



GEORGE & FAY YEE

Centre for
Healthcare
Innovation

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ANNUAL REPORT
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Empowering
— CHANGE —

CHI generates and supports health research in Manitoba.

We're continually working on ways to improve the health of Manitobans and the health system that cares for them.

What is CHI?

The George & Fay Yee Centre for Healthcare Innovation (or CHI, pronounced as three distinct letters, "C-H-I") is part health research support hub, part think tank, and part implementation and evaluation centre.

As a SPOR SUPPORT Unit, we provide researchers with the tools they need to conduct patient-oriented research, and patients with the necessary training to participate in research as *partners* rather than as traditional research *participants*. This enables patients and the public to help guide the research that affects them.

As a SUPPORT Unit, we also serve as a convener in Manitoba, bringing the right players to the table—including researchers, policy makers, government, healthcare providers, and patients—to address our province's pressing health issues.

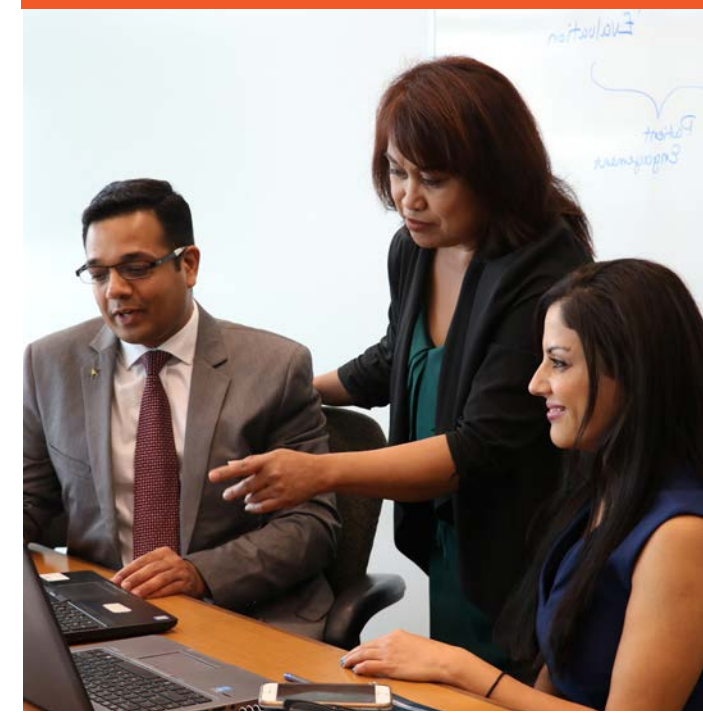
We counsel decision-makers with the latest evidence, advocate for patient engagement and allyship, conduct and support innovative health research, and nurture tomorrow's healthcare leaders.

In short, **we empower change.**

For more information about CHI, read the stories within these pages to see what we've been up to over the last year. You can also flip to the last page for a summary of the services we provide, or visit **chimb.ca** to initiate a project using our online intake form.

The partners who make CHI possible

- University of Manitoba
Rady Faculty of Health Sciences
- Strategy for Patient-Oriented Research (SPOR)
- Winnipeg Regional Health Authority (WRHA)
- Shared Health
- Government of Manitoba





From left to right: Rasit Eskicioglu, Patricia Roche, Ogai Sherzoi, Thomas Beaudry, Mpho Begin, Carolyn Shimmin, Angela Tessier, and Lorie Deda.

LETTER FROM THE PUBLIC AND PATIENT ENGAGEMENT Collaborative Partnership

The 2018/2019 year was a fun and productive one for CHI's Patient and Public Engagement Collaborative Partnership. In the fall, two of our members, Thomas Beaudry and Mpho Begin, travelled to Ottawa to present at the 2018 SPOR Summit about how we moved from an Advisory Group to a Collaborative Partnership model (see callout on opposite page for details). We shared the importance of ongoing conversations around physical, emotional, psychological, and cultural safety and shared with audience members from across Canada how these conversations shape our Guiding Principles for meaningful relationships.

CHI sponsored one of our Collaborative Partnership members, Thomas Beaudry, to attend our Academic Health Sciences Leadership program, where he connected with his preceptor from the Rady Faculty of Health Sciences, University of Manitoba, Dr. Michael Moffatt. Thomas' capstone project about Indigenous engagement in health systems and research received great praise for its heart and innovation.

In the winter, four of our Collaborative Partnership members—Angela Tessier, Lorie Deda, Thomas Beaudry, and Mpho Begin—shared insights and perspectives around patient and public engagement in health research at CHI's Patient and Public Engagement Lunchtime Learning Series. Health researchers were able to ask questions and dialogue over successes, challenges, and ways to build authentic relationships with patient/caregiver partners.

Our Collaborative Partnership engaged in a variety of research projects. We were involved in the interpretation of research findings from a patient engagement survey given to Manitoba health researchers by Dr. Kathryn Sibley. We also worked with Dr. Maya Jeyaraman in the research design phase of her project on scoping and systematic reviews of emergency department wait times, helping to clarify and refine the research question and identify outcomes that are important to patient/caregiver partners. One of our members continues to be involved on the research team throughout the study (p. 12).

Our Collaborative Partnership has also informed a number of CHI's patient and public engagement programs, services, and resources. Based on feedback from members, community organizations are now eligible to apply for CHI's Preparing for Research by Engaging Public and Patient Partners (PREPPP) award; a strengths-based component has been added to the scoring rubric to recognize community resilience; and the award review process has been revised to ensure all voices (including patient/caregiver partners) are heard and valued.

We advocated for a seat at the table on CHI's Royal College of Physicians and Surgeons of Canada-accredited Patient Engagement Lunchtime Learning Series Scientific Planning Committee to ensure that patient/caregiver perspectives and insights are reflected in the curriculum. Beyond sitting on CHI's Executive Council, the PREPPP Award Review Committee, and the Patient Engagement Lunchtime Learning Scientific Planning Committee, our members have also joined the College of Pharmacy's Experiential Learning Curriculum Committee and the Canadian Medical Association Journal's patient-oriented research collection review panel. We have informed various stories in CHI's KnowledgeNudge blog, including posts on the ethics of community engagement, and another discussing trauma-informed engagement. CHI's Patient Engagement Champions also had the privilege of meeting with our group, cultivating new relationships that have led to further research engagement at CHI for our Collaborative Partnership members.

Use of the term 'advisory group' or 'advisory committee' suggests that researchers and decision-makers are asking for advice from the group, but not necessarily that they are involved in the decision-making process or part of the team. Moving to 'Collaborative Partnership' symbolizes a more involved and equitable role for the group in research and policy, where they are working alongside researchers and decision-makers, rather than at arm's length.

Our Collaborative Partnership looks forward to 2019/2020, as we continue to reach out to the community and work to recruit new members and perspectives for the group. We see community outreach and engagement in health research as one of our priority areas this coming year, and hope to continue relationship building between Manitobans with lived experience of health issues, caregivers, families and communities, health researchers, healthcare professionals and healthcare decision-makers. ●●●

Sincerely,

^{The}
*Collaborative
Partnership*

Visit chimb.ca for more info.

At CHI, we talk a lot about innovation.

That’s particularly true these days, as we lead and support efforts to transform our healthcare system, design advanced clinical trial methods, extract fresh insights from complex data, and directly support and evaluate implementation initiatives.

As Manitoba’s SPOR SUPPORT Unit, we do all this with a bias towards patient-oriented research, looking for opportunities to bring people—including researchers, policy makers, government, healthcare providers, and patients and the public—together to form new collaborations and partnerships.

We firmly believe that it’s only by learning how to meaningfully work with one another, sharing ideas and experiences, and breaking down barriers with new solutions that we can begin to address the most pressing health issues in Manitoba.

Regardless of how big or small, most innovations begin as a question. How might we do research differently? What is the evidence for ____? How can we facilitate research culture change towards patient engagement? These are the types of questions we get asked most often from our clients and partners—some of whom are at the start of their academic careers, while others are at the helm of some of the largest transformations our healthcare system has seen in a generation.

And while our menu of services may be broad, we believe they all distill into a single concept—**empowering change**.

We **empower** patients and the public by practicing allyship. We support and promote patient-oriented research to nurture a culture that respects the voices less heard in health research and makes space for—and values—their time, insights and contributions so patients can help guide the research that affects them. You’ll read about engagement success stories from recipients of CHI’s PREPPP funding award (p. 24) and how our team is striving to improve research relevance through early engagement (p.12) We’re also really excited about the launch of an important new platform guided by shared leadership between Ongomiizwin Indigenous Institute of Health and Healing and CHI (p. 16).



We **empower** decision-makers with the insights and resources they need to tease apart wicked problems and continuously improve health, the healthcare system, and health service delivery in Manitoba. In these pages, you’ll hear stories about CHI’s important role in developing the Community Health Assessment (p. 27), how we’re supporting change in the health system by, among other things, improving patient flow (p. 38), and evaluating the viability of promising health services that support underserved populations (p. 31).

