



The Children's Hospital Research Institute of Manitoba

Research Theme Annual Report

PURPOSE:

The purpose of this report is to inform the Board of Directors of our research activity for this past year. The audience is diverse in their understanding of the scientific method, biology and medical terminology. It is critical to be concise, brief, and to use lay language. The Board uses this information to ensure that CHRIM's vision, mission and values are being fulfilled on an ongoing basis, and to report to the Foundation on productivity and responsibility to our donors.

Name of Theme

Excellence in Neurodevelopment and Rehabilitation Research in Child Health (ENRRICH)

Group Leader and Members

(Please list in alphabetical order by last name with primary departmental affiliation, if any, and indicate whether MD or PhD or both)

Untitled

Co-leads:

Kelly Russell, PhD, Pediatrics and Child Health

Kristy Wittmeier, PhD, Pediatrics and Child Health

Co-ordinator:

Brittany Curtis, MCP, Pediatrics and Child Health

Members:

Mandy Archibald, PhD, Nursing
Pam Becker, MOT, Rehabilitation Centre for Children (healthcare leadership)
Kristene Cheung, PhD, Clinical Health Psychology
Susan Doyle, PhD, Clinical Health Psychology
Michael Ellis, MD, Surgery, Pan Am Clinic
Melanie Fernandes, BMR(PT), Physical Therapy Instructor
Christine Froese, BMR(OT), Rehabilitation Centre for Children (healthcare leadership)
Allan Garland, MD, Internal Medicine
Kerstin Gerhold, MD, Pediatrics and Child Health
Elizabeth Hammond, PhD, Physical Therapy
Ana Hanlon-Dearman, MD, Pediatrics and Child Health
Geoffrey Hicks, PhD, Biochemistry and Medical Genetics
Soheila Karimi, PhD, Physiology and Pathophysiology
Colin Kazina, MD, PhD, Surgery
Lauren Kelly, PhD, Pediatrics and Child Health
Michelle Lark, PhD, Children's Therapy Initiative
Deepak Louis, MD, Pediatrics and Child Health
Hassan Marzban, PhD, Human Anatomy and Cell Science
Diane Moddemann, MD, Pediatrics and Child Health
Joanne Parsons, PhD, Physical Therapy
Christy Pylypjuk, MD, Obstetrics, Gynecology and Reproductive Sciences
Mubeen Rafay, MD, Pediatrics and Child Health
Gina Rempel, MD, Pediatrics and Child Health
Florenzia Ricci, MD, PhD, Pediatrics and Child Health
Jacquie Ripat, PhD, Occupational Therapy
Lesley Ritchie, PhD, Clinical Health Psychology, Pan Am Clinic
Kim Thiessen, MOT, Rehabilitation Centre for Children (healthcare leadership)
Tamra Werbowetski-Ogilvie, PhD, Biochemistry and Medical Genetics
Roberta Woodgate, PhD, Nursing

Trainees:

Pramila Maharjan, Trainee (supervisor, Dr. Kristy Wittmeier)
Leo McKay, Trainee (supervisor, Dr. Geoff Hicks)
Kyle Millar, MD, Trainee (supervisor, Dr. Allan Garland)
Chelsea Scheller, Trainee (supervisor, Dr. Joanne Parsons)
Sarah Spenard, Trainee (supervisor, Dr. Florenzia Ricci)
Tegan Turner, Trainee (supervisor, Dr. Florenzia Ricci, Dr. Kelly Russell)

Parent Representatives:

Liz Bannister (co-chair, parent advisory committee)
Carrie Costello (co-chair, parent advisory committee)

External Advisory Committee:

1. Tracy Blake, Lead Physiotherapist, Volleyball Canada; Lecturer, Department of Physical Therapy, University of Toronto; Physical Therapist University Health Network-Toronto Western Hospital
2. Annette Majnemer, Professor, School of Physical & Occupational Therapy, McGill University; Senior Scientist, Research Institute-McGill University Health Centre
3. Nick Reed, Associate Professor, Department of Occupational Science & Occupational Therapy, University of Toronto; Canada Research Chair (Tier 1) in Pediatric Concussion
4. Shannon Scott, Professor, Faculty of Nursing, University of Alberta; Principal Investigator, ECHO; Canada Research Chair in Knowledge Translation in Child Health Distinguished Researcher, Stollery Children's Hospital

