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Queensland cerebral palsy & rehabilitation research centre

Newsletter
December 2014

Message from the Scientific Director, Professor Roslyn Boyd

The QCPRRC and our collaborators have had an outstanding year of success with funding totalling $4.3M from the National Health and Medical Research Council (NHMRC) in the form of three new project grants, one partnership grant and an early career fellowship (p 5-6, 11). These projects will develop new markers for very early detection of cerebral palsy (CP) in infants born < 32 weeks gestational age (PREBO); neuroprotection to reduce the risk of CP (SuPreme); very early rehabilitation for infants with hemiplegia (REACH) which will be conducted in WA, VIC, NSW and QLD; and a fellowship for the implementation of rehabilitation into practice (p 5-6). In addition, our new partnership grant (PREDICT CP) will invite back all CP Child study participants born in the birth years of 2006-2007. PREDICT CP will commence comprehensive surveillance of outcomes (motor, manual, communication, bone health, nutrition and educational) related to brain structure and resource use when we move to the new Centre for Children’s Health Research (CCHR) next to the Lady Cilento Children’s Hospital (LCCH) (p 15) in April 2015. In addition to our exciting grant successes, the QCPRRC team have two graduating PhD students and 5 graduating in Physiotherapy and Medicine with honours. This year our team also had our most outstanding year ever at the American Academy of Cerebral Palsy and Developmental Medicine (AACPDM) with 22 podium presentations, 6 scientific posters, 2 instructional courses and a pre-conference seminar culminating in two prestigious awards for best paper and the promising career award (p 3-4) – a great testament to our outstanding team. We are looking forward to your continued support in 2015 in our new facilities. Warm Regards, Ros Boyd

Researchers from the QCPRRC Team attended the 68th Annual Meeting of The American Academy for Cerebral Palsy & Developmental Medicine (AACPDM) in September 2014 in San Diego, USA.
L-R : Dr Lee Barber, Prof Ros Boyd, Ms Rachel Jordan, Dr Louise Mitchell, Dr Laura Miller, Ms Sarah James, Prof Jenny Ziviani, Ms Stephanie Ross and Ms Kathrine Benfer. See Award winners (p 3) and highlights (p 4).

The University of Queensland’s Faculty of Medicine and Biomedical Sciences (M+BS) held its inaugural excellence awards to honour the people who embody the Faculty’s vision of being the best in Australia. Professor Ros Boyd won a M+BS Research Supervision Excellence Award for providing exceptional training of research students.
Mastery motivation in children with congenital hemiplegia: individual and environmental associations

In this cross-sectional study the aim was to examine the relationship between mastery motivation and individual and environmental characteristics in school-aged children with congenital hemiplegia. Mastery motivation involves the drive to independently persist with solving difficult problems and master challenging tasks. Consistent and positive parental disciplinary practices were associated with higher total motivation and aspect scores of the Dimensions of Mastery Questionnaire. Children with siblings and from single-parent families experienced greater negative reactions to failure. Children from two-parent families and with better bimanual performance demonstrated greater object-oriented persistence. Age, gender, limitations in manual ability, and movement and body function of the impaired limb did not contribute significantly to mastery motivation. Functional parenting styles, positive discipline practices, and autonomy-supportive strategies for task engagement should be encouraged when intervening with children with cerebral palsy. Parents should be supported to engage in these practices in all aspects of daily activities.

Predicting functional communication ability in children with cerebral palsy at school entry

The aim of this study was to examine which factors in early childhood predict functional communication at school entry in children with CP. Initially 114 children with CP were assessed at 18-24 months on their communication ability, gross motor function motor type and distribution, upper limb function, gestation age at birth, multiple gestation, birth order, Apgar scores, vison and hearing impairment, epilepsy and socioeconomic status. The children's functional communication was then classified at 48-60 months using the Communication Function Classification System. Univariate analysis indicated that hearing impairment was the strongest predictor of poorer functional communication but epilepsy, visual impairment, and poorer early gross motor and upper limb function were also strong predictors. Better early communication skills and higher Apgar scores were related to better functional communication. Following multiple variable analysis only early gross motor function and communication skills remained significantly related to functional communication at school entry. These results highlight that there are factors very early in development that predict later functional communication in children with CP. Screening very early during child development (18-24 months) is indicated so that we can provide targeted assessment and intervention for children most at risk of poorer functional communication outcomes.

Motor severity in children with cerebral palsy studied in a high-resource and low-resource country.

This study compared the gross motor severity and motor type of two cohorts of young children with cerebral palsy residing in high-and low-resource settings (Australia and Bangladesh, respectively). Patterns of functional severity, motor type, comorbidities, etiology, and environmental risk factors differed markedly between settings. This paper is of high importance as it provides useful information to assist with global perspectives on CP management. This unique data provides scope for improved primary prevention in Bangladeshi children, and a significant window of opportunity for secondary prevention owing to delayed age of diagnosis and delayed access to appropriate treatments. Providing training, resources and support to clinicians in low-resource settings to assist in earlier and differential diagnosis and uptake of classification systems will ultimately assist in improved delivery of services for children with CP in these settings.
Achievements

**Gayle G. Arnold Award** for Ms Sarah James and co-authors from the QCPRRC for **best paper** at the American Academy for Cerebral Palsy and Developmental Medicine meeting in September 2014.