We **empower** researchers with the supports and tools they need to develop and execute health research studies, discover valuable insights, mobilize their knowledge and become powerful advocates for patient-oriented research in their own right. We’re supporting our partners as they address pressing health research questions like vaccination rates and therapeutic cannabis use (p. 15 & 19). We’re also excited to provide an update on our ever-growing collection of patient engagement materials (p. 21) and introduce you to our experienced Research Project Managers (p. 10).

Finally, we **empower** tomorrow’s healthcare leaders with the knowledge and hands-on skills they need to champion a learning, accountable and sustainable healthcare system that meets the evolving needs of Manitobans. You’ll hear from a couple of brilliant young data specialists who’ve made the most of their mentorship opportunities at CHI (p. 18). Along the way, you’ll learn how we’re facilitating learning opportunities in the fields of clinical research (p. 10), data visualization (p. 11), patient engagement (p. 21), and knowledge synthesis (p. 29), among others.

All these projects began with a simple question. Devising solutions to those questions is what drives us. And while we don’t have all the answers, we can certainly help along the way, and call together a few people who might just have the insight needed to spark the next great health innovation.

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How might we do research differently?

Innovation can happen at any time, even at the very onset of research by redefining the questions we ask, the people who are empowered to ask them, and the processes we follow to find the answers.

Advancing lifelong learning in clinical trials in Manitoba

Organized by CHI's Clinical Trials platform, The Society of Clinical Research Associates (SoCRA), Winnipeg Chapter holds monthly professional development sessions for clinical researchers in Manitoba.

Topics featured over the last year—its second in operation—included clinical trial regulations, outcome selection, and ethical review processes, among others.

The sessions promote quality clinical research across the province, and are accredited with SoCRA but remain open to all Manitoba researchers.



SoCRA members have the opportunity to network and earn continuing education credits for SoCRA CCRP recertification. Everyone, **including non-members**, are welcome to attend all upcoming SoCRA sessions.

For a listing of upcoming events, visit chimb.ca.

Helping a community group evaluate its peer-led preventative health program

People need safe social connections to thrive. Social isolation is a risk factor for chronic disease and increased mortality. Conversely, interventions that reduce social isolation have the potential to improve health.

In partnership with community members, Winnipeg's NorWest Co-op Community Health developed the Hans Kai program, inspired by Japanese health co-operatives. Hans Kai is a preventative, self-sustaining peer-led program designed to empower participants to take control of their health. As part of the program, participants attend a health school to develop their health knowledge and skills. Once complete, participants form Hans Kai groups of three or more people who meet on a monthly basis in a self-sustaining model.

Wanting to test the program's effectiveness, NorWest Co-op turned to CHI's Clinical Trials and Data Science platforms. CHI assisted NorWest Co-op in the design and approval process of a randomized controlled trial to test the program. CHI is also assisting in the implementation of the trial.

If proven effective, the Hans Kai program has the potential to be expanded to more locations within Canada and around the world.

Facilitating a better way to measure health-related quality of life

Multiple sclerosis (MS) is a chronic disease that affects the brain, spinal cord, and optic nerves. It takes a physical, psychological, and social toll on people living with it.

The North American Research Committee on MS (NARCOMS) Registry has collected information about health-related quality of life (HRQOL) from participants with MS for over twenty years. Historically, these participants reported their HRQOL using questionnaires designed for general populations. Another tool (the Health Utilities Index) is available to help researchers and clinicians better understand the experiences of MS patients, and would support cost-utility analyses. However, switching to this tool could result in the loss of historical data gathered using the old questionnaire (the SF-12). A solution was needed to be able to directly compare the scores between the two tests to ease the transition and protect the older data.

CHI partnered with the NARCOMS Registry to use a large cohort of MS patients who answered both questionnaires. Using a technique known as item response theory, we created a crosswalk table that equates the scores between the two tests.

As a result, the NARCOMS Registry can now use another HRQOL measure without losing historical information. Other researchers who wish to compare and contrast findings across studies using different measures will also find this useful.

Data not only helps us understand the nature and underlying causes of a problem, it can also help us evaluate the effectiveness of our attempts to intervene and solve it.

Can we make clinical trials with children more efficient?

Clinical trials are the gold standard of research evidence, but they require a lot of time and money to conduct. Traditionally, two arm studies recruit a pre-specified number of participants before looking at the outcomes.

Fortunately, there are fewer sick children compared to adults. However, children have historically been excluded from clinical trials due to ethical concerns and a small market share, which leaves little incentives for investment from pharmaceutical companies. Unfortunately, this often leaves clinicians without the data needed to inform care.

To address this need, CHI's Clinical Trials and Data Science platforms designed a study protocol to evaluate new methods to study medicines and therapies for children.

The ensuing evaluation will include a literature review and mixed-methods approach to identify regulatory, ethical, logistical, and statistical considerations and emerging issues of adaptive design studies in children. The study will inform the design of adaptive clinical trials which, when appropriate, will provide answers to critical research questions using fewer participants and resources.

Link to the protocol: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6194696/>

Providing customized solutions through Research Project Management

Managing research projects can be overwhelming. There are numerous outcomes and performance measures to be defined, monitored, and evaluated for which many research teams may not plan or have the capacity.

CHI's Research Project Managers (RPMs) have adapted their procedures to the unique research context, allowing RPMs to support investigators and administrators throughout the project lifecycle. Our customizable service focuses on Adaptive Project Management by organizing tasks to be completed in small iterations that make quick, cost- and time-saving course corrections.

The SPOR Innovation in Pediatric Clinical Trials (SPOR-IPCT) project team required rapid procurement solutions for critical supplies and investigational products when participating sites faced procurement challenges. Our assigned RPM leveraged academic and industry network connections to source, negotiate, and procure the necessary project resources required for the trial, saving the investigator significant time and effort. Responsive and corrective actions—based on iterative monitoring and evaluation—were taken to mitigate critical product waste and control overall investigational product costs, particularly during times of decelerated recruitment.

With an adaptive approach to Research Project Management, possibilities remain endless for Manitoba's evolving research landscape.



VADA Program Students, 2019

CHI an integral member of new Canadian Data Platform

Some of the most pressing questions we have in health research can be answered by scouring through existing and emerging electronic data, such as electronic medical records, health surveys, and registries of patients being treated for specific health conditions such as stroke. Data not only helps us understand the nature and underlying causes of a problem, it can also help us evaluate the effectiveness of our attempts to intervene and solve it.

But up until now, researchers have had difficulty doing studies across multiple provinces and territories because of differences in data-sharing agreements, approval processes, availability of documentation, and methods to extract meaning from administrative, clinical, and social data.

To address this issue, SPOR recently announced a 7-year, \$81 million investment in the Canadian Data Platform. "A streamlined, simplified process for requesting comparable data will create new opportunities for researchers across the country," explains Dr. Kim McGrail, Scientific Director for the new platform. It will "help foster an environment where researchers can address questions that cross boundaries and more easily build on the work of their peers."

Co-leading the Manitoba project arm are Drs. Lisa Lix, Director of CHI's Data Science platform, and Alan Katz, Director of the Manitoba Centre for Health Policy. Their focus will be on helping researchers access common data inventories and health measures from multiple jurisdictions—work they hope will lead to insights that can improve population health and strengthen our healthcare system.

Real-world data, real-world results: how VADA trains students into thinking BIG

The Visual and Automated Disease Analytics (VADA) program entered its second year in 2018/19 with a new cohort of ten PhD and four MSc students. Five PhD students from last year continued into their second year.

Since its debut in 2017, exciting changes to programming emerged in both the Foundations of Disease Analytics course (also offered as a graduate course in the Department of Community Health Sciences) and the Summer School. Topics covered in the Foundations course included: types of data, analytic tools for complex health data, visualization, and data reproducibility.

During the 2019 Summer School, students worked with real-world data provided by Dr. Meghan Azad, a University of Manitoba faculty member and head of a research lab located in the Children's Hospital Research Institute of Manitoba, for the annual Big Data Challenge. Teams of three submitted their work to a panel of judges. This event was followed by three days of research seminars, professional skill development sessions, and networking opportunities.

As a joint initiative between the University of Manitoba and University of Victoria, the VADA Program continues to train students to effectively and efficiently detect, manage, and prevent outbreaks associated with infectious diseases, and to measure and predict healthcare utilization and health outcomes for patients with complex chronic conditions.

FEATURE STORY

Patient and public engagement during the design stage of a systematic review



Maya Jeyaraman, MD, PhD

Overcrowding and long wait times in emergency departments—it’s one of the most high profile challenges facing Canada’s healthcare system. A team from CHI set out to conduct a systematic review on interventions and strategies to address this pressing issue. Systematic reviews represent the highest levels of evidence available to decision-makers; as a result, they can have some of the greatest impacts on patient care and outcomes. Unfortunately, those who stand to benefit the most from the research—patients and the public—are often overlooked in the early design phase of these reviews.

CHI’s team set out to engage members of the public (who had relevant lived-experience) as active research partners in every aspect of the review to learn about their direct experiences, hopes, needs, and concerns. By engaging patients and the public, the team sought to improve the relevance and value of the evidence being synthesized. The objective of the patient and public engagement was to seek guidance in the design of the systematic review, particularly in framing and refining the research question, inclusion criteria, and outcomes.

