing ($p = 0.01$; $\eta^2 = 0.20$) from mid- to post-intervention.

Conclusion:

The findings from this randomised controlled trial suggest that experience of exploring self-concept using a targeted music therapy intervention provides a means of emotional expression for individuals in early neurorehabilitation, which resulted in decrease in negative symptoms and improved psychological wellbeing. Future research with follow up data will be required to address the possibility of delayed effects of the intervention on self-concept.

The New Zealand approach to pressure injury prevention and management in people with spinal cord injury

Ms Christine Bloomfield, **Sean Bridge**¹, Sandar Duckworth, Rosemary Jarney², Anna Thompson⁴

¹Senior injury prevention specialist, ACC, ²Senior project manager, ACC, ³Partner Litmus research, ⁴R&E Practitioner,

Background and aim(s):

Accident Compensation Corporation (ACC) administers the no-fault accident insurance scheme of New Zealand (NZ). Injuries sustained from delivery of health care are covered by the ACC, and are called treatment injuries or consequential injuries.

Pressure injuries (PI's) are estimated to cost ACC about NZ\$40 million annually, majority of which is linked to clients with spinal cord injury (SCI). Needs of clients with SCI to better understand PI's were identified to support the development of the Guiding Principles for Pressure Injury Prevention and Management in NZ.

Methods:

We organised 3-day visits to five NZ regions. Face-to-face semi-structured interviews were conducted with clients, their whānau/caregivers, health care providers and relevant stakeholders (n = 60). A thematic analysis was conducted to determine a wide range of factors contributing to PI's in clients with SCI.

Results:

Findings showed that prevention and effective management of PI's are the key elements in this work. PI's negatively impact clients with serious injury through severe impairment, and loss of function and independence. Health care professionals need consistent use of risk assessment to identify clients in most need of support, and the need for timely coordination of these supports.

Conclusions:

While previous work has explained the role of clinicians and carers in preventing PIs, this research identified better coordination of services and the potential role clients can play in PI prevention and management. To support participation in PI prevention, clients are likely to need help with health literacy, confidence and advocacy.

10 years of Experience with Intrathecal Baclofen- A Review of safety and adverse events

Dr Romain Briest¹, **Associate Professor Ray Russo**^{1,2}, Ms Felicity Baker¹, Dr James Rice¹

¹Women's and Children's Health Network, Adelaide, Australia, ²Flinders University, Adelaide, Australia

Background and aim(s):

Children with chronic acquired and congenital central neurological conditions often develop severe spasticity and dystonia. Management is multi-modal consisting of medication and non-medication based interventions. Intrathecal continuous delivery of baclofen (ITB) can provide control over spasticity and dystonia, but given the nature of the device and the patients who require the therapy, complications and events related to treatment are frequent. Our aim was to describe the complications related to the delivery of ITB in consecutive patients having ITB therapy and compare this to published data.

Method:

Electronic and paper records were evaluated for consecutive patients receiving ITB therapy identified over a 10 year period from 2008-2018. Number of adverse pump related events per patient, type of event and events per patient pump years were reported.

Result(s):

There were a total of 8 patients identified. The average age at pump insertion was 11 years 6 months, 75% having a primary diagnosis of cerebral palsy. Gross Motor Function Classification System was divided equally between levels IV and V, with 75% having a pattern other than isolated spasticity. 13 ITB related events were noted, with 3 (23%) related to the pump, 7 (54%) related to the catheter and 3 (23%) infection. A total of 25.93 patient pump years were reviewed, with an average of 0.50 events per patient pump year noted. Subdividing for patients with spasticity and dystonia noted a yearly rate of 0.38 and 0.53 respectively. This compared favourably with published information for those publications reporting events per patient pump years.

Conclusion(s):

Adverse Events related to ITB treatment are common. Events are more common in patients with a dystonic pattern compared to patients with isolated spasticity. Published reviews of ITB complications should report events per patient pump years to allow for comparisons to be made for benchmarking purposes.