**Efficacy of a web-based multimodal therapy on occupational performance, upper limb function and visual perception for children with unilateral cerebral palsy**

James S, Ziviani J, Ware R & Boyd RN.

This paper reports on occupational therapy outcomes from the “Move it to improve it” (Mitii™) study. Therapy delivered via web-based or virtual reality systems is emerging as a way to deliver therapy for individuals with cerebral palsy, however, research to date has primarily been from small studies. This paper reports on improvements in motor planning and upper limb coordination from the first large clinical trial of a web-based therapy program for children with unilateral cerebral palsy. Eighty-two children with spastic hemiplegia were recruited at a tertiary referral centre. Participants were randomly allocated to either the intervention group (Mitii™ program for 20 weeks, 20-30 minutes daily) or the control group (standard care for 20 weeks). The Mitii™ program consists of approximately 60% upper limb and visual perception/cognitive activities and 40% gross-motor activities.

The intervention group demonstrated significantly greater improvements on the Assessment of Motor and Processing Skills (AMPS) – Motor Scale, AMPS Process Scale, Canadian Occupational Performance Measures (COPM) – Performance Scale, COPM Satisfaction Scale, and Jebsen-Taylor Test of Hand Function for the dominant UL compared to the control group.

The Mitii™ program is an effective intervention for children with unilateral CP to improve motor and processing skills for activities of daily living, individual goal attainment and visual-spatial abilities. Children classified as level II on the Manual Ability Classification System may require additional specific upper limb training to improve their manual abilities. The Mitii™ program offers a home-based alternative to standard face-to-face therapy that can provide significant benefits for children with unilateral CP.

**MacKeith Press Promising Career Award** for Dr Lee Barber from the QCPRRC at the American Academy for Cerebral Palsy and Developmental Medicine meeting in September 2014.

Dr Barber is a Senior Physiotherapist and NHMRC Early Career Researcher at QCPRRC who has completed a PhD on the investigation of the morphological and mechanical properties of muscles and tendon in children and adolescents with spastic type cerebral palsy. He has a great interest in how treatments to improve walking ability for children with spastic type cerebral palsy, such as botulinum toxin and surgical techniques, impact on muscle growth, and muscle and tendon structure and function. Dr Barber uses a number of innovative techniques including ultrasound, 3D motion capture, freehand 3D ultrasound, surface electromyography (EMG) and dynamometry to measure in vivo muscle and tendon structure and function during limb movement and gait.

At the 2014 Annual Meeting of the American Academy of Cerebral Palsy and Developmental Medicine, San Diego, USA, Dr Barber presented the findings of a study investigating how lower leg muscles and tendons function during walking in young adults with CP. The methods and findings from the study will help further understanding of the impact of treatments. At this premier meeting for researchers within the field of cerebral palsy and developmental medicine, Dr Barber was awarded the prestigious MacKeith Press Promising Career Award.
The 2014 Annual Meeting ‘To Boldly Go’ provided high-quality dissemination of information in the basic sciences, prevention, diagnosis, treatment, and technical advances as applied to persons with cerebral palsy and other childhood-onset disabilities.

The full list of QCPRRC abstracts are available at: http://www.som.uq.edu.au/cerebralpalsy/2014aacpdmabstracts

It was an honour to attend the 68th Annual Meeting of the AACPDM in San Diego under an international student scholarship awarded by the AACPDM. The conference was an inspiring compendium of science and clinical care hosted within the friendly warmth of San Diego. The conference opened with a discussion panel of parents who have children with cerebral palsy. The importance and power of communication was a theme that resonated among all the parents in the panel. Both their desire to communicate with their children but also the critical importance of parents to be able to communicate with their health professionals and for these professionals to hear them and listen to the individual needs of that family. The power of communication was also the central premise to Richard Ellenson’s presentation on his journey to find a voice for his son with cerebral palsy through inventing a communication device. He demonstrated that by innovation and drive one can make a significant change in a young person’s quality of life. Finally Rick Hansen, a man who received a spinal cord injury in his teens then went on to wheel around the globe, changing the world’s perception of ‘disability’ and ‘ability’ and left us all motivated to challenge our thoughts and perceptions with his sage words, “our paradigms can trip us up. We must continue to challenge them”. An important mantra in research, but also in life.

Andrea Coleman BSpPath, MBBS scholar Griffith University & QCPRRC Research Assistant.

It was positive to have the opportunity to attend sessions exploring how to best provide services to children with cerebral palsy living in poorly resourced settings, an emerging field in disability. There is growing evidence of the huge disparities which exist between the delivery of health and research resources, which are focused largely on the minority of individuals with disabilities living in high-resourced societies. Day one kicked off with an instructional course discussing the opportunities and challenges surrounding health disparities, prematurity and cerebral palsy. Using the framework of the ‘Innovative Solutions for Disadvantage and Disability’ NGO, participants attempted to tackle the tough issues; sharing from their diverse backgrounds, spanning work in low-resourced settings in western countries as well as experiences from low-resource countries. Day two began with a breakfast session exploring strategies for establishing a sustainable international program in a developing countries for the rehabilitative management of children with disabilities. This session prompted discussions regarding entry points for programs which may create the greatest impact and long-lasting change. In conjunction with our Centre’s free papers and posters on the topic, there were numerous opportunities to discuss this important issue with participants at this year’s meeting.