Goals of the Program: Who We Are, What We Do and Why

Please give a narrative summary of your group's identity and purpose. This account should be written in lay language and should identify how the theme has added value to the research efforts of the individual investigators (MAX 1 page)

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Who We Are:

The ENRRICH theme consists of 26 investigators, 5 professionals, 6 trainees, and 2 parent advisory members, all committed to the theme's vision of improving the quality of life for children and families requiring pediatric neurodevelopment and rehabilitation services in Manitoba, central Nunavut, and northern Ontario through research. We are a group committed to, and capable of developing the high-quality research programs needed in order to sustain and advance the quality of care that children receive. ENRRICH is a collaborative effort between three major provincial hubs for pediatric neurodevelopment and rehabilitation located in Winnipeg, Manitoba: Children's Hospital, Specialized Services for Children and Youth (SSCY), and the Pan Am Concussion Program. Children's Hospital provides neurodevelopment and rehabilitation services largely for the inpatient population and specialty outpatient clinics (rheumatology, plastic surgery, chronic pain, and scoliosis clinics among others). At SSCY centre, children and youth access outpatient neurodevelopmental and rehabilitation services through Neurodevelopmental Clinics and Programs (Child Development Clinic, Manitoba Fetal Alcohol Spectrum Disorder Centre, upcoming Cerebral Palsy program), Rehabilitation Clinics (Muscular Dystrophy, Spina Bifida, Orthopedic, Spine, Feeding, Complex Care, Assistive Technology, Amputee) and rehabilitation services (physiotherapy, occupational therapy, speech therapy, audiology). The broader SSCY Network includes rehabilitation therapists who work in schools, communities, and serve over 1400 children and youth in First Nation's communities through Jordan's Principle. The third hub is the provincial government-funded Pan Am Concussion Program, devoted to the comprehensive multidisciplinary care of approximately 900 children and adolescents each year with sports and non-sports related concussion and mild traumatic brain injury. The Pan Am Concussion Program also provides outpatient care for children who sustained a moderate or severe traumatic brain injury and serves rural and remote northern communities in Manitoba and Nunavut through telemedicine services. All three hubs conduct research; however, research efforts would benefit from a more coordinated and collaborative process. Through ENRRICH's values, we have begun to improve research across the three hubs.

What We Do:

Our members focus on neurodevelopment and rehabilitation research in child health from a diverse range of backgrounds, including, but not limited to, pediatrics and child health, nursing, occupational and physical therapy, biochemistry and medical genetics, and clinical psychology. In our first year as a theme, we have progressed in building a community within which to bring investigators, trainees, professionals, and parent advisors together. Under the guidance of Elder Mary Wilson, we are building a community that is increasingly informed with regard to Indigenous cultural safety in research. We are developing our trainee network, developing our communication tools, and have consulted with our parent advisory to develop our membership application and Catalyst Grant process. The first Catalyst Grant competition has been completed, and we awarded funding to support two new research collaborations between ENRRICH members. We have established an external advisory committee, initiated a collaboration with CanChild (Ontario), and submitted a national grant to Canadian Institutes of Health Research with representation from major Canadian pediatric rehabilitation facilities and rehabilitation-focused research networks (Child-Bright, Kids Brain Health). In addition, we are providing research support to our members in collaboration with SSCY Centre by way of research consultation, assisting with recruitment strategies and research access submissions, and we have obtained the necessary approvals to begin strategic implementation of a streamlined approach to recruitment through SSCY Centre via a consent to contact database. While COVID-19 slowed the establishment of new, collaborative research projects and partnerships, and prevented some research from progressing, we celebrate the successes that we have achieved and look

forward to increasing interdisciplinary connections in the coming year(s).

Why We Do It:

Compared to the national average of 3.7%, Manitoba has a higher proportion (4.1%) of youth aged 0-14 years who live with at least one disability. This increased prevalence is likely exacerbated in part by both Manitoba's geography and government funding arrangements that have historically resulted in systemic inequalities especially for Indigenous children and youth. There is high quality basic, clinical, population and health systems research underway in Manitoba related to pediatric neurodevelopment and rehabilitation. However, until now much of this research has been accomplished within silos by individual researchers or small groups of researchers rather than by coordinated interdisciplinary teams and collaborations that are better suited to creatively and effectively improving outcomes and quality of life among Manitoba children. A major contributor to this siloed research has been the lack of a network or common platform to support or facilitate neurodevelopment and rehabilitation researchers to come together with clinicians, policy makers, patients, and families. This has also limited opportunities for trainees. In order for the fields of neurodevelopment and rehabilitation to make meaningful advances in research and knowledge translation to improve children's and their family's quality of life, it is critical that scientists with a range of backgrounds and methodological expertise are encouraged and supported to collaborate with the multidisciplinary health care teams, patients, and families. ENRRICH exists in order to support this collaboration, by creating a hub of interdisciplinary research and knowledge translation that improves quality of life for children and families requiring pediatric neurodevelopment and rehabilitation services in Manitoba, central Nunavut, and northern Ontario.