Venue Epsom Rooms 1 &2

Virtual reality movement based gaming for chronic lower back pain - a pilot trial

Mrs Alla Melman^{1,2,3}, Dr Matthew Liston¹, Dr James Yu², Dr Elodie Chiarovano⁴

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Background and aim(s):

This pilot trial explored the potential benefits of incorporating Virtual Reality (VR) exergaming into the clinical care of those with Chronic Lower Back Pain (CLBP).

For CLBP sufferers with poor response to traditional rehabilitation, we are developing a novel treatment method that addresses both sensorimotor impairment and psychological barriers to exercise, such as kinesiophobia and low motivation. There are currently very few studies investigating clinical use of immersive VR (using a headset), and none specifically targeting CLBP. This is due to prohibitively high costs of immersive VR in the past, as well as poor tolerance in some populations.

It was important to first ascertain tolerability and suitability of VR therapy in those with CLBP, before incorporating this technology into randomised controlled trials. An additional goal was to compare the user experience of immersive vs non-immersive VR gaming, to ascertain advantages and disadvantages of both systems.

Method:

20 Participants with CLBP trialled two forms of VR, and completed a User Perception Survey on their experience.

Kinesiophobia levels were assessed via the TSK-11 score. Volitional postural sway and movement during gaming were recorded on a Wii Board using the Balance Rite App.

Results:

VR exergaming is well tolerated, especially in its non-immersive format. It successfully motivates those with CLBP to practice functional movements in a fun and engaging way.

Conclusions:

As VR technology has evolved, it is now relatively simple to engage in therapeutic exergaming in a clinical setting. There is potential for VR technology to be extended into home based rehabilitation, greatly reducing ongoing rehabilitation costs. This opportunity could be extended to tele-rehabilitation, for those unable to access Metropolitan centres.

The association between physical activity and low back pain: A systematic review and meta-analysis of observational studies

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Objective:

To investigate the association between levels of total and domain-specific physical activity (PA) and non-specific low back pain (LBP) in adults.

Methods:

PubMed, Medline, Scopus, CINAHL, EMBASE, SPORTDiscus, and Web of Science were searched up to March 2017 for cohort and cross-sectional studies, published in English, examining the association of non-occupational PA with LBP. Separate meta-analyses were conducted to derive a pooled estimate of the association of medium and high levels PA and LBP, using the generic inverse-variance method with fixed- and random-effects models.

Results:

Data from 24 studies (15 cohort and nine cross-sectional) with a combined total of 95,796 participants were included in quantitative syntheses. The pooled fully adjusted risk ratios (RR) from cohort studies comparing medium with lowest activity levels were 0.90 (95% CI 0.85 to 0.96) for total PA, and 0.90 (95% CI 0.85 to 0.96) for leisure-time physical activity (LTPA). The pooled RR comparing highest with lowest activity levels were 1.00 (95% CI 0.92 to 1.08) for total PA, and 1.01 (95% CI 0.93 to 1.10) for LTPA. The pooled fully adjusted odds ratios (OR) from cross-sectional studies comparing medium with lowest activity levels were 0.93 (95% CI 0.65 to 1.32) for total PA, and 0.77 (95% CI 0.62 to 0.96) for LTPA. The pooled OR comparing highest with lowest activity levels were 1.05 (95% CI 0.89 to 1.23) for total PA, and 0.85 (95% CI 0.79 to 0.93) for LTPA.

Conclusion:

Physical activity appears to be associated with lower prevalence of LBP, but we found no evidence of dose-response.

The effectiveness of lifestyle physical activity intervention compared to other interventions in the management of people with low back pain: A systematic review and meta-analysis

Mr. Hosam Alzahrani^{1,2}, Associate Professor Martin Mackey¹, Professor Emmanuel Stamatakis¹, Dr. Marina Pinheiro^{1,4}, Ms. Manuela Wicks¹, Dr. Debra Shirley¹

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Objective:

To investigate the effectiveness of lifestyle physical activity interventions compared to other commonly prescribed interventions for the management of people with low back pain (LBP).

Methods:

We performed a systematic review with meta-analyses of randomized controlled trials, searching Medline, Scopus, CINAHL, EMBASE, and CENTRAL. This review considered trials investigating the effect of lifestyle physical activity intervention compared to other interventions in people aged 18 years or over diagnosed with non-specific LBP. Analyses were conducted separately for short-term (≤ 3 months), intermediate-term (> 3 and < 12 months), and long-term (≥ 12 months), for each outcome. The analyses were conducted using weighted mean difference (WMD). The overall quality of evidence was assessed using the GRADE system.