Kath Benfer MPH, BSpPath, NHMRC PhD scholar.
New studies funded by the NHMRC

National Health and Medical Research Council

QCPRRC had an outstanding outcome achieving
3 Project grants, 1 Partnership grant and an Early Career Fellowship

REACH: Randomised trial of Rehabilitation very EArly in Congenital Hemiplegia
NHMRC 1078877 - $939,038

Chief Investigators: Prof Roslyn Boyd, Prof Jenny Ziviani, Dr Leanne Sakzewski, A/Prof Iona Novak, Prof Nadia Badawi, Dr Kerstin Pannek, A/Prof Catherine Elliott, Dr Susan Greaves, Dr Andrea Guzzetta, Dr Koa Whittingham

Associate Investigators: A/Prof Jane Valentine, Prof Paul Colditz, Dr Robert Ware, Ms Cathy Morgan, Dr Margaret Wallen, Dr Karen Walker, Dr Russell Dale, A/Prof Stephen Rose, Dr Roslyn Ward, Ms Brittany Choy, Dr Mary Sharp, Dr Noel French, Ms Lisa Findlay, Dr Priya Edwards

Children with congenital asymmetric brain lesions frequently develop hemiplegia with major limitations in use of their impaired hand which results in poor bimanual coordination and impacts on the performance of daily activities in home, school and community life. By 8 months corrected age (c.a.) over 70% of infants with asymmetric brain lesions already perform bimanual tasks in a maladaptive fashion, however these children are frequently not referred to or receive therapy until 12 months c.a. Currently, two very different intensive therapy approaches are used each with some evidence of improving outcomes for school-aged children. Traditional therapy adopts a bimanual approach (BIM) in which equal use of both hands is trained in bimanual tasks. More recently constraint induced movement therapy (CIMT) employs a unimanual approach whereby the unimpaired arm is constrained in a glove with intensive unimanual training of the hemiplegic arm. This randomised trial will directly compare an intensive infant friendly ONE handed approach using modified Constraint Induced Movement Therapy (mCIMT) to an equally intensive TWO handed approach Bimanual Therapy (BIM) in very young infants with asymmetric brain lesions. This is a multisite study involving Queensland, New South Wales, Victoria and Western Australia.

There are a variety of PhD opportunities for candidates in occupational therapy and physiotherapy linked to this research. Please contact the research team if interested.
Qld: r.boyd@uq.edu.au
Nsw: iNovak@cerebralpalsy.org.au
Vic: sue.greaves@rch.org.au
W.A: Catherine.Elliott@health.wa.gov.au

SuPrime study: Neuroprotective role of sulphate among preterm babies
NHMRC 1081911 - $720,437

Chief Investigators: Dr Paul Dawson, Prof Nadia Badawi, Prof Roslyn Boyd, A/Prof Vicki Flenady, Dr Elizabeth Hurrion, Prof Francis Bowling, Dr Pieter Koorts, Prof Sailesh Kumar

Associate Investigators: Ms Cathy Morgan, Dr Kristen Gibbons, Dr Michael Beckmann, Prof Paul Colditz, Dr Sarah McIntyre, Ms Victoria de Ryck

Preterm birth places more than 4000 Australian infants born each year at an increased risk of life-long health outcomes, including cerebral palsy and cognitive dysfunction. Our research into the neuroprotective role of sulphate among preterm babies will address this important health issue.
This study involves measuring plasma sulphate levels in preterm infants (<32 weeks gestation) recruited over 3 years, and to test the hypothesis that sulphate levels in 1 week old infants inversely correlates with adverse neurodevelopment outcome. We will assess infants at 12 weeks of age using General Movements as an established marker of cerebral palsy, which will enable us to provide cohort data within 3.5 years. We will also follow the children up to 24 months corrected age (c.a.) for formal neurodevelopmental assessment.
The infant born very preterm (23-31 weeks gestation) is at high risk of an adverse neurodevelopmental outcome (10% cerebral palsy, 50% learning and behavioural difficulties at school age). In the several months after very preterm birth, the brain is at its maximal capacity for neuroplasticity and repair. This study aims to predict adverse neurodevelopment earlier and more accurately than currently possible in a cohort of 250 babies. To do this we will use (i) advanced brain imaging (MRI) to determine the structural wiring diagram of the brain (‘brain connectome’), (ii) dense array electroencephalogram (EEG) to establish the functional activity or electrical ‘traffic’ being carried on the main branches of the connectome, and (iii) structured clinical neurodevelopmental assessments to provide a cutting-edge view of the state of brain development. This research will represent a major advance towards better neurodevelopmental outcomes for preterm babies through the very early detection of those likely to have adverse neurodevelopment outcome, the creation of a platform for the development of rationally based very early interventions, and the rapid testing of the efficacy of these interventions.

The team assembled to undertake this research brings together Australia’s only two sites with an MRI-compatible incubator into an exceptional multidisciplinary research team of international standard.