To ensure meaningful public participation at the collaborate level of engagement, the project team partnered with CHI to use trained patient engagement facilitators. The team built a safe environment to establish trust, commitment, and openness by facilitating a trauma-informed, anti-oppression, anti-racist, and anti-colonial approach to engagement. The team used a two-step modified Delphi process to engage patient partners.

First, they conducted individual face-to-face meetings (semi-structured interviews with open-ended questions). During these meetings, patient partners discussed the barriers they had faced when visiting the emergency department, and potential facilitators that could mitigate overcrowding and increased wait times. This helped in the identification of research priorities and facilitated further discussion.



Second, patient partners and researchers were invited to attend a facilitated group meeting to arrive at a consensus regarding the final review question and the outcomes of interest. Initially, the review question had a broader focus (all interventions to reduce overcrowding and wait times). Patient partners helped refine the review question to focus only on primary care interventions, as they felt this would be a priority to patients visiting the emergency department. After facilitated conversations, consensus was achieved on the review outcomes. For example, the team removed one patient outcome, “all-cause mortality,” from the list and replaced it with the outcome “time to initial physician assessment.”

Using the two-step process, the project team successfully refined its review question to focus on primary care interventions and strategies that were of interest to patients, and identified patient-oriented review outcomes. Two of the patient partners expressed interest in supporting the successful research grant application to CIHR and provided letters in support of the application as knowledge users. One patient partner joined the team as a Principal Knowledge User.

Also integral to the success of the project has been the ongoing collaboration with healthcare decision-makers from the Government of Manitoba and Shared Health. These leaders are engaging in stakeholder meetings to help interpret results and the outcome selection process for the systematic review, and will support knowledge translation efforts when appropriate. **By bringing together these decision-makers and members of the public, this project stands to increase the relevance and applicability of its findings, while continuing to chart a new path for how this type of research is conducted in Manitoba.**

“I am humbled to be able to collaborate on this project, and to see how it has progressed to this stage with Dr. Jeyaraman, knowing that our input was used to assist with the research.”

– Thomas Beaudry, Patient Partner





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How are we helping to address some of Manitoba's most important health research questions?

We are partnering with allies throughout the province to investigate some of the most pressing health issues, including vaccination rates, therapeutic cannabis use, and racial disparities in health and access to care.

Analyzing the data in search of a vaccine for HIV

Canada's state-of-the-art National Microbiology Laboratory (NML) is known around the world for its scientific excellence in infectious disease research.

Dr. Ben Liang, a senior biologist at NML, is an integral member of a research team led by Dr. Luo Ma. The international team is conducting pre-clinical studies that may lead to the development of an effective vaccine for HIV. These pre-clinical animal studies are essential before any human trials are undertaken.

Last summer, Dr. Liang approached CHI's Dr. Rob Balshaw and the Data Science platform for support and collaboration in comparing the degree of protection offered by several possible SIV vaccine candidates.

Currently, Drs. Liang and Balshaw are using modern statistical and machine learning methods and the principles of causal inference to investigate how the complex patterns shown by the levels of antibodies, cytokines, and T-cells measured during the trial offer protection from infection. They hope that what they are learning about why and how these vaccines protect monkeys from SIV infection will contribute to the ultimate goal of an effective vaccine for HIV.

Collaborating as the Manitoba hub for the SPOR Evidence Alliance

Over the past three years, CHI has been the Manitoba hub for the SPOR Evidence Alliance—a collaboration of over 175 researchers, Canada Research Chairs, clinicians, policy makers, patient partners, and partners from 41 public agencies and organizations across Canada.

Dr. Andrea Tricco, Canada Research Chair in Knowledge Synthesis from the University of Toronto, leads the Alliance and provides national coordination and project management in support of knowledge synthesis, clinical practice guidelines development, knowledge translation, and patient-oriented research.

"We work with other Alliance members on several research projects to support our mandate of being a well-resourced, pan-Canadian initiative," says Dr. Ahmed Abou-Setta, Director of CHI's Knowledge Synthesis platform and one of the founders and principle investigators of the Alliance. "Since 2017, we have collaborated on over a dozen cross-jurisdictional projects providing evidence to support decision-making by several provincial health ministries, professional organizations, and Canadian guideline panels."

The Evidence Alliance continues to be a hub for research, evidence, and collaboration across the spectrum of knowledge synthesis to identify gaps and better provide health care for all Canadians.



Building a strong foundation for the Indigenous Healthcare Quality Platform

Indigenous people have a right to the highest attainable standard of health, including equitable access to high-quality health care. Numerous research studies, and the experiences of Indigenous people throughout Canada, reveal pronounced racial disparities in health care. The root causes of the health gaps experienced by Indigenous people lie outside Canada's healthcare system to a significant extent, and include a range of factors such as the intergenerational impacts of residential schools, entrenched poverty, and discriminatory funding in education and child welfare.

A platform to close the gap

With a vision to develop, implement, and evaluate methods to close the gap in the quality of health care experienced by Indigenous peoples in Manitoba, Dr. Marcia Anderson, along with Amanda Fowler-Woods, are leading the development of an Indigenous Healthcare Quality platform with shared leadership between

Ongomiizwin Indigenous Institute of Health and Healing and the George and Fay Yee Centre for Healthcare Innovation (CHI). Dr. Marcia Anderson leads the project as the Executive Director of Indigenous Academic Affairs in Ongomiizwin, while lead research and project coordination roles are held by Amanda Fowler-Woods, Research Associate within Ongomiizwin.

Forming an Indigenous Advisory Council

In alignment with the United Nations Declaration on the Rights of Indigenous Peoples, in particular the rights of self-determination and involvement in planning and decision-making related to health programs serving them, it is understood that this work must be guided through the involvement of an Indigenous community council. In accordance with the Tri Council Policy Statement Article 9.1 which states that researchers must seek engagement with relevant Indigenous communities when research is likely to affect the welfare of

the communities, Ongomiizwin distributed a call through academic, health, and community networks to form a council to guide and support the development of the new platform. Originally conceived as a twelve-member council, the first meeting featured twenty members, reflecting the quality of applicants who responded to the call and the diversity of their voices, consisting of self-identified First Nations and Métis people living in urban and rural settings throughout Manitoba.

Welcoming the voice of a powerful ally

In 2018, the Ongomiizwin senior leadership team met Dr. Ronald Wyatt—an outspoken leader in public health and an advocate for health equity—at an Institute for Healthcare Improvement conference. In May of the following year, we realized our vision of welcoming Dr. Wyatt to Winnipeg to share his knowledge. By the end of his day at the University of Manitoba Bannatyne Campus, Dr. Wyatt had hosted a workshop for 80 registrants, given a presentation to the over 200 people in attendance for a joint Ongomiizwin and CHI Grand Round, and wrapped up with a more intimate question and answer period with invited guests.

The events were open to anyone interested in attending, and were highly suggested for health professionals, health leaders, health administrators, faculty, students, patient's academics, and community members.

Having grown up in the deep south of Alabama and currently serving as the Chief Quality Officer for Cook County Health in Chicago, he has witnessed a lifetime of racism and its impacts. Seeing many parallels between our experience in Winnipeg and his in Alabama, he was very much invested in helping his Manitoba audience to understand the reality of racism within our own federal and provincial healthcare systems. Many of his examples and stories connected back to Manitoba-specific incidents and statistics.



It was clear his dedication to his work is powered by a drive to make life better for people of colour in the United States and internationally, including his own family. His connection to his family shone through in the most genuine way when the auditorium filled with the familiar tune of My Girl by the Temptations—it was Dr. Wyatt's daughter calling him on his cell phone. He joked she was supposed to be watching the live feed online. In that moment, the empathetic human-to-human appeal he has been building through his presentation no doubt resonated even deeper.

A vital first step, but plenty of work ahead

Dr. Wyatt's visit was a vital first step in the very important movement towards the recognition and elimination of institutional racism within Manitoba's healthcare system. The Grand Rounds presentation also served as the public's official introduction to the members of the Indigenous Advisory Council, who were also in attendance. The council is planning to meet twice more in the upcoming academic year and the drafting of an Indigenous Healthcare Quality Framework has begun based on the first meeting and will be finalized with the council over the upcoming year.

Acknowledgments

Assisting with the events and continued development of the platform are: Research Associate, Amanda Fowler-Woods; Senior Administrative Assistant, Karla Lavoie; and Training, Education and Event Coordinator, Amanda Osorio. Funding for the event was provided through a partnership between Ongomiizwin, CHI, and the Winnipeg Regional Health Authority. The Workshop and Grand Rounds lunch were catered by Feast Bistro, which serves traditional First Nations inspired food and beverages.

FEATURE STORY

Impact of data science students

Canada's healthcare landscape is constantly evolving. Numerous research studies are being conducted to improve health and healthcare systems within every discipline. Data visualization and integration are valuable tools for these types of studies. Our Data Science platform recruits students to leverage their fresh perspectives in these ever-growing fields while imparting hands-on learning experience by offering opportunities to work on real-world scenarios.

Naomi Hamm received her MSc in Kinesiology at the University of Manitoba and her BSc (Hons) at the University of Saskatchewan. She also participated in the Visual and Automated Disease Analytics program (more info on p. 11). Naomi is a Student Research Assistant as she completes her doctoral studies with Dr. Lisa Lix, Director of the Data Science platform.