Major Accomplishments (Milestones)

Please list **up to 5** major accomplishments/milestones from the past year. (media, impact on child health, events, awards and recognitions)

Untitled

1. Development of Guiding Documents, Theme Style and Branding

This year we focused on drafting essential guiding documents to solidify our mandate and build our community. These include our Terms of Reference, Membership Application, External Advisory Committee Roles and Responsibilities, and ENRRICH Catalyst Grant Application and process. We established our External Advisory Committee, to help ensure we uphold our mandate, and to provide strategic direction. We worked closely with the CHRIM Communications team (Erin Hill) to develop a logo, and style guide, and initiated a social media presence (Twitter; @ENRRICH_Theme). We are currently working with Erin Hill to develop a whiteboard video that can act as a functional introduction to our theme, and with a brand specialist agency to develop a website with the intention of launching in February 2021.

2. Working with Indigenous Partners

With a commitment to enhancing cultural knowledge and safety and how it can be applied to research, we have been working with Elder Mary Wilson to provide oversight and guidance as we build our community. In September we held our naming ceremony and feast at SSCY Centre, led by Elder Mary, who bestowed upon our theme the honour of an Indigenous name: Cowikanâpisîs (Cree), or "Dragonfly." As taught by Elder Mary, the dragonfly has the ability to travel on the medicine wheel, and to turn in every direction with the same spontaneity that children may; it teaches us that both delicacy and strength will keep us balanced in life. Elder Mary has recorded a video sharing the meaning of the dragonfly, that we will feature prominently on our website. We are currently working together with Elder Mary Wilson to develop a workshop series for our members and trainees, focusing on the language of research, from an anti-racism lens. This educational series will begin in February 2021. In collaboration with CanChild and Elder Mary, we are also in the process of applying for funding to translate the Measure of Processes of Care (MPOC), a family satisfaction and experience survey commonly used in clinical practice, research, and quality improvement into six native Indigenous languages (Cree, Ojibwe, Oji-Cree, Dakota, Dene, and Michif). Our ability to use this tool in Indigenous languages is an important step towards our commitment of conducting

culturally appropriate and safe research within our community.

3. Knowledge Translation Partnerships for Neurodevelopment and Rehabilitation Research

This year we have begun strengthening ties between our partnered organizations, including through increased exposure to different areas, types, and communities of research. As of the middle of 2020, we began to cross-promote Breakfast at SSCY and CHRIM Research Rounds through collaboration of the institutions' communications personnel. Six Breakfast at SSCY presentations took place, with many CHRIM and ENRRICH members in attendance. Four ENRRICH members also presented at CHRIM Research Rounds, with SSCY researchers in attendance. Multiple ENRRICH member presentations are confirmed or planned for Breakfast at SSCY and CHRIM Research Rounds for 2021 to promote our research. Other exciting knowledge translation activities include the imminent publication of new "Telemedicine and Virtual Concussion Care" guidelines for the Ontario Neurotrauma Foundation based on their recent concussion telemedicine research, and the development of an interactive prototype of a living lab for engaging families in knowledge translation. In addition, in collaboration with the national Networks of Centres of Excellence SKIP (Solutions for Kids In Pain), we oversaw the development, publication, and widespread promotion of the blog "Painfully Aware" to address the lack youth-informed resources for youth living with chronic pain.

4. Trainee Development

We are developing our trainee community. Engagement began in the ENRRICH proposal phase, where we discussed trainee priorities with BoB and DREAM trainees. We have aimed to act on their advice, to build a supportive trainee community within ENRRICH. We have connected with our trainee group, regarding their hopes for development and engagement through ENRRICH. As suggested and supported by our current group of seven, we are preparing to begin trainee peer presentation series that will begin in February—with Leo McKay taking the lead on our first session of the year. As our trainees are from diverse faculties, Leo will provide a summary of learning objectives prior to the presentation, which will help the group better engage with his research and offer critical feedback. At this early phase, we are pleased to have had an ENRRICH trainee share their work as part of the main Child Health Research Days 2020 conference session (Leo McKay, Prenatal alcohol exposure-induced retinoic acid deficiency during early gastrulation results in oxytocin signaling deficits and associated maternal care deficits). In addition, seven ENRRICH trainees and members' students presented at the conference.