There are a variety of PhD opportunities including physiotherapy, occupational therapy, psychology and medicine around early detection of cerebral palsy, parenting acceptance and commitment therapy and neuro-imaging etc. Please contact the research team if interested. Roslyn Boyd r.boyd@uq.edu.au, Paul Colditz p.colditz@uq.edu.au or Michael Fahey Michael.Fahey@monash.edu.au

Dr Leanne Sakzewski – NHMRC Early Career Fellowship 2015-2018

Improving translation of intensity and quality of upper limb rehabilitation provided by occupational therapists to children with unilateral cerebral palsy: A cluster randomised controlled trial

NHMRC 1090828 - $216,605

Children with congenital hemiplegia have difficulties effectively using their impaired hand in two-handed tasks, a major issue when 70% of daily activities are inherently bimanual. Findings from Dr Sakzewski’s PhD studies and two subsequent randomised clinical trials (RCTs) of upper limb rehabilitation for children with hemiplegia have made major contributions to understanding the type and dose of rehabilitation required to impact long term changes in children’s upper limb skills. Despite strong evidence supporting goal-directed upper limb rehabilitation at an adequate dose, there has been minimal uptake of evidence into clinical practice. Dr Sakzewski has pursued a NHMRC TRIP Fellowship (2012-2014) developing and piloting a multifaceted implementation program to increase occupational therapists’ uptake of current evidence-based rehabilitation. This new Early Career Fellowship research program will further develop this multifaceted translational research implementation program in a cluster RCT. The multifaceted implementation program will be compared to a single faceted intervention to increase the quality and dose of upper limb rehabilitation provided by occupational therapists to children with hemiplegia. Findings will guide the provision of effective translational research interventions that will lead to improved care provision and patient reported outcomes.

There are PhD opportunities in occupational therapy related to this study. Please contact Dr Leanne Sakzewski l.sakzewski@uq.edu.au if interested.
Meet our new team members...

**Ms Kellie McGrory: Research Nurse**
Kellie is a neonatal nurse and midwife currently working in the Neonatal Intensive Care nursery at the RBWH. She has joined the PP REMO team in 2014 to assist with recruitment, escorting babies to brain imaging (MRI) and electroencephalogram (EEG) as well as coordinating the return of the 1-year-old participants for their follow up assessment.

**Dr Tiina Lammervo: Senior Administration Officer**
Tiina joined the QCPRRC team in October 2014 bringing administration experience from her previous roles with the University of Queensland and University of Jyvaskyla. Her research and teaching background is in applied language studies. In a previous role she was responsible for the research based development of a language testing organisation. Tiina is working Wednesday to Friday in a job share arrangement with Angie Strelow providing support to the Scientific Director, staff and students.

**Ms Miranda Campbell: Occupational Therapist, Masters Student**
Miranda is a senior occupational therapist currently working at the Lady Cilento Children’s Hospital in cardiac and critical care. Miranda received a funding grant through HeartKids to undertake her research investigating neurological and neuromotor outcomes in infants who undergo open heart surgery. Miranda has enrolled in a Master of Philosophy through the University of Queensland and is being supervised by Dr Leanne Sakzewski.

Welcome to our students from The University of Queensland Bachelor of Medicine Bachelor of Surgery (MBBS) honours program. It is great to have the next generation of clinical researchers undergoing research training with the Centre. They are being supervised by Professor Ros Boyd.

**Aminda Nanayakkara**
*Project:* Exploring the reliability of a rater and between raters on the General Movements Assessment in very preterm infants to examine the feasibility of using this assessment to detect neurological deficits as early as possible.

**Jinwen He**
*Project:* Investigating the relationship between brain structure and school readiness in children with cerebral palsy.

**Sean McKeague**
*Project:* Investigating the reliability of the Dubowitz neurological exam in the assessment of very preterm infants within the PP REMO study.

**Ella Houston**
*Project:* Investigating the relationship between corticospinal tract reorganisation and mirror movements in children with congenital hemiparesis.
PPREMO: Prediction of PREterm Motor Outcomes

Chief Investigators: Ms Joanne George, Prof Roslyn Boyd, Prof Paul Colditz, A/Prof Stephen Rose, Dr Kerstin Pannek, Dr Jurgen Fripp.

PPREMO is examining the relationship between brain structure (MRI) and function (General Movements, Dubowitz, NNNS etc) of very preterm infants (born <31weeks) to predict neurodevelopmental outcomes.

PRETERM
Current recruitment is 90 preterm infants. Of these 70 have commenced the study with an initial MRI and functional assessment, after reaching 30 weeks gestation. A further 10 babies are needed.

1 YEAR OLDS
We have started seeing our preterm recruits come back for their 1 year old assessments. A total of 15 have so far been assessed.

TERM RECRUITS
A control group of 20 full term-born infants are also needed for the study. So far 14 have been recruited, with 6 still required.

UP-BEAT: Upper limb Baby Early Action Observation Training

Chief Investigators: Prof Roslyn Boyd, Prof Jenny Ziviani, Dr Andrea Guzzetta, Prof Virginia Slaughter, Ms Micah Perez, Ms Lisa Findlay, Ms Bernadette Shannon (ARC Australian Research Council DP110104292)

We have now exceeded our recruitment targets for UPBEAT - having a combined cohort of 47 (intended sample of 40) healthy term-born participants; and a combined cohort of 34 (intended sample of 32) participants with asymmetric brain injury (asymBI). Our last 6 healthy term-born participants are due to complete their final 12 month assessments by the end of 2014. We have recently recruited four participants with asymBI, with our latest recruit due to commence the study in January 2015.