Using a questionnaire CHI developed with the Public Health Agency of Canada for the Chronic Disease Surveillance System (CCDSS)*, Naomi sourced data from health registries across Canada to assess how different populations are identified, how the data are managed, and what is missing. Her experience was nothing short of eye-opening. "Bridging several health insurance registries was a daunting task—especially when looking at representing the data nationally," said Naomi. "Challenges not only lie in coordinating data from across Canada, but also navigating different data-sharing laws."

Working with the CCDSS, Naomi was able to develop her communications skills and grow her professional network, nation-wide.

* The CCDSS monitors and creates estimates for chronic disease throughout the country. The goal of the CCDSS is to ensure individuals are represented more accurately and to find gaps within the data to better address the evolving needs of Canadians.

"Throughout this experience, I was able to see how interdisciplinary health and collaboration are needed at every level—it's nice to see this in practice."

Naomi hopes to publish the results of this project and pursue an academic position after completing her PhD.

Justin Dyck received his BSc in Statistics at the University of Winnipeg and is currently a second-year masters student in the University of Manitoba's Department of Community Health Sciences. His current research interests include spatial statistics and spatio-temporal modelling.

Justin's first project with CHI was to consult with students in the University of Manitoba's Occupational Therapy program on their quantitative research projects. His role was to assess their research questions and provide feedback on their feasibility from a statistical perspective.

Now on his fifth project with CHI, Justin has gained diverse and practical knowledge in the field, valuable mentorship from the Data Science platform, and peer-support from CHI's other students.

"As a data analyst, I see over a hundred ways of doing something and how data can be interpreted. CHI helped me focus on becoming an effective communicator and broadened my experience working with diverse and interesting projects."

CHI takes pride in knowing that our students are making a difference in today's healthcare landscape. Canadians can feel confident knowing that our students are on their way to becoming tomorrow's healthcare leaders.



Naomi Hamm, MSc, BSc



Justin Dyck, BSc

Understanding the pros and cons of therapeutic cannabis use in children

Half of Canadian pediatricians and subspecialists report they've managed a patient using cannabis products to help them deal with a health concern. However, since we haven't studied the therapeutic use of cannabis products in children, clinicians and parents don't have the evidence they need to make an informed decision.

The Canadian Childhood Cannabinoid Clinical Trials (C4T) network, led by CHI's Dr. Lauren Kelly, was established in 2018 to inform, design, and conduct studies to fill this knowledge gap. C4T—which includes parents, youth, doctors, researchers, and policy makers—studies what products are being used, as well as their perceived benefits and risks. C4T will also look to complete prospective studies on safety. CHI provides C4T with patient engagement tools, trial design expertise, and data analysis capabilities, as demonstrated in these two initiatives:

Surveillance of serious adverse events related to cannabis-use for medical purposes

The Canadian Paediatric Surveillance Program (CPSP) represents over 2,800 Canadian pediatricians, in partnership with the Public Health Agency of Canada. CPSP has launched a national surveillance program to characterize serious adverse events related to medical cannabis use, including management in children across Canada. Designed and led by CHI's Clinical Trials platform, this project will directly inform policy and dose selection for future clinical trials.

Cannabis use for chronic daily headache in adolescents

Chronic daily headache is one of the most common sources of pain in teenagers, but only half of them are managed with available headache treatments. Cannabis products have been used to manage headache in adults. C4T is working with parents and two young persons' advisory groups to design a study looking at the tolerability of cannabidiol-enriched cannabis products to manage the frequency, duration, and associated pain of headaches in 14-18 year-old teens. CHI designed the study and will create a data collection tool for participants. This initiative will be the first globally to evaluate the safety and dosing of a cannabis product used to manage headache in children. ●●●



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How are we facilitating research culture change towards patient engagement?

As one of the Strategy for Patient Oriented Research's SUPPORT Units, we are champions for patient and public engagement. We provide education and tools, build partnerships, and provide funding to facilitate engagement.

Patient Engagement Champions program

A growing community of practice

Engaging patients and members of the public as partners in the research process is integral to patient-oriented research.

CHI's Patient Engagement Champions program provides a community of practice for advocates from each of CHI's seven platforms, in addition to the Manitoba SPOR Primary and Integrated Healthcare Innovation Network. The Champions meet monthly to discuss how to best incorporate patient engagement in health research projects and programs, and mobilize strategies for advancing both the science and practice of patient engagement in health research in Manitoba.

The Champions program continues to expand its reach and grow its influence. Over the past year, the program expanded to include members from the Manitoba Centre for Health Policy (MCHP), Translating Emergency Knowledge for Kids (TREKK), and Developmental Origins of Chronic Diseases in Children Network (DEVOTION). The program has also fostered partnerships between individual Champions and members of CHI's Public and Patient Engagement Collaborative Partnership.

Lunchtime Learning Series: newly accredited!

An engaging resource open to all

As part of CHI's patient engagement strategy, the Patient and Public Engagement Lunchtime Learning Series concluded its second successful season.

The series provides researchers, students, healthcare practitioners, patients, and the public with an introduction to patient engagement. Recurring sessions include Patient Engagement 101, Recruiting for Patient Engagement, and Budgeting for Patient Engagement.

The series became a Royal College of Physicians and Surgeons of Canada-accredited program in the summer of 2018. Its Scientific Planning Committee includes a physician, policy maker, researcher, patient partner, and patient engagement practitioners. Also new for the 2018-19 series were engagement case studies from Manitoba researchers discussing their work from basic biomedical science to participatory action research approaches. The case studies came in response to requests from healthcare practitioners for practical, hands-on experiential knowledge.

By viewing patient engagement in health research through a trauma-informed, intersectional, and social justice lens, CHI's Patient Engagement Lunchtime Learning series continues to bring a unique perspective on patient engagement in Canada.

Budgeting for patient engagement tool

A practical product for research teams

Successfully fitting patient engagement activities into research projects and programs requires teams to consider the potential costs in their funding applications. It's a daunting task, especially for the majority of teams that are new to patient engagement.

In response to this need, CHI's Patient Engagement team created budgeting tools crafted through feedback from researchers, patient partners, and advocates. A quick online calculator is available to help teams estimate the most common costs (such as food, transportation, and meeting materials). The Collaborative Partnership reviewed the draft tool and provided revisions including adding budget items and providing cost estimates, in order to ensure consideration for the needs of diverse voices, such as those from remote and Northern communities. For researchers requiring more in-depth or nuanced budgets, an Excel-based calculator (and how-to instructions for its use) is available for download via CHI's website.

The tool was recently featured at the KT Canada Annual Scientific Meeting workshop, and used by a variety of stakeholders, such as in a BC SUPPORT Unit workshop about patient engagement tools for researchers.

By using this comprehensive tool, research teams can ensure they are building an inclusive budget that addresses important and often overlooked barriers to ensure everyone has a chance to engage in health research.

Visit chimb.ca for more info.

Empowering the patient voice in the earliest stages of research

We encourage researchers to engage patients and members of the public in the earliest stages of a research project, such as priority-setting, research design, and grant development. It helps ensure research questions, methods, and outcomes reflect the needs and priorities of those living with the health condition(s) being studied.

But it's hard to budget for engagement when the grant hasn't been awarded yet. In fact, there has historically been little to no funding available in the early stages of a project to help researchers engage patients and public partners or compensate them for their expertise, time, and energy.

CHI's Preparing for Research by Engaging Public and Patient Partners (PREPPP) funding award, initiated in 2017, bridges this gap by providing support to facilitate meaningful engagement from the onset of a research endeavour.

To date, 29 health researchers, students, and community organizations have received PREPPP awards, valued at \$2,000 each. Recipients also qualify for in-kind support from CHI's Patient Engagement team. In the stories ahead, past award-winners share some of their successes and unique experiences of engaging in these early stages, and reinforce the value of the PREPPP award.



Thomas Baudry (Patient and Public Engagement Collaborative Partnership member), Jyoti Singh (Executive Director of the Elizabeth Fry Society of Manitoba, co-investigator with Dr. Kathryn Levine), Reece Malone (co-investigator with Dr. Robin Westmacott), Dr. Robin Westmacott, Dr. Todd Duhamel, David Kent (Research Coordinator with Dr. Todd Duhamel), Dr. Patty Thille, and Dr. Jennifer Protudjer.

Food as medicine: meeting Indigenous community members where they're at

Dr. Natalie Riediger

Dr. Natalie Riediger—in partnership with Dr. Joyce Slater, the National Aboriginal Diabetes Association, and Aboriginal Youth Opportunities (AYO!)—was part of the inaugural round of PREPPP award winners in Fall 2017.

The project, titled **On the Ground: Research Engagement at the Bell Tower**, began with an initial community event held in conjunction with one of AYO!'s regular Meet Me at the Belltower Friday night gatherings. The event, Food as Medicine, brought together approximately 80 community members, allowing the research team to hear about the community's food-related priorities and interests.

The team looks forward to being part of many more events to: continue to facilitate and build relationships, incorporate community input, inform shared research projects, and share results with the broader community.