Results:

Three trials involving 422 participants were included in this review. Due to insufficient data, we were able to conduct meta-analyses for pain and disability outcomes only. For pain, the pooled results did not show any significant effects between the lifestyle physical activity intervention and other interventions at all time points. For disability, lifestyle physical activity was not statistically more effective than other interventions at short-term; however, the pooled results favored lifestyle physical activity at intermediate-term (WMD= -6.05, 95% CI: -10.39 to -1.71, $p=0.006$) and long-term (WMD= -6.40 95% CI: -11.68 to -1.12, $p=0.02$) follow-ups among participants with chronic LBP. The overall quality of evidence was rated "moderate quality" based on the GRADE system.

Conclusion:

For people with chronic LBP, the lifestyle physical activity intervention provide intermediate and long disability relief, although this improvement was small and not clinically important.

Venue: Plenary: New Zealand 3 + 4

An analysis of effectiveness and cost effectiveness of an inreach rehabilitation team at Wollongong Hospital from September 2010 to July 2013

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Background and aim(s):

Many inreach rehabilitation teams at Australian hospitals funded by a COAG agreement were disbanded in 2013 when funding ceased. We analyzed Wollongong data to explore whether there is justification for re-establishing inreach rehabilitation teams at acute hospitals.

Before it was disbanded, the Wollongong multidisciplinary inreach team comprised 0.3 rehabilitation specialist, 0.8 senior nurse, 3.4 therapy staff, and typically managed 10 patients. There were 699 episodes (680 patients) over 34 months. All patients were moderate to high medical complexity, and deconditioned due to long hospital stays.

Method:

We extracted data from contemporary spreadsheet records. We conducted subgroup economic analysis of 205 patients with completed FIM scores from 1/7/2011 to 30/6/2102. In addition, AHSRI developed a model to compare outcomes with matched controls from the same Diagnostic Related Groups (DRG) and Patient Clinical Complexity Levels during the 34 months, and with historical controls.

Results:

78 of 205 (38%) patients made sufficient functional recovery to be discharged directly home in 2011/12. They participated for an average of 14.0 days, and achieved a high FIM efficiency score of 1.61. Admission avoidance to subacute rehabilitation reduced bed day demand by 1092 days, equating to \$886,704 (\$812/day in 2011/12) 81 were transferred to public rehabilitation wards. There was 20% reduction in rehabilitation LOS measured against AROC benchmarks, resulting in reduced demand of 405 bed days, equating to \$336,980. The budget for the therapy team in 2012/13 was \$451,665. Total annual saving for public patients was \$772,704. Reductions in LOS in acute care could not be accurately calculated. Our modelling indicated significant reductions in acute hospital LOS in 6 of the 10 most common DRGs, suggesting additional bed day savings.

Conclusion:

In reach rehabilitation teams targeting complex deconditioned acute patients are effective at achieving earlier functional recovery and discharge, and are highly cost effective.

Physical activity and health-related quality of life in people with back pain: A population-based pooled study

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Objective:

To investigate the association between moderate- to vigorous-intensity physical activity (MVPA) and health-related quality of life (HRQoL) in people with back pain.

Methods:

The sample comprised adults aged ≥ 16 years who participated in the Welsh Health Survey (2011-2015). The HRQoL was evaluated using the Short Form-36 Item (SF-36). The MVPA was categorized into four groups: inactive (0 minutes/week), insufficiently active (< 150 minutes/week), sufficiently active (≥ 150 and < 300 minutes/week), very active (≥ 300 minutes/week). The association between MVPA and HRQoL was investigated using generalised linear models and multiple

linear regression. The results then were compared with minimal clinical important difference (MCID) for the change in the dependent variable. An MCID has been founded for the SF-36 (≥ 5 points).