In July, Professor Boyd and Dr Guzzetta presented early findings from the study at an international summit for early detection and intervention in Vienna. We are continuing to analyse UPBEAT data and are preparing to submit papers on the new assessment ‘Grasping and Reaching Assessment of Brisbane’ or the ‘GRAB’, which was designed by the research team to evaluate the early development of reaching and grasping behaviours in babies with asymBI. Early detection of reaching and grasping asymmetries between hands can allow for prompt and early intervention that may help these babies to develop more complex upper limb motor skills that they will need later in life.

For more information about this study, please contact:
Bernadette Shannon:
T: 07 3646 5540 E: bernadette_shannon@health.qld.gov.au
Micah Perez: T: 07 3646 5372 E: m.perez1@uq.edu.au

Funding support:
**Prem Baby Triple P: Supporting Parents of Preterm Infants**

**Chief Investigators:** Prof Paul Colditz, Prof Matthew Sanders, Prof Roslyn Boyd, Dr Margo Pritchard, A/Prof Peter Gray, A/Prof Michael O’Callaghan, Prof Virginia Slaughter, Dr Koa Whittingham. (NHMRC 1024345)

**PhD students:** Michael Herd, Tracey Evans, Jessica Ahern

Having a very preterm baby can be an extremely challenging time for parents in the Neonatal Intensive Care Unit with the challenges often persisting as their babies are at a higher risk than term babies for many adverse outcomes including behavioural and learning difficulties.

The Prem Baby Triple P Study is evaluating the effectiveness of a parenting program for parents of very preterm infants (<32 weeks gestational age) in improving both child and parent/couple outcomes at 24 months corrected age. Recruitment is progressing well with 135 RBWH and 138 Mater Mothers’ Hospital families now participating. The study is on track to finalise recruitment by the end of April 2015.

Congratulations to team members and PhD candidates Tracey Evans and Michael Herd who will be submitting their PhDs in January and February 2015, respectively. Well done, Tracey and Michael, and best wishes for your future endeavours!

**If you would like to find out more about this project please visit our website** [http://exp.psy.uq.edu.au/prembaby](http://exp.psy.uq.edu.au/prembaby).

**Contact us:** Dr Leanne Winter (Project Coordinator)

T: 07 3646 2349 E: prembabytriplep@psy.uq.edu.au

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**PREMM Study: PREMature infants Massage therapy**

**Chief Investigators:** Dr Melissa Lai, Dr M Giulia D’Acunto, Dr Andrea Guzzetta, Prof Roslyn Boyd, Prof Paul Colditz, Ms Naoni Ngenda, Ms Penny Love, Ms Bernadette Shannon, Ms Sonia Sam, Dr Kerstin Pannek

The PReterm Early Maternal Massage (PREMM) study is investigating an early intervention programme which is based on enriching the postnatal environment to optimise brain development and infant attachment. Outcomes are being assessed with brain imaging (MRI), electroencephalogram (EEG), body composition, neurodevelopmental assessments and infant observations and questionnaires to assess maternal-infant attachment. Infants are randomised to a massage intervention administered by the parent on a daily basis up until term, or a control standard care group.

Recruitment has progressed well and we have nearly reached our recruitment target of 60 and aim to complete recruitment early next year. One-third of infants involved in the study have completed all of their assessments up until completion at 2 years.

**For more information about the PREMM study, please contact:**

Melissa Lai  melissa.lai@uq.edu.au

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Child Study Updates

CP Child: Gross Motor and Brain Development

Chief Investigators: Prof Roslyn Boyd, Dr Lynne McKinlay, Ms Megan Kentish, Ms Meredith Wynter, Ms Christine Finn, Ms Rachel Jordan (NHMRC 465128)

2014 has been another busy year for the QLD CP Child study, with many outreach trips and local visits to complete the final assessments for the study. The last assessment is due to be conducted in March 2015, with the final outreach trips planned to Bundaberg and Cairns in January and February 2015.

The team presented data at the American Academy of Cerebral Palsy and Developmental Medicine (AACPDM) conference in San Diego in September this year on the “Relationship between brain structures and motor function” and “Patterns of gross motor severity and motor type in preschool age children with cerebral palsy: comparison between high- and low-resource countries”. Further papers are planned for the future particularly looking at longitudinal analysis of the complete dataset. Katherine Benfer has just returned to Australia following field work in Bangladesh where she has been conducting a 12 month follow-up of the Bangladesh sample. This follow-up study explores children’s gross motor function using the Gross Motor Function Measure as well as classification on the GMFCS to understand differences between the patterns seen in Australia and Bangladesh. We would like to thank all families who participated in these studies, and the staff at the Centre for the Rehabilitation of the Paralysed in Bangladesh.

We would like to take this opportunity to sincerely thank all the children involved in this study, and their families, for their time and commitment in supporting this study.