They are very much on their way, having parlayed that first PREPPP-funded event into a series of research highlights, which include:

- Co-hosting three additional Food as Medicine events to connect with the community (Food as Love, Food as Resistance, and Food as Sharing)
- Featuring AYO!'s own Michael Champagne and Chris Clacio as guest lecturers in Dr. Slater's course, HNSC 3320 Nutrition Education, to discuss the Food as Medicine series. As a result, a number of students from the nutrition undergraduate program attended the ensuing Food as Sharing event.
- Securing several high value follow-up grants and awards, including:

- Dr. Riediger's \$345,000 CIHR Early Career Investigator Award (2018-2021) and \$359,550 CIHR grant for "Sticky money: Exploring the acceptability of a sugar-sweetened beverage tax among Canadian Indigenous populations" (2018-21)
- Dr. Slater's \$359,975 CIHR grant for "FANS: Building Evidence to Inform Policies and Programs for Food and Nutrition Security in Manitoba Youth" (2018-21) and a University of Manitoba Teaching and Learning Enhancement Fund for "Experiential Learning and Enhancing Indigenous Content for HNSC 3320 Nutrition Education and Dietary Change: Bringing Community into the Classroom," valued at \$6,593 (2018-19).

It's amazing to see how previous PREPPP award winners have actively and meaningfully engaged patients, caregivers, and community members and the impact that this involvement has had on their research programs and projects. Many have gone on to win larger research grants and continue to grow and nurture their relationships with patient and community partners—which I think is a real testament to the impact of the PREPPP awards.

— Carolyn Shimmin,
Patient & Public Engagement Lead

Visit chimb.ca for more info on our PREPPP award.

Collaborating to improve care for children and teens with chronic pain

Drs. Kristy Wittmeier & Kerstin Gerhold

Also from the Fall 2017 award round, Drs. Kristy Wittmeier and Kerstin Gerhold received funding for their project titled **Collaborating to improve care for children and teens with chronic pain**.

In November 2017, thirteen families attending the pediatric chronic pain clinic at Winnipeg Children’s Hospital gathered to meet with the clinic team and a small research group to discuss priorities for research and health care. Parents participated through facilitated dialogue while youth worked on an arts-based project and participated in discussions.

Both sets of participants emphasized the importance of the youth voice in research and clinical improvement. Youth wanted to be part of the solution. Key themes that emerged from the session included peer-to-peer support and a focus on accessibility of information about chronic pain (for youth, parents, teachers, and healthcare providers).

From these themes, the team developed a project that was awarded a Health Sciences Centre Foundation Allied Health Research Grant. The team is recruiting for a study that will bring youth together to review chronic pain information. The information will be used in clinic, posted on everychildeverytime.ca, and recommended to others.

“The PREPPP award allowed us to hold the inaugural session that sparked the idea for this project, and initiated our continued effort to provide parents and youth with opportunities to be part of the solution for chronic pain.

— Dr. Wittmeier

Demonstrating the need for support for people with chronic kidney disease

Dr. Dylan MacKay

As an early career researcher, Dr. Dylan MacKay is working to ensure his research program aligns closely with the priorities of patients, the public, and the healthcare system. With the rise of chronic kidney disease in Manitoba, and as someone living with type 1 diabetes himself, Dr. MacKay applied for a PREPPP award. He wanted to engage with patients and the public to learn how they receive information about recommended lifestyle changes that can help improve symptoms of kidney disease and diabetes.

His project, titled **Assessing Patient Acceptance of Alternate Dietary Therapies to Improve Protein Malnutrition in Patients with Chronic Kidney Disease (CKD)** was one of 10 successful applications in Spring 2018.

Though currently in the process of conducting meetings with patient and public partners, Dr. MacKay has already received valuable insight from the group—information he’s using to inform larger grant applications.

“Receiving this award to engage with patients and the public has clearly reinforced the fact that there is a need for this type of work. It really gives you more drive and motivation to continue to do work that focuses on patient priorities and patient-identified outcomes.

— Dr. MacKay

The power of stories in reshaping diabetes research and care

Dr. Alex Aregbesola

Similar to Dr. MacKay’s work, Dr. Alex Aregbesola’s research seeks to improve current care strategies for people living with diabetes. He received a PREPPP award in Spring 2018 for his application titled **Reshaping Type 2 Diabetes Care in Manitoba: Considering Remission as an Option**.

The award made possible group discussion sessions with 11 patient and public partners—sessions which proved eye-opening for everyone involved.

Physicians who are part of the larger research study have come to realize that patients need more support for weight management goals and planning, especially with the amount of conflicting and confusing diet-related information that’s available.

Researchers have come to appreciate the need for flexibility in engagement and research planning. Dr. Aregbesola emphasizes how moving away from a strict script and schedule, and opening up discussions so patient and public partners could fully share their stories, changed the research paradigm. Doing so revealed salient information that reshaped the research question and areas of research the team would have never otherwise considered.

“If we hadn’t gotten the PREPPP award, we wouldn’t actually know the research interests and priorities of patients living with type 2 diabetes—it requires actually sitting down in person and having these discussions.

— Dr. Aregbesola

Most importantly, patient and public partners came to realize how their lived experience fits into the larger picture of diabetes care and how important their contributions can be to research.

Dr. Aregbesola’s team is using the information they’ve learned to inform a larger survey. They intend to publish on their work with patient and public partners to further the science of patient engagement in health research. The team is also preparing for larger grant applications that incorporate these patient perspectives, in collaboration with Dr. MacKay.

The transformative nature of patient engagement has not only impacted the team’s methods and research direction, but also how it will shape the way they do research in the future. ●●●

“The award gave us an opportunity, as academics, to strengthen relationships with AYO! and the broader community in the North End.

— Dr. Riediger



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What is the evidence for _____?

Our experts work with leaders in the health system, research community, and government to gather and objectively analyze available evidence to identify best practices, verify assumptions, and help chart the path ahead.

Housing and health: the sick and vulnerable become homeless; the homeless become more sick and more vulnerable

Tuberculosis, cardio-respiratory disease, nutritional deficiencies, sleep deprivation, muscle and bone disorders, dental problems, skin and foot disease, injury from cold, injury from violence, premature death, significant barriers to accessing health services: all are common among people experiencing homelessness. Whether it's a cause of—or a consequence of—ill health, homelessness has emerged as a fundamental health issue in Canada.

CHI provides advisory and working group support to local and national research initiatives on homelessness that inform policy and program development, such as the Winnipeg Street Health Survey and the Canadian Observatory on Homelessness.

CHI is also involved in healthcare solutions for street-involved persons through evaluation that explores what works, why, for whom, and in what context. For example, one evaluation focused on a supportive housing project with enhanced health service access for long-term chronically homeless adults identified project learnings to inform multi-sectoral (housing, health, business) partnership models.

A forthcoming evaluation will focus on the impact of providing primary health care onsite at an agency working with street-entrenched and homeless youth.

Are we doing better now for patients with hip fracture in Manitoba?

Nearly 30 years ago, a series of studies showed hip fracture mortality was higher in Manitoba than in the United States. Hip fracture care in Manitoba has undergone a substantial transformation over the past two decades, but the comparison data has not been updated.

Dr. Peter Cram, a senior scientist with Toronto General Hospital Research Institute and a professor of Internal Medicine at the University of Toronto, conducted a retrospective cohort study to compare hip fracture care and short-term outcomes defined as in-hospital death, hospital length of stay, and readmission within 30 days of discharge in Manitoba and New York State using contemporary data. In support of this project, Drs. Lisa Lix, Eric Bohm, and Lin Yan contributed their expertise to study design, methodology development, data analysis, and outcome interpretation.

The study showed that patients in Manitoba who experienced hip fracture now appear to fare as well as their New York counterparts with respect to short-term outcomes. The study provides optimism that re-engineering of clinical care can produce substantive improvements in quality.

Reading the pulse of the community

A Community Health Assessment (CHA) identifies the strengths and needs of a population and aids in setting community-wide health priorities. The CHA helps us track health outcomes over time, identify the conditions that contribute to health disparities, and highlight opportunities for health promotion and disease prevention.

The CHA is legislated in Manitoba and is overseen by a collaborative group with representation from: the regional health authorities; Manitoba Health, Seniors and Active Living; CancerCare Manitoba; Addictions Foundation Manitoba; Manitoba Centre for Health Policy (University of Manitoba); and Manitoba Education & Training (Healthy Child Manitoba).

CHI has been an integral partner in the creation of the CHA for a number of years. Most recently, we participated in: developing the 2019 CHA framework; identifying the health indicators to report (148 of them!); analyzing health administrative and survey data; conducting stakeholder engagement and community consultations; and producing advisory notes, executive summaries, and reports, including the provincial and regional comprehensive reports.

The CHA is key to understanding the health needs of the population and is critical to effectively planning programs and services to meet their needs.

This was a first for CHI and expanded our capacity to provide expertise in this state-of-the-art method for researchers in Manitoba.

A promising community-based weight loss intervention for children

How can parents and doctors get children to change their lifestyle behaviours in ways that can improve their health outcomes? Have them listen to their peers. That's what researchers found amongst people living with chronic disease who built a relationship with peer or community-based healthcare workers.