Results:

Of the 27,273 participants diagnosed with back pain, 20,470 participants with valid data were included in the analyses. Dose-response associations between MVPA and HRQoL were demonstrated for all SF-36 domains in both the minimally and fully adjusted models ($p < 0.001$), with the highest HRQoL scores observed in sufficiently and very active participants. Specifically, in the fully adjusted analyses, participants classified as insufficiently, sufficiently and very active had an average increase of 6.31, 7.72 and 8.00 points, respectively, in the overall HRQoL, compared to inactive participants. The fully adjusted association of MVPA with overall HRQoL and SF-36 domains scores exceeded the MCID of 5 points for six out of the eight SF-36 domains (the exception being role-emotional and mental health).

Conclusion:

There is a positive association between MVPA and HRQoL, with better HRQoL for those meeting guidelines.

Venue: Marlborough Rooms 1 & 2

The effect of navicular sling vs tibialis posterior taping on medial longitudinal arch in runners, a pilot study

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Background and aim(s):

In long distance running, forces generated during repeated pronation and supination and anti-pronatory muscle fatigue may increase stress of the plantar fascia which in turn causing it to be overstretched. These mechanisms might lead to an increased risk of lower extremities injury in runners. Navicular sling (NS) and tibialis posterior fascilitation (TPF) taping have proven to be effective in supporting the medial arch. However, there has not been any study comparing the effectiveness of the two techniques in preventing medial arch collapse during long distance running.

Method:

Ten amateur runners were randomly assigned to NS and TPF taping groups. Each group consisted of ten feet as study subjects. Three samples were dropped out in the NS group. Outcomes measured were navicular drop and Clarke's angle, measured in pre-taping, post-taping, and post-running 5 km.

Results:

Both taping groups showed reduced navicular drop in post-taping measurement. After a long distance run, the TPF group showed a slight increase in navicular drop comparing to the pre-tape and post-tape measurements ($p=0.82$). There was also no significant difference in the NS group during the pre-tape, post-tape, and post-run measurements ($p=0.87$).

The Clarke's angle in TPF and NS groups did not show any statistically significant difference in within group' pre-tape, post-tape, and post-run measurements ($p=0.85$ and $p=0.69$ respectively). The result demonstrated a tendency of increased Clarke's angle post-taping in both groups, although was slightly decreased post-run.

Measurements of navicular drop and Clarke's angle from three different timings in each group and between groups exhibited no statistically significant differences ($p > .05$).

Conclusion:

Both NS and TPF taping techniques might provide medial arch support during long distance running demonstrated by relatively constant value of navicular drop and Clarke's angle before and after running. Further study should be done in order to have definitive result.

Is Osseointegration the definitive answer to amputee reconstruction? Examining the complication and re-operation rates after osseointegrated reconstruction

William Lu¹ Osseointegration Group of Australia, Australia

Background and aim(s):

Osseointegration has emerged as a promising alternative to rehabilitating with a traditional socket mounted prosthesis. Advantages have been reported to include improved functional mobility, better osseoperception, improved comfort, reduced pain, better biomechanical alignment and better gait, which all lead to a less restricted lifestyle and significantly improved quality of life. A major concern of the Osseointegrated approach lies in the risk of infections occurring from the permanent transcutaneous opening often referred to as the stoma. Several systematic reviews have indicated that the occurrence of minor infections can be quite common, serious complications are reported to be rare. In addition to commonly anticipated complications including fractures, surgical debridements or revisions, we have identified several significant events in which a patient may require to be readmitted and go through additional surgery. The objective of this study is to look into the rate of occurrence of all subsequent complications requiring a re-operation after a patient receives osseointegration surgery. While these additional re-operations may not be a direct result of the osseointegration approach, it is still essential to perform such an analysis to provide a realistic evaluation on the effectiveness of the treatment and reveal any hidden underlying complexities.

Methods:

A detailed analysis has been performed on all osseointegration surgeries performed by the Osseointegration Group of Australia between since 2010. The surgeries took place in Sydney Australia at three different hospitals (Norwest Private Hospital, Macquarie University Hospital and Hurstville Private Hospital) and were all performed by a single surgeon. All events leading to a readmission and subsequent re-operation have been identified through hospital operation records and pooled together for meta-analysis. Events identified include: revision of implants, periprosthetic fracture fixation, surgical debridement due to infections, neurectomies and soft-tissue refashioning.