For more information, please contact Camilla Davenport, Study Co-ordinator, T: (07) 3646 5541 or E: camilla.davenport@uq.edu.au.

Growth, Nutrition and Physical Activity

Chief Investigators: Prof Peter Davies, Prof Roslyn Boyd, Dr Kristie Bell, Prof Richard Stevenson
Ms Camilla Davenport, Ms Stina Oftedal, Ms Kelly Weir, Ms Kath Benfer, Ms Piyapa Keawutan (NHMRC 569605)

The Growth, Nutrition and Physical Activity study team has been busy in 2014 conducting assessments, visiting families on outreach and analysing data. All of the children participating are now being seen for their final assessments. It has been wonderful catching up with families and seeing children graduate from the study after their 5 year assessment. Our final child is due to graduate from the study in March 2015. After working hard analysing data relating to dietary intake, body composition, micronutrient and energy intake, physical activity and feeding ability a number of our team presented papers at the prestigious American Academy for Cerebral Palsy and Developmental Medicine in San Diego in September this year.

These papers included “Micronutrient intakes of preschool-aged children with cerebral palsy”, “Sedentary and active time in toddlers with and without cerebral palsy”, and “Is growth and nutritional status in children with cerebral palsy related to the severity of the brain lesion?”.

We would like to recognise the time and commitment all our study participants have provided supporting this study and wish all the children and their families involved in the study a very happy and safe festive season.

We are well under way with the new arm of the study investigating Bone health in a 30 minute Dual Energy X-ray Absorptiometry (DEXA) study. Children who are being seen for their 5 year old assessments and who can travel to the Children’s Hospital are eligible to participate in the bone health study. Please don’t hesitate to contact us if you would like more information.

We are still recruiting and would welcome any children who were born in QLD in 2009 with a diagnosis of cerebral palsy. For more information on the study, or if you would like to participate, please contact Dr Kristie Bell (study coordinator) T: (07) 3646 5541 or E: k.bell@uq.edu.au.
PREDICT CP: Implementation of comprehensive surveillance to predict outcomes for children with cerebral palsy

**NHMRC 1077257 - $1,593,519**

**Chief Investigators:** Prof Roslyn Boyd, Prof Peter Davies, Prof Jenny Ziviani, Prof Stewart Trost, Dr Lee Barber, Dr Robert Ware, A/Prof Stephen Rose, Dr Koa Whittingham, A/Prof Jennifer Whitty, Dr Kristie Bell

**Associate Investigators:** Prof Paul Scuffham, Dr Chris Carty, A/Prof John Walsh, Ms Megan Kentish, Dr Priya Edwards, Dr Lisa Copeland, Ms Kelly Weir, Dr Leanne Sakzewski, Dr Andrea Guzzetta, Dr Denise Brookes, Prof Alan Coulthard, Dr Rebecca Pelekanos, Mr Owen Lloyd, Dr Adina Piovesana

This five year study will implement population-based comprehensive surveillance of children with CP from early diagnosis (at 2-3 years) on brain structure and function (early gross and fine motor, growth, nutrition, HPA, musculoskeletal development) to PREDICT outcomes at school age (8-9 years) - a time of definitive motor maturation, walking ability, need for orthopaedic intervention, and educational attainment. We will utilise data across the full spectrum of functional severity from our two overlapping prospective population-based CP cohorts (followed from 18-24 months corrected age (c.a.) to 5 years), and will confirm the relationship between severity and brain structure on diffusion MRI at 8-9 years of age. At this age, health care utilisation is likely to be different to preschool age so that associations between health resource use and a beneficial health/social outcome will be re-evaluated at 8-9 years. In addition to comprehensive reports on health outcomes, this study will enable us to build prediction models so that for future infants born with CP we can predict their outcomes and service requirements.

The PREDICT study offers opportunities suitable for new graduates as well as experienced clinicians. Opportunities exist for candidates with a range of backgrounds including medicine, allied health (physiotherapy, occupational therapy, speech pathology, nutrition and dietetics and psychology), nursing, human movement studies, exercise science and/or health economics to undertake a PhD. Please contact the research team on the below emails if interested.

Roslyn Boyd – r.boyd@uq.edu.au
Stewart Trost – s.trost@qut.edu.au
Lee Barber – l.barber@uq.edu.au
Koa Whittingham – koawhittingham@uq.edu.au
Jennifer Whitty – j.whitty@uq.edu.au
Mitii™: “Move it to improve it” for Children with Cerebral Palsy

Chief Investigators: Prof Roslyn Boyd, Prof Jenny Ziviani, A/Prof Anthony Smith
Researchers: Dr Louise Mitchell, Ms Sarah James, Dr Adina Piovesana, Ms Stephanie Ross.

A total of 102 children with unilateral CP have completed Mitii training. There was a big range in the amount of Mitii™ that participants did over the 20 weeks. The maximum training that one participant did was almost 80 hours!

In the analysis of our final results we have determined that after 20 weeks of Mitii™ compared to standard care:

**Mitii™ improved:**
- Activities of daily living skills
- Visual perception
- Goals - e.g. brushing own hair
- Strength – e.g. sit to stands and squats

**Mitii™ did not change:**
- Executive functioning skills
- Everyday physical activity
- Bimanual performance

Rylee enjoying her Mitii Reward Chart

Mitii™: Move it to improve it for Children with Acquired Brain Injury

Chief Investigators: Prof Roslyn Boyd, Prof Jenny Ziviani, Ms Emmah Baque, Dr Adina Piovesana, Ms Stephanie Ross, Dr Lynne McKinlay, Mr Owen Lloyd.