5. Funding

Over the course of the year, ENRRICH investigators secured 23 grants, totaling over \$1.65M in new funding. Three major awards were granted through CIHR, to PI Dr. Lauren Kelly, Cannabis for symptom management in children with cancer; PI Dr. Tamra Werbowetski-Ogilvie, Novel therapeutic targets for Group 3 medulloblastoma stem cells; and PI Dr. Roberta Woodgate, Delivering mental health services to youth living in Island Lake Anishinew Nations. In addition, Dr. Geoffrey Hicks received significant funding from MLLC for his research to reduce the impacts of FASD. We also held our first ENRRICH Catalyst Grant competition and awarded two grants to support new collaborations, to PI's Dr. Lauren Kelly (Investigating neurodevelopmental outcomes following opioid exposures in pregnancy) and Dr. Florencia Ricci (Concurrent use of transcranial magnetic stimulation and constraint, induced movement therapy in children with unilateral cerebral palsy: a feasibility study).

In what ways has your work positively impacted child health? (1-2 examples)

1. Connection

We are creating opportunities for connections between individual PI's, to foster new and innovative research collaborations. We have started to see the development of these connections with the award of our first two Catalyst Grants. We are actively reaching out to trainees to co-develop a trainee program that will connect and support trainees. A strong community of researchers, with opportunity for collaboration, can be leveraged to attract trainees and new investigators to the area of child neurodevelopment and rehabilitation. Importantly, all members will be encouraged and supported to embark on personal and professional development to conceptualize and conduct research in a culturally safe and sensitive manner.

We are also prioritizing this within ENRRICH leadership, by attending events such as "Writing Effective EDI (Equity, Diversity and Inclusion) Statements", presented by Women in Science: Developing, Outreach, and Mentorship in Manitoba, and "Principles for Working in Good Ways with Indigenous Communities", hosted by Community Engaged Learning. While we are working to bring together diverse research perspectives, we are also promoting and encouraging CHRIM membership, and participation in the CHRIM community for those who were not previously members.

2. Research Innovation

By pairing research along with ongoing quality improvement initiatives, we have applied a more rigorous evaluation lens to improve outcomes. This year, ENRRICH members have (1) developed new Virtual Care Concussion Guidelines (for children) for the Ontario Neurotrauma Foundation based on their recent concussion telemedicine research and published a clinical algorithm to optimize remote delivery of pediatric concussion care in Canada's North, (2) embraced the opportunity to research family and therapist perceptions of virtual rehabilitation care, after a rapid change in service delivery prompted by the COVID-19 pandemic, (3) secured a grant with the Rady Innovation Fund to develop one of the first clinically embedded Living Labs in pediatric rehabilitation to provide access points for integrated knowledge translation, and data on stakeholder knowledge exchange priorities (protocol currently under revision at BMJ Open), and (4) submitted an application for the CIHR 2020 Fall Project grant, to apply the methods of Social Network Analysis, characterize knowledge translation networks in pediatric neurodevelopment and rehabilitation, and to recommend strategies to strengthen them, so that children and families across Canada have timely access to the safest, most effective healthcare available.

Research Funding

1. Total dollar value of your membership's research funding held in fiscal year 2020 (April 1, 2020 - March 31, 2021).

Total: \$1,379,090.73

2. Give a subtotal of ACTIVE research funding awarded (and held in Manitoba) in the past 12 months.

Subtotal: \$1,654,851.17

Highlight of current funding:

Archibald, M., Woodgate, R., Ricci, F., Russell, K., & Wittmeier, K., Rady Innovation Fund. 2020. Developing a living laboratory in pediatric rehabilitation research: A new paradigm for integrated knowledge exchange and patient engagement research. \$100,000.

Hicks, G. MLLC. Global leadership in reducing the impacts of FASD. 2020-2023. \$1,350,000.

Hicks, G. KBHN Implementation Awards. 2020-2023. Implementation of a genomic assessment tool from early identification of infants and children at-risk for FASD. \$600,000.