Results:

A total of 261 surgeries have been identified with a minimum 12-month follow-up time (mean follow-up time 33.1±16.14 months) and included in this study. These included 71 tibial, 187 femoral and 3 humeral osseointegration cases. 76 of these were performed using a 2 stage protocol while the remaining 185 were performed in a single stage. Among all cases, there were a total of 130 re-operation events recorded which occurred among 66 patients, indicating a high recurrence rate among the same patients. We recorded a total of 29 debridements, 29 neurectomies, 43 soft tissue refashions, 22 implant revisions and 7 periprosthetic fracture fixations. Interestingly, the rate of debridements and soft-tissue refashions were found to be reduced for patients who were operated using a single stage surgery.

Discussion:

Many events leading to readmission after the primary surgery may not necessarily be graded as a complication of the osseointegration technique, but will still amount to a significant inconvenience for the patient and financial burden of the healthcare system. In this study, we have identified several addition possible reasons in which an osseointegration patient may need to be re-admitted into hospital for additional surgery. It was identified that through the implementation of improved surgical techniques and rehabilitation protocols, the rate of several of these re-operation events can be largely reduced, thus improving the overall outcomes of patients undergoing osseointegration surgery.

Disclosures:

Dr. Al Muderis consults for and receives royalties from companies including: Osseointegration International Pty Ltd (Australia), Osseo-PL Inc (USA), Osseo-PL GmbH (Germany), AQ Implants GmbH (Germany) and Permedica S.P.A (Italy).

Osseointegrated implants in patients with diabetes mellitus: A case series of eight patients

William Lu¹ Osseointegration Group of Australia, Australia

Background and aim(s):

Osseointegration is a novel approach to eliminate socket related problems experienced by amputees. Over 70% of amputations in developed countries are due to vascular causes with the prevalence of diabetes mellitus reaching pandemic status leading to more amputations. Traditionally, diabetic patients with amputations have been excluded from osseointegrated reconstruction due to higher risks of complications. This is the first study reporting on the clinical outcomes of diabetic patients receiving an osseointegrated reconstruction.

Methods:

This is a case series with one-year follow-up in eight diabetic patients with trans-tibial or trans-femoral amputation, and have received osseointegration implants between 2013 and 2016. Clinical and functional outcomes were assessed including pain, prostheses wearing time, mobility, walking ability and quality of life. Adverse events were monitored and recorded, including infection, fractures, implant failure, revision surgery, further amputation and death.

Results:

Three trans-tibial and five trans-femoral amputees (aged 48-73 years) were included in this study. All patients were pain-free and still using the osseointegrated prosthesis at 12-months post-surgery. The mobility of all patients improved at follow-up. Notably, five of the eight patients were wheelchair-bound prior to surgery, but all were able to walk and perform daily activities at follow-up. Two patients experienced infection events which were treated by surgical debridement. One patient experienced peri-prosthetic fracture after a fall which was fixated by a lag screw. No other adverse events were recorded.

Discussion:

Lower limb amputees with a history of diabetes mellitus have been traditionally excluded from osseointegrated reconstruction. Here we report the initial results of treating diabetic amputees with osseointegration, demonstrating improvements in function, mobility and quality of life. It can be expected that the improved function and mobility can

serve a protective role in controlling the underlying diabetic conditions in these patients which makes osseointegration an attractive alternative to conventional socket prosthesis.

Disclosures:

Dr. Al Muderis consults for and receives royalties from companies including: Osseointegration International Pty Ltd (Australia), Osseo-PL Inc (USA), Osseo-PL GmbH (Germany), AQ Implants GmbH (Germany) and Permedica S.P.A (Italy).

Drawing on the experiences and perspectives of amputees using a Microprocessor Prosthetic Knee to inform policy and practice

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Background and aim(s):

The New Zealand Artificial Limb Service (NZALS) is the national provider of prostheses to amputees in NZ. Their statement of intent outlines their commitment to improving client experience, equity and access, while being responsive to advances in prosthetic technology. This includes drawing on user experience to inform policy and practice. The aim of this study was to explore the experiences and perspectives of amputees regarding their transition to and use of a microprocessor prosthetic knee (MPK).