The Mitii study for children with ABI has enrolled 58 children from all over Queensland and is nearing completion. There are 4 assessments to go and all data will be collected by the end of January 2015. All participants have finished the Mitii training program and did a great job completing up to 48 hours of training! Over the next year Emmah and Adina will be analysing the outcomes to report back to the participants and to publish the findings.

Additionally, as part of her PhD and the Mitii ABI study, Emmah will be looking at how much energy children with ABI use while completing daily activities such as walking at different speeds, home tasks and playing an interactive therapy program. Emmah requires participants to complete a one-off 2 hour physiotherapy assessment while wearing an ActiGraph accelerometer, heart rate monitor and a mask.

If you would like to participate in Emmah’s study please contact her on (07) 3646 5361.

Emmah conducting her physiotherapy assessment
MiYoga: Mindfulness Yoga for Children with Cerebral Palsy and their Caregivers

Chief Investigators: Ms Catherine Mak, Dr Koa Whittingham, Prof Roslyn Boyd, A/Prof Ross Cunnington

The trial of MiYoga for children with cerebral palsy is continuing into 2015. Parents and children who have participated in MiYoga so far have reported enjoying the opportunity to take part, meet other families and learn some mindfulness and yoga techniques that can be incorporated into everyday life.

The MiYoga study is investigating whether an 8 week mindfulness yoga program enhances cognitive function such as attention, physical strength and fitness, behaviour and emotional control in children with diplegia and hemiplegia.

MiYoga incorporates a family centred approach to therapy by inviting a caregiver to participate alongside their child. The program is facilitated by a registered psychologist who is also a Yoga Australia registered yoga teacher with experience in teaching yoga to children with disabilities.

At the conclusion of the study, participants will receive a brief neuropsychological report that outlines the child’s cognitive functioning. This written report will highlight their strengths and difficulties. Along with the report there will be some general recommendations and tips on how parents can help their child develop and strengthen different cognitive abilities.

Recruitment is still ongoing and we will be expanding the MiYoga program to the Gold Coast and Sunshine Coast in 2015.

Participation commitment:
• 3-4 assessment sessions over an 8-10 month period
• 6 x 90 minute sessions of MiYoga, once-a-week for 6 weeks, followed by two once-a-week skype/phone consultations
• Daily practice at home using the MiYoga poster/DVD for a minimum of 20 minutes a day for the 8 week period

If you have a child with diplegia or hemiplegia between 6 - 16 years of age and would like to be involved in this novel study, or if you would like to find out more about this project, please contact our registered psychologist, yoga teacher and study coordinator: Catherine Mak on (07) 3646 5539; email: c.mak@uq.edu.au or visit our website https://exp psy.uq.edu.au/miyoga/
Cerebral Palsy Muscle Research

Chief Investigators: Dr Lee Barber, Dr Chris Carty, Dr Glen Lichtwark, Mr Jarred Gillet, Prof Roslyn Boyd

Individuals with cerebral palsy have muscles that have adapted and function in different ways than typically developing muscles. Our Cerebral Palsy Muscle Research group is working hard to understand how best to keep the muscles functioning.

Firstly a huge congratulations goes to our three Honours students, Ms Felicity Read (PT), Ms Jacquie Lovatt-Stern (MD) and Ms Dervla Ryan (PT) who have completed their Honours studies with the CP Muscle Research group. They have learnt a lot about CP, muscles and doing research, and all have produced very high quality Honours theses. All three have also just completed their final exams for their respective undergraduate degrees so we wish them all the very best for their future endeavours.

We welcome Ms Felicity Read back to our group. She was awarded a UQ School of Medicine Summer Scholarship and will spend 9 weeks investigating the longitudinal effects of Botulinum toxin type A on walking ability in children with CP. Felicity will be busy both in the Queensland Children’s Gait Laboratory and the Lady Cilento Children’s Hospital. Mr Jarred Gillett has started our very important study investigating the impact of combined weight training and skills training on contracture and walking function in young adults with CP. If you are a young adult with CP and would like 12 weeks of one-on-one exercise training to improve your strength and fitness please contact us.

Dr Glen Lichtwark and Ms Shari O’Brien, from the School of Human Movement Studies, The University of Queensland, are continuing to recruit adults between the ages of 18-65 years with CP for our study investigating physical activity capacity and how muscle changes across the lifespan. Please contact us if you are interested in volunteering.

Thank you very much to those that have already been involved in our projects and we look forward to meeting new interested participants. If you would like to be involved please contact us and don’t forget to keep up with information at our Facebook page https://www.facebook.com/CPMuscleResearch.