Hicks, G., Hanlon-Dearman, A. CIHR Project Grant. 2019-2024. Translating to the Community (T2C): A social epigenetic study of FASD. \$1,503,226.

Kelly, L. CIHR Cannabis Team Grants. 2020-2025. Cannabis for symptom management in children with cancer: a demonstration project by the Canadian Childhood Cannabinoid Clinical Trials (C4T) platform. \$1,499,000.

Kelly, L. SickKids-CIHR-IHDCYH New Investigator Grants. 2020-2023. Cannabis for Chronic Daily Headache in Adolescents. \$293,335.

Russell, K., Wittmeier, K. CHRIM- Theme Funding. 2020-2023. ENRRICH Research Theme (Excellence in Neurodevelopment and Rehabilitation Research in Child Health). \$600,000.

Russell, K., Ellis, M. National Football League. 2018-2023. Surveillance in High Schools to Reduce Concussions in Youth: SHRed. \$11,197,921.

Werbowski-Ogilvie, T. E. CIHR Operating Grant. 2020-2025. Novel therapeutic targets for Group 3 medulloblastoma stem cells. \$1,208,700

Werbowski-Ogilvie, T. E. CancerCare Manitoba Foundation Operating Grant. Exploring the Regulatory Landscape of Medulloblastoma Stem Cells. 2020-2023. \$449,136.

Wittmeier, K., Hanlon-Dearman, A., Rempel, G. Child BRIGHT Network, SPOR (Strategy for Patient-Oriented Research) Initiative. 2016-2022. \$366,122

Woodgate, R. Canadian Institutes of Health Research (CIHR) 2020 Spring Project Grant. 2020-2025. Abinoonjees Nikanenim: Delivering Mental Health Services to Youth Living in Island Lake Anishinew Nations. \$1,296,676.00.'

Woodgate, R., Rempel, G.R.; Ripat, J.D. Canadian Institutes of Health Research Operating Grant. 2018-2022. Designing a Responsive and Integrative Model of Respite Care for Families of Children with Complex Care Needs and Conditions (CCNC) through Patient-Oriented Research. \$458,999.

Woodgate, R., CIHR Major Initiatives. 2017-2022. \$4,996,890.

3. Identify any Catalyst Grants awarded in the past year (Title, PI, funding amount)

1. Investigating neurodevelopmental outcomes following opioid exposures in pregnancy, Dr. Lauren Kelly, \$15,000

2. Concurrent use of transcranial magnetic stimulation and constraint, induced movement therapy in children with unilateral cerebral palsy. A feasibility study, Dr. Florencia Ricci, \$15,000

Collaborations

Give a list of **NEW** collaborations in the last 12 months with other groups or organizations, and a brief description of your activity with each.

Untitled

Mandy Archibald (Nursing)

- Kelly Russell (Pediatrics and Child Health),
- Florencia Ricci (Pediatrics and Child Health),
- Kristy Wittmeier (Pediatrics and Child Health),
- Carrie Costello (parent/family advisor)

Carrie Costello (parent/family advisor)

- ChildBright

Lauren Kelly (Pediatrics and Child Health)

- Florencia Ricci (Pediatrics and Child Health),
- Marni Brownell (Community Health Sciences),
- Christiaan Righolt (Community Health Sciences)

Florencia Ricci (Pediatrics and Child Health)

- Mubeen Rafay (Pediatrics and Child Health),
- Colin Kazina (Surgery),
- Kim Thiessen (Rehabilitation Centre for Children, OT Clinician),

- Christine Froese (Rehabilitation Centre for Children, OT Clinician),
 - Diane Moddeman (Pediatrics and Child Health),
 - Dr. Allan Garland (Internal Medicine)
- Kelly Russell (Pediatrics and Child Health)
- Kristy Wittmeier (Pediatrics and Child Health)
- Kristy Wittmeier (Pediatrics and Child Health)
- CanChild
 - Elizabeth Hammond (Physical Therapy),
 - Liz Bannister (parent/family advisor)
 - Jennifer Protudjer (Pediatrics and Child Health)
 - Stephanie Glegg (UBC, Doctor of Philosophy in Rehab Sciences program)

Supporting Documents (graphics, figures, impact reports)

15Jan21_2020 ENRRICH Annual Report_Member Students.docx

15Jan21_ENRRICH Annual Report_Member Publications.docx

Email for Copy of Submission

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