Method:

This was a Qualitative Descriptive study using semi-structured interviews. Participants (n=13) were adults (>18 years) with transfemoral amputation who had been fitted with a MPK. Purposeful sampling was used to capture diversity on key characteristics including traumatic (n=6) vs. non-traumatic (n=7) amputation, time since first MPK (range: 3 months-12 years), gender (n=9 male; n=4 female), and age (range: 26-73 years). Data was analysed using Conventional Content Analysis.

Result(s):

Participants reported experiencing a greater sense of normality and confidence to manage varied terrain. The MPK opened up their world, now being able to engage in more diverse activities and enjoy the destination rather than focus all their energy on the journey. Participants spoke of a process of relearning to walk upon transition to a MPK requiring them to forget habits learnt while using a mechanical knee. Participants expressed some frustrations with current service provision, including reliance on centralised services.

Conclusion(s):

The findings offer an in-depth understanding of the experiences of amputees using an MPK which is missing in existing literature. They have been formative to NZALS in helping to articulate the possible cost-benefit argument for MPKs, informing service outcomes frameworks and guiding service improvements. Meaningful uptake of findings into NZALS policy and practice has the potential to optimise their impact on outcomes that matter to the people they serve.

Venue: Epsom Rooms 1 & 2

Measuring Connection and Collaboration in REhabilitation (CORE): Developing and piloting a measure of therapeutic relationship

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Background and aim(s):

The therapeutic relationship (TR) may be critical to rehabilitation outcome. However, knowledge advance is hampered by existing measures, which were not designed for use in the rehabilitation context and fail to capture essential elements. Drawing on a conceptual framework developed through our prior research, we aimed to develop and pilot a measure of TR, tailored to the rehabilitation context.

Methods:

A measure development study drawing on Prior et al., 2011. A preliminary pool of 68-items was derived by a) extracting items from existing measures and mapping them against our conceptual framework; and b) developing new items to capture concepts not already addressed. Cognitive interviewing methods were used to determine item comprehensibility, acceptability, relevance and answerability, leading to a refined set of 36-items currently being piloted in a larger cohort. Rasch analysis will be used to determine the internal construct validity of the measure, and inform final refinements.

Results:

For the cognitive interviewing phase, clients (n=13) were drawn from a diversity of contexts and included people with neurological (n=5), long-term chronic (n=4), and acute (n=4) conditions. We deleted 32 and reworded eight items in response to feedback. Reasons for deletion included overlap with other items (n=22), not relevant across populations/context (n=5), ambiguous (n=4), or too global (n=1). During the pilot phase, the 36-item questionnaire is being distributed across a range of rehabilitation settings including limb centres, inpatient and community-based neurorehabilitation providers, and private musculoskeletal physiotherapy clinics. In this presentation, we will share preliminary findings from the Rasch analysis.

Conclusion:

The development of a robust measure of TR, tailored to the rehabilitation context, will enable further research into the role of TR in rehabilitation, identification of specific components of the TR linked to better rehabilitation outcomes, and inform the development of interventions targeting improvements in rehabilitation delivery and outcome.

Could coaching interventions be delivered through tele-rehabilitation to support families of children with disabilities?

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Background and aim(s):

Coaching interventions are being increasingly implemented to work collaboratively with families of children with neuro-disabilities to deliver evidence-informed paediatric rehabilitation services. In parallel, tele-rehabilitation is increasingly used for cost-effectiveness and to increase access to services. Therefore, could coaching interventions be delivered through telerehabilitation?

1) to briefly present the key ingredients of coaching intervention; 2) to present results of a systematic review analysing effective tele-rehabilitation interventions; and 3) to critically analyse if, and how, coaching intervention could be delivered through tele-rehabilitation.

Method:

1) Theories underlying coaching interventions have been reviewed to identify key ingredients, defined as the components expected to explain an intervention's outcomes. 2) Secondary analysis of a systematic review on the effectiveness of tele-rehabilitation was conducted to identify examples of paediatric tele-rehabilitation using coaching or key ingredients relating to coaching interventions; 3) A critical analysis has been conducted to explore which key ingredients of the coaching interventions are or could be delivered through tele-rehabilitation.