Dr Lee Barber. Ph 07 3646 5537.
Email l.barber@uq.edu.au.
Web https://www.facebook.com/CPMuscleResearch
PhD, MPhil and Honours Opportunities at QCPRRC in 2015

All research training opportunities involve supervision from a supportive team of experts in the field and the opportunity to be part of a multidisciplinary research team. Honours, MPhil and PhD students select topics embedded in current clinical trials and population based cohort studies. They are closely supported by senior staff and postdoctoral fellows, and have the opportunity for practical clinical data collection, clinical experience linked to the relevant studies, or a program embedded within clinical teams in our state-wide service from the Department of Paediatric Rehabilitation. All postgraduate students have the opportunity to be involved in our annual training course on systematic reviews and meta-analysis (8 sessions), which will assist them in developing skills for their literature search and systematic review of the literature or the psychometric properties of measures that they will use.

For details of available projects please visit our website http://www.som.uq.edu.au/cerebralpalsy/RHD-opportunities-2015 or for general enquiries contact us at QCPRRC@uq.edu.au.

Lady Cilento Children’s Hospital

The opening of the Lady Cilento Children’s Hospital (LCCH) at South Brisbane on 29th November 2014 signals the beginning of a new era for children’s health care in Queensland. The Royal Children’s Hospital and Mater Children’s Hospital have merged into one hospital to improve patient outcomes. For more information on the LCCH visit: http://www.health.qld.gov.au/childrenshospital

Centre for Children’s Health Research

Scheduled to open in April 2015 next to the LCCH, the Centre for Children’s Health Research (CCHR) will bring together child-health researchers from the Royal Children’s Hospital, Mater Children’s Hospital, The University of Queensland, Queensland University of Technology & the Translational Research Institute. The QCPRRC team are excited to be a part of this new facility and are busy planning our move in March 2015. In the mean time, it is business as usual.

Baby news!

Welcome to Thomas James born to proud parents Zoe Cahill and her husband Matt on 6th August 2014, weighing 8.4 pounds.

Welcome to William John born to proud parents Alice Greenwood and her husband Matt on 6th December 2014, weighing 8.6 pounds.
We are investigating the factors which contribute to declines in function across the lifespan in people with Cerebral Palsy. This project aims to look at muscle degradation throughout life and its relationship to changes in physical activity levels. We will be using a questionnaire, ultrasound, functional measures, an activity monitor and strength testing equipment to look at how you and your muscles function before and after exercise training.

If you (or someone you know) have cerebral palsy, are between the ages of 15-30 years, and can walk independently, you could really help us. We will be conducting the study during 2014 and 2015 and the findings may help tailor future exercise programs for people with cerebral palsy. If this has sparked your interest and you would like to volunteer, or if you have further questions, please contact us and we can send you an information pack.

Mr Jarred Gillett, Queensland Cerebral Palsy and Rehabilitation Research Centre, School of Medicine, University of Queensland. P. (07) 3646 5537 E. jarred.gillett@uqconnect.edu.au
Dr Lee Barber, Queensland Cerebral Palsy and Rehabilitation Research Centre, School of Medicine, University of Queensland. P. (07) 3646 5537 E. lee.barber@uq.edu.au
Dr Glen Lichtwark, School of Human Movement Studies, University of Queensland. P. (07) 3365 3401 E. g.lichtwark@uq.edu.au
Prof Roslyn Boyd, Queensland Cerebral Palsy and Rehabilitation Research Centre, School of Medicine, University of Queensland. P. (07) 36365542 E. r.boyd@uq.edu.au

How does exercise affect your muscles?

Help us understand how different forms of exercise impact how your muscles work.

We are comparing different types of exercise and training on how the leg muscles and tendons work in young adult with cerebral palsy. We will be using ultrasound, strength testing equipment, and exercise tests to look at how you and your muscles function before and after exercise training.

If you (or someone you know) have cerebral palsy, are between the ages of 18-65 years, and can walk (with or without a walking aid) you could really help us. We will be conducting the study during 2014 and 2015 and the findings may help tailor future exercise programs for people with cerebral palsy. If this has sparked your interest and you would like to volunteer, or if you have further questions, please contact us.

Dr Glen Lichtwark, School of Human Movement Studies, University of Queensland. P. (07) 3365 3401 E. g.lichtwark@uq.edu.au
Dr Lee Barber, Queensland Cerebral Palsy and Rehabilitation Research Centre, School of Medicine, University of Queensland. P. (07) 3646 5537 E. lee.barber@uq.edu.au

Muscle Function and Physical Activity over the Lifespan in People with Cerebral Palsy

We are investigating the factors which contribute to declines in function across the lifespan in people with Cerebral Palsy. This project aims to look at muscle degradation throughout life and its relationship to changes in physical activity levels. We will be using a questionnaire, ultrasound, functional measures, an activity monitor and strength testing equipment to look at how your muscles function and changes in your physical activity involvement.

If you have Cerebral Palsy, are between the ages of 18-65 years, and can walk (with or without a walking aid) you could really help us. We will be conducting the study during 2014 and 2015 and the findings may help your function and activity levels. If this has sparked your interest and you would like to volunteer, or if you have further questions, please contact us.

Dr Glen Lichtwark, School of Human Movement Studies, University of Queensland. P. (07) 3365 3401 E. g.lichtwark@uq.edu.au
Dr Lee Barber, Queensland Cerebral Palsy and Rehabilitation Research Centre, School of Medicine, University of Queensland. P. (07) 3646 5537 E. lee.barber@uq.edu.au