Local researchers wondered whether this cost-effective public health intervention could be used to promote short and long-term weight loss among overweight and obese youth. There are numerous trials focused on treatment. However, most do not focus on peer-led interventions, let alone compare their effectiveness to expert-led interventions. To address this gap, Dr. Jon McGavock engaged CHI to conduct a systematic review of trials and compare the results from weight loss interventions for children that were delivered by experts to those delivered by peers or non-experts.

CHI provided expertise in methodology and statistics to support the design, execution, and interpretation of the evidence, led by Dr. Rasheda Rabbani. We used an advanced statistical method (network meta-analysis), which allowed us to compare multiple treatments in one statistical model, despite there being missing or few direct head-to-head trials. This was a first for CHI and expanded our capacity to provide expertise in this state-of-the-art method for researchers in Manitoba.

The analysis revealed that both expert-led and peer-led interventions yielded similar significant and sustained reductions in body weight among overweight and obese children and adolescents during long-term follow-up. This finding could influence how health interventions for children are delivered in the future.

Chronic primary pain interventions: what are we doing for pregnant women and women of reproductive age?

Chronic primary pain can cause significant emotional distress and can severely impact how you perform everyday tasks. While the condition affects many adults, it disproportionately impacts women.

Numerous studies have been conducted around chronic pain management for adults, but there is uncertainty about whether these interventions would be safe to use during pregnancy or could negatively affect a growing baby.

In order to support a clinical practice guideline by the Society of Obstetricians and Gynaecologists of Canada—and in collaboration with the SPOR Evidence Alliance and a team of researchers across Canada—we undertook a review of the literature. We reviewed evidence from over 4,000 published studies and identified 83 randomized trials, systematic reviews, meta-analyses, pooled analyses, and clinical practice guidelines of potential relevance, and included 51 trials that were of interest to the review.

What we found was that none of the included trials specifically targeted pregnant women, but most participants were women of reproductive age. Further, most of the evidence related to the use of non-pharmacological treatment options like exercise and physiotherapy rather than pain medications. While there is a lack of strong evidence on pain management interventions in pregnant women, the identified trials showed promising results for non-pharmacological interventions that are expected to be safer on the pregnant mother and growing fetus.

Are vitamin and mineral supplements promising for migraine prevention?

Over 8% of Canadians experience migraines¹. Many people learn to avoid the dietary, physiological, and environmental triggers that cause them. Those needing additional relief often turn to costly prescription medications that can have adverse effects.

Preliminary evidence suggests an alternative treatment—taking certain vitamins and minerals—may help reduce the frequency and severity of migraines. Vitamins and minerals are cheaper and more readily available than prescription medications. Furthermore, they cause little or no adverse effects.

To determine the efficacy of this alternative treatment option, CHI's Senior Systematic Reviewer, George Okoli, led an effort to summarize the existing evidence from randomized controlled trials. A team of eight researchers from CHI and the University of Manitoba took part in a systematic review and meta-analysis that was published in the Canadian Journal of Neurological Sciences.

What they found, unfortunately for migraine sufferers, is that there is not enough existing evidence to support the use of any vitamin or mineral supplement for migraine prevention in adults. As such, physicians and migraine patients should be cautious in using and relying on these supplements for migraine prevention.

¹ <https://www.ncbi.nlm.nih.gov/pubmed/30764890>

Learning by doing—systematic review methods training in an academic setting

The University of Manitoba produces a multitude of articles, studies, and reviews every year. However, in a 2012 evaluation on research output by Canadian universities, the University of Manitoba ranked low in systematic review publications.

To address this issue, the Department of Community Health Sciences partnered with our Knowledge Synthesis platform to establish a systematic review postgraduate course in 2013. Attendees participate in practical exercises, demonstrations, discussions, and group work. The course requires attendees to conduct a full systematic review, which are then graded by our experts on tasks such as protocol development and identifying studies.

Since its inception, we have seen over 60 postgraduate students, clinicians, physiotherapists, nurses, and other health professionals gain hands-on experience under expert supervision and support. Over 70% of students have published or are working towards publishing their work in peer-reviewed journals. Others have reported their results at conferences and through their dissertations. Furthermore, we have collaborated with dozens of librarians, statisticians, and content experts to support the reviews being conducted.

Our experiences have led us to believe that a hands-on approach is possible and valuable to trainees and the research community. As we bridge classroom learning with real-world expectations of quality research, we hope to provide a teaching example for other disciplines to follow. ●●●





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What is the benefit of _____?

Before investing valuable resources into nascent programs, our partners turn to CHI to better understand their associated costs, health impacts, potential value, and future sustainability.

Measuring the impact of a smile

Early Childhood Caries (ECC) is a common, yet fully preventable, chronic disease that decays the teeth of disadvantaged preschoolers. ECC is very painful and can negatively affect a child's ability to eat, learn to talk, and maintain a positive self-image. Treatment for ECC usually requires dental surgery, which is expensive and has low rates of success.

To help prevent ECC, the WRHA sponsors the Daycare Fluoride Varnish Program (DFVP) to treat children at daycare-based dental clinics in Downtown Winnipeg and Point Douglas. To evaluate the impact and sustainability of the program, CHI designed and conducted a cost-effectiveness analysis using an economic Markov model.

What we found made us smile. The program is highly effective. Each year, it saves an estimated \$181,000 and prevents 964 cavities. Over the full program course of five years, it reduces the need for dental surgery by 17.5%, the cost for caring for each child by over \$800, and more importantly, prevents an average of 4.38 cavities per participant. Since inception, the program has saved an estimated \$753,000. The evaluation reveals the program has the potential to be successfully scaled up.

Pain, pain go away: in search of a sustainable care model for children with chronic pain

Approximately 5% of children in Manitoba are living with chronic pain, which includes headaches, abdominal, joint, back, and whole-body pain. These children have limited access to appropriate care and often experience long wait times.

Dr. Kerstin Gerhold, a pediatric rheumatologist specialized in chronic pain management, started an unfunded preliminary pediatric chronic pain clinic in October 2015. She and other researchers from the University of Manitoba wanted to know whether the clinic showed promise as a sustainable model for providing timely, specialized care to children with chronic pain.

The team engaged CHI to co-develop the analysis, involving use of the admin data from the Manitoba Population Research Data Repository housed at the Manitoba Centre for Health Policy (MCHP). Analysts at CHI are in the process of conducting the analyses, and will be providing interpretations and support future reports to help improve access to care and wait times for children living with chronic pain. ●●●



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How can we enhance quality of care?

We advocate for patient-centered care at every turn, whether that means reducing unnecessary tests, identifying when safe alternatives to surgery should be considered, or fostering a culture of continuous improvement.

Collaborating on quality improvement initiatives: taking small steps toward big change

For new evidence to reach clinical practice takes an estimated 17 years. Changing large-scale systems and ingrained practices continues to be a prolonged challenge for healthcare systems with limited resources and patients who need care.

Quality improvement tools and strategies are evidence-based implementation approaches that can be used to reduce unnecessary tests, treatments, and procedures. Through our partnership with Shared Health to form Choosing Wisely Manitoba, CHI has been working with clinicians, patients, researchers, and healthcare leaders to build capacity for resource stewardship and quality improvement in Manitoba.

We have implemented and evaluated a total of eight quality improvement projects at CHI over the past three years that put evidence-based recommendations into practice. **This work, in combination with our Choosing Wisely Manitoba provincial initiatives, has led to an estimated \$3 million being reinvested in the healthcare system.**

Access to CHI's multi-platform expertise has contributed to this success, whether it's knowledge translation input into design, implementation evaluation, project management guidance, data analysis or methods support. Moving forward, CHI will continue to implement evidence-based findings into practice, aligning this work with the Provincial Clinical and Preventive Services Plan and Manitoba's Quality and Learning Framework. Through our collaborative environment, we will continue to build capacity for quality improvement and resource stewardship in Manitoba.



Orthopaedics: when surgery isn't the solution

Many Canadians over 65 years old experience osteoarthritis in their knees. Osteoarthritis is a painful and debilitating condition that occurs when the protective cartilage on the ends of bones wears down over time.

Arthroscopy is a common minor surgical procedure used to treat this condition. The procedure involves trimming loose cartilage and washing the joint out. However, a growing body of research suggests this procedure is not necessary for most older patients since it typically has the same long-term outcomes as non-operative and less invasive treatment.

CHI's own Dr. Eric Bohm—Director of our Health Systems Performance platform and Co-chair of Choosing Wisely Manitoba—championed the development of a set of recommendations for orthopaedic surgery. These recommendations include counsel against the practice of routine knee arthroscopy in older adults with knee arthritis. Dr. Bohm and CHI are developing strategies to support the appropriate use of knee arthroscopy in Manitoba, helping patients and clinicians understand when arthroscopy is indicated and when safe alternatives to surgery can be used.

Projects like these lead to thoughtful, evidence-based use of our healthcare system resources, and can help improve appropriate care for all Canadians.

Access to CHI's multi-platform expertise has contributed to Choosing Wisely Manitoba's success, whether it's knowledge translation input into design, implementation evaluation, project management guidance, data analysis or methods support.



Shelley Irvine Day, Jeanette Edwards, Dr. Paul Beaudin, Shauna Zinnick, and Ashley Struthers

FEATURE STORY

Lighting a beacon for healthcare quality improvement

It's no secret Manitoba's healthcare system is undergoing significant transformation. Everyone needs to be working together toward the same goals of ensuring quality, safety, and a culture of client-centered care will lead to meaningful and lasting improvements. The Manitoba Quality Learning Framework (MQLF) articulates that shared vision and a unified approach to defining quality and quality-dimensions in the province.

Led by Jeanette Edwards, *Strategic Lead, community health, quality and learning*, the MQLF is designed to support a culture of continuous improvement and drive alignment throughout the health system. The framework is intended to support the provincial clinical and preventative services planning; provincial clinical governance including standards and guideline development; and even job descriptions. MQLF reminds us that quality is everyone's responsibility, and lists leadership and a shared vision as key enablers.

The MQLF identifies four principles to guide quality and patient safety decision-making and actions. The four principles—continuous

improvement and learning, respect for every individual, accountability, and value—represent a common understanding of what quality-first health care should look like.

Of particular relevance to the challenges facing our health system today is the anti-racism content embedded in the principle of respect. This important clause, penned in collaboration with Marcia Anderson, *Executive Director of Indigenous Academic Affairs in Ongomiizwin Indigenous Institute of Health and Healing*, marks a commitment to quality-first health care for all, and a need to overcome personally mediated and institutional barriers to care. Dr. Anderson was one of many contributors to the MQLF project.

The development of the framework was guided by the Quality, Patient Safety and Accreditation Project Advisory Committee, with input from two working groups: The Quality & Patient Safety Framework Working Group and the Accreditation Working Group. Provincial input involved all health authorities.

CHI served as a collaborator throughout the project, gathering and synthesizing evidence which included an environmental scan, current state survey, and key stakeholder interviews. The environmental scan looked at which provinces had quality frameworks, how they were created, and how they were being used. The current state survey and interviews explored staff responses regarding the current state of quality, patient safety, and accreditation in Manitoba.

“The development of this framework shows some of the many ways CHI can support leadership and decision-makers throughout the course of a project, and help bring people and ideas together to build consensus and a stronger end-product.”

— Ashley Struthers

The MQLF is grounded in scientific evidence and features built-in real-world applicability. The framework champions many of the attributes that can be found in the world's high-performing health systems. For example, the MQLF's four aims align with the IHI Quadruple Aim, a widely accepted guideline to optimize health system performance. It also incorporates Accreditation Canada's eight dimensions of quality, to which project stakeholders added two more dimensions: equity and workforce. By ensuring alignment provincially, nationally, and internationally, learning can be supported on a much broader scale.

The MQLF acknowledges that all dimensions need to be addressed in order to provide systemic high-quality care, and that we must also understand the intricate ways in which they are interconnected.

“The MQLF helps to promote a common vision of quality within all aspects of the health system in Manitoba. As provincial clinical governance evolves, the MQLF will guide and support quality and learning while implementing the Provincial Clinical and Preventive Services Plan.”

— Jeanette Edwards ●●●





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How might we improve _____?

Never satisfied with the status quo, we are always looking for ways to optimize healthcare resources, help patients get the right care at every point-of-contact, and improve health outcomes.

Evaluating key patient flow performance indicators to support decision-making

Manitoba is in the midst of a wide-scale health system transformation designed to maximize patient flow; thereby improving patient experiences and outcomes. In short, this means ensuring that patients get the right care, at the right time, in the right place.

In partnership with the WRHA's Division of Analysis and Performance Management, CHI has supported the application of statistical process control and data visualization to evaluate key performance indicators in the area of patient flow. We co-developed analysis strategies to evaluate drivers of emergency department wait times, drivers of exit block from intensive care units, and patterns in critical incident data.

Using an integrated knowledge translation approach, this work has supported planning and decision-making in the context of bed mapping, priority setting in transfers across inpatient units, and patient safety monitoring.

Using supply chain informatics to influence contracting & purchasing behaviours

Every year, the Winnipeg Regional Supply Chain issues over 162,000 purchase orders with suppliers to provide products and services to the healthcare system that strike the ideal balance between cost savings, quality, and patient outcomes.

Until recently, new contracting opportunities were identified ad hoc by subject matter experts and as a result of internal annual reviews. However, expected savings from those contracts were not always fully realized or measurable.

To reduce unnecessary costs to the healthcare system and promote more sustainable expenditures, CHI (in partnership with the WRHA Logistics Services Leadership Team) developed a Key Performance Indicator Dashboard and supporting informatics analysis tools. The tools flag new contractual opportunities and implementation gaps, and aide in sustaining desired purchasing behaviours. The dashboard's scalable and flexible design allows managers to tailor their dashboards to their specific information needs with the click of a button.

Efforts are in place to scale this initiative's concepts to other areas of the supply chain to support materials management, data management, and other contracting and procurement areas.

Supporting surgery consolidation to preserve life and limb

It's not easy to address the elephant in the room, especially when that 'elephant' is moving numerous human resources, surgery slates, and hundreds of pieces of equipment. Those were the challenges the WRHA Surgery Program faced at the start of their surgery consolidation project.

"The Surgery Program had a big job," says Isadora Ferreira, Project Manager at CHI, "Their analogy was 'like eating an elephant'. The amount of work seemed like a large and daunting task." To assist the program with their goal of becoming leaner and more efficient, CHI's Project Management platform was brought on to take 'one bite at a time'.

Using project management methodologies, Ferreira acted as a trusted advisor and liaison between cross-functional teams. She developed and managed project schedules, maintained the risk register, coordinated equipment and supply moves between several sites, helped developed a road map, and provided guidance to ensure timelines were met.

No longer feeling the brunt of what seemed like an impossible task, the Surgery Program successfully consolidated its services to fewer facilities while continuing to deliver their program's goal to preserve life and limb and enhance quality of life through surgical and non-surgical approaches.

FEATURE STORY

Improving safety, consistency, and flow: patient pathways

In track and field, regardless of how well a sprinter runs their leg of the relay, it is irrelevant if they do not nail the handoff.

Getting patients safely through the hospital is no different. Effective patient transfers, from one program to the next, have a significant impact on patient flow within the system. Flow, when done right, is critical to improving patient outcomes, achieving job satisfaction, and reducing stress.

An initial analysis of 11 WRHA programs (including cardiology, emergency, and mental health) revealed a complex array of more than 400 reported types of transfers, or patient pathways.

“Programs had mostly been working in silos, setting their own standards and processes,” says Seyi Aribuki, Project Manager at CHI. “One of our goals was to create an understanding that the whole system is interconnected, and that transitions between services are just as important for quality and patient safety as what happens in between.”

After mapping and validating 146 of the pathways, the team turned its attention to creating standard rules for patient transfers. “This was the most difficult step,” says Aribuki, who credits the WRHA executive and program leads for driving the project and helping the team to ultimately achieve its goals. “We had many discussions with the programs—trying to understand their needs and the unique complexities of their cases, building trust, and getting programs to agree to a template for how they would work together.”

These templates, called Standard Operating Procedures (SOPs), outline how, when, and under what conditions patients should move from one program to the next. To simplify the process, the team collapsed many of the patient pathways into single SOPs. The programs on the receiving end of patient transfers retained ownership of the SOPs, allowing them to hold programs accountable to the conditions outlined in the document before accepting a patient transfer.

Providing a coordinated and centralized service to access beds

Historically, coordinating patient transfers from one site to another was fragmented with no standardized bed access or management process. Healthcare providers spent a significant amount of time doing administrative tasks and duplicative work in search of an appropriate bed resulting in long wait periods and inconsistent results.

Central Bed Access (CBA) was envisioned as a single, centralized, one-call bed access coordination centre for

all inter-facility adult patient transfers. CBA connects health professionals to ensure smooth, timely, and safe patient transfers; matches patients to the site/program/bed that best suits their care needs; and monitors flow in the system.

Laurie Gosselin, Process Engineer at CHI, helped build systems to track all patient moves within the CBA patient transfer streams across the WRHA. This included (1) the emergency department stream from

Mike Lewkiw, Process Engineer at CHI, helped develop the Models of Care online portal that provides all programs with access to the SOPs. “The participants we talked to told us the information needed to be very accessible and user friendly. So we created an icon, conveniently located on the desktop of any WRHA computer.”

Education materials and toolkits, as well as training and onboarding materials were also developed—and integrated into each site’s training by the site educators—to ensure staff became familiar with the SOPs and how to use them.

To ensure sustainability, the team has already transferred most of the SOPs to operations so they may, at any time, update the documents to meet the ever-changing needs of patients and the healthcare system. The online nature of the tool ensures the most up-to-date version is always just a click away.

Aribuki acknowledges that, at the end of the day, there is little value in documenting processes if they are not followed. That is why the team has turned its attention to performance indicators—ensuring the necessary monitoring and accountability mechanisms are in place to promote lasting and meaningful change. The ultimate goal is that decision-makers are able to determine how to help patients move through the system more efficiently. The mechanisms will determine how well the SOPs are being used; which pathways have the highest volumes; highest risks; and which SOPs are not working and at what stage and why. These insights will be invaluable in improving patient safety and experience, and in identifying ways to improve efficiency in our healthcare system.



Seyi Aribuki



Mike Lewkiw, BSc (ME), PEng

emergency departments to low-acuity sites; and (2) the waitlist stream from acute clinical assessment and in-patient medicine units to low-acuity sites. Monthly performance metrics and reports were developed to measure the effectiveness of CBA and provide evidence for expansion and further system improvements.

CHI continues to work with key stakeholders within the healthcare system to support the development,

growth, and expansion of CBA to better serve patients and streamline workflows. CBA is in the process of expanding, with new staff coming on-board to expand the hours of service. ●●●



GEORGE & FAY YEE

Centre for
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Innovation

How can we share information more effectively?

Communication without clarity or relevance is just noise. Our team specializes in engaging stakeholders to identify what they care about. We then develop information resources that people can understand, value, and put to use.

“Will there be toilets there?”: learning to live with inflammatory bowel disease

Anxiety, stress, and depression can often provoke debilitating flare-ups for people living with Inflammatory Bowel Disease (IBD). Symptoms can include severe diarrhea, abdominal pain, fatigue, incontinence, and weight loss.

In partnership with a patient advisory group, University of Manitoba researchers are developing an online program that teaches cognitive behavioural therapy techniques to people living with IBD. Cognitive behavioural therapy can help patients lower their anxiety, and thus lessen the severity and frequency of their IBD symptoms.

In support of this project, CHI produced a series of videos featuring people living with IBD. The videos, which are scattered throughout the education modules, recount personal stories about the challenges of living with IBD and overcoming anxiety and depression.


Online learning modules like these could help increase access to valuable cognitive behavioural therapy for people living with IBD.

Communicating complex Statistical Methods for Patient-Reported Outcome Measures (PROMs)

A team of statisticians, clinicians, and knowledge translation specialists from across Canada, including Drs. Lisa Lix (Data Science platform) and Kathryn Sibley (Knowledge Translation platform) are conducting research to develop and implement statistical methods for Differential Item Functioning (DIF) and Response Shift (RS) in analysis of Patient-Reported Outcome Measures (PROMs) in heterogeneous populations.

An underlying assumption in the use of PROMs is that individuals interpret and respond to questions about their health in the same way, such that scores are equivalently applicable to all people in the population. However, this assumption may not be reasonable, because individual characteristics—such as age, sex, and even health status—may affect how individuals interpret questions. Moreover, a significant challenge is how to share knowledge about these advanced statistical methods with patients, clinicians, researchers, analysts, and methodologists.


Our study includes a knowledge translation component focused on facilitating the uptake and utilization of knowledge about DIF and RS. Examples of knowledge translation resources being developed included a short introductory whiteboard-style video on DIF and RS, a short webinar-style video on using latent variable mixture models for examining DIF and RS in heterogeneous populations, and annotated syntax for latent variable mixture models to test for DIF and RS. ●●●



How might we do research differently?

EXAMPLE SERVICES

- Adaptive project management
- Innovative clinical trial methods
- Insightful health data capture tools, visualization, and analytics
- Practical training in patient & public engagement, systematic review methodologies, and evaluation design
- On-demand consultations and support



How are we helping to address some of Manitoba's most important health research questions?

EXAMPLE SERVICES


- Partnership building & practicing allyship
- Developmental evaluations
- Advanced data analysis methods
- Linkages to knowledge synthesis collaborations
- Objective identification of provincial health needs



What is the benefit of _____?

EXAMPLE SERVICES


- Develop health economic analyses
- Oversee quality control for clinical trials
- Analyze appropriateness and effectiveness of health interventions
- Conduct assessments, including patterns of patient needs and organizational readiness for change



How can we enhance quality of care?

EXAMPLE SERVICES

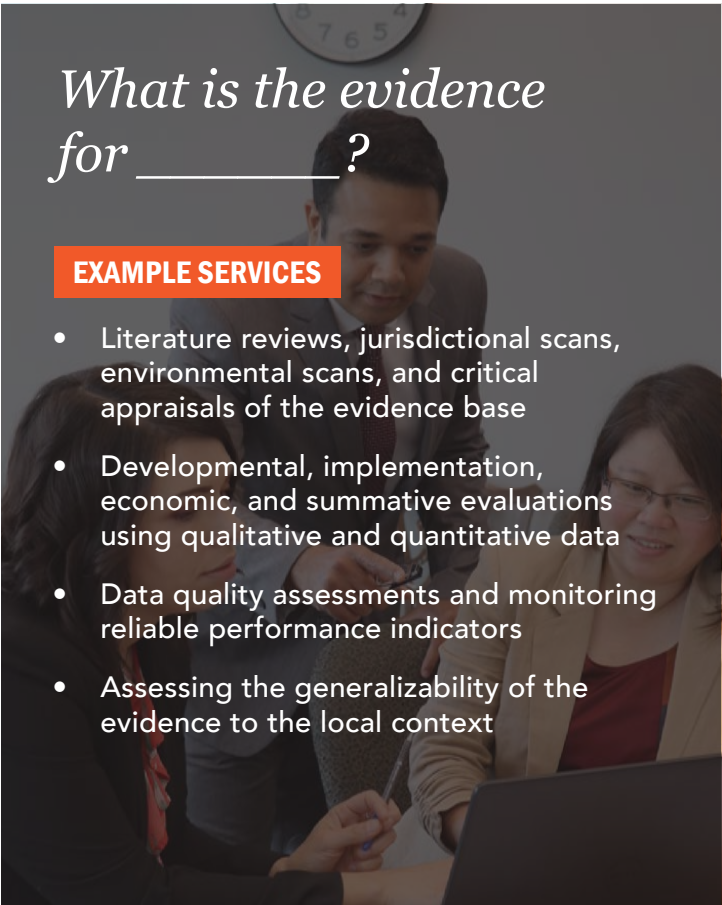
- Process engineering
- Service delivery redesign
- Mobilize insights gathered through patient engagement
- Extract insights from complex data and put findings to use
- Research tool training and leadership development



How are we facilitating research culture change towards patient engagement?

EXAMPLE SERVICES

- Advice on participatory models and support to overcome barriers to meaningful engagement
- Facilitate engagement and active partnership
- Evolve an ever-growing series of patient engagement learning resources and tools
- Support the Preparing for Research by Engaging Public and Patient Partners (PREPPP) funding award



What is the evidence for _____?

EXAMPLE SERVICES

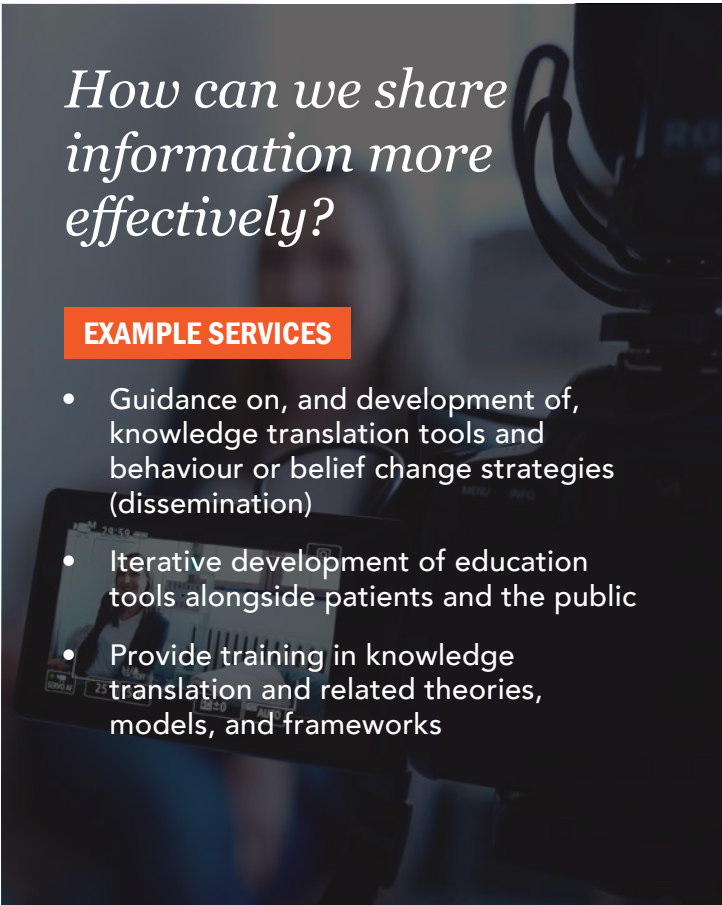
- Literature reviews, jurisdictional scans, environmental scans, and critical appraisals of the evidence base
- Developmental, implementation, economic, and summative evaluations using qualitative and quantitative data
- Data quality assessments and monitoring reliable performance indicators
- Assessing the generalizability of the evidence to the local context



How might we improve _____?

EXAMPLE SERVICES

- Address questions to inform decision-making, such as how should we measure success, how could we improve or transform the service, and how should we roll this out
- Project management and implementation support, such as developing clinical practice guidelines and processes
- Build a sustainable monitoring strategy to support continuous improvement



How can we share information more effectively?

EXAMPLE SERVICES

- Guidance on, and development of, knowledge translation tools and behaviour or belief change strategies (dissemination)
- Iterative development of education tools alongside patients and the public
- Provide training in knowledge translation and related theories, models, and frameworks



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