Result(s):

1) Coaching key ingredients include collaboration, problem-solving and capacity building. 2) Coaching emerged as a theme that authors self-reported having used in the vast majority of paediatric tele-rehabilitation studies included in the review (25/26 studies, 96%); however, coaching referred to a broad range of different practices, including parental support and education. 3) Collaboration and capacity building appear to be already included in effective paediatric tele-rehabilitation approaches. In most of the studies, however, coaching was loosely defined and problem-solving real-life situations was frequently lacking in the design of interventions.

Conclusion(s):

Tele-rehabilitation seems to be a service delivery format that could be used to deliver cost-effective coaching interventions. The conceptualizing of online coaching interventions would ease its implementation and would aid the design of future rigorous trials.

Redesigning the Rehabilitation Consult Service using a novel method of Proactive Rehabilitation Screening (PReSS)

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Background and aim(s):

Patients admitted to hospital for an acute illness or injury experience impairment and are at risk of deconditioning. For some patients, early rehabilitation could help prevent decline during hospitalisation and accelerate recovery. However, there are currently no systematic screening processes that can be used to identify these patients early during admission, and proactively trigger rehabilitation interventions. This project aimed to develop a novel, proactive rehabilitation screening process, and implement this in a hospital setting to assess feasibility and sensitivity.

Method:

The Proactive Rehabilitation Screening Score (PReSS) was developed as a simple, 5-item questionnaire. This screener can be used to review medical records and quantify care needs and rehabilitation input during the last 5-days of a patient's acute hospital admission. PReSS was used by a rehabilitation doctor or nurse to screen all consecutive admissions to acute care wards at St Vincent's Hospital 5-7 days after admission. The PReSS score was used to identify those with high rehabilitation needs, and trigger proactive rehabilitation assessment and management.

Result(s):

1,100 consecutive screens were conducted between May-December 2017. PReSS achieved high sensitivity (86.9%) and specificity (95.8%) in predicting rehabilitation needs. Positive/negative predictive values were 74.7% and 98.0%, respectively. A new methodology has been implemented in St Vincent's Hospital rehabilitation consultation service, where PReSS is used to screen all admissions and those "ruled in" are reviewed by a rehabilitation physician. Since this redesign, we can demonstrate improved patient flow, reduced process inefficiencies and fewer administrative delays for rehabilitation.

Conclusion(s):

PReSS is a simple, feasible and sensitive rehabilitation screening tool. It can be used to trigger early rehabilitation assessment which may minimise delays in treatment and improve patient outcomes.

How do we justify funding for rehabilitative interventions when the published literature is inconclusive?

Dr Melissa Barry¹ ACC, Wellington, New Zealand

Introduction:

With increasing access to information globally, there is growing demand for alternative therapies and emerging technologies for rehabilitation to be funded. Many interventions are difficult to assess with conventional methods as

they have an inconclusive evidence base. For these situations, the Accident Compensation Corporation (ACC) in New Zealand (NZ) uses adapted evidence-based medicine (EBM) methodology in development of funding recommendations. This model is established internationally and assesses academic evidence alongside clinician and patient perspectives to form the final funding position for an intervention. If the intervention has a poor evidence base, a higher weighting is placed on clinical expertise and the context of how the intervention is used to inform the final funding recommendation.

Examples of decisions made with inconclusive evidence at ACC are conductive education (CE) for children with cerebral palsy and lower-limb exoskeletons for people with spinal cord injury (SCI). CE is a program that combines special education with rehabilitation for children to maximise functional potential. Lower-limb exoskeletons move a person's legs (eg. after SCI) so they can stand and walk without using a wheelchair. For these interventions, a comprehensive search of multiple medical databases yielded research at an early stage or studies of low quality design. Differing outcome measures used between studies made it difficult to draw firm conclusions on whether either intervention was effective. Under the guidance of a multidisciplinary panel after consultation with other NZ agencies and subject matter experts, different sources of information alongside the evidence was used to form ACC's final funding position for both items.

EBM is an agile assessment framework that enables ACC to use evidence as the cornerstone of clinical guidance in lieu of conclusive evidence. With the increasing pace of technological development and disparate evidence sources for various rehabilitative interventions, this model will become increasingly important in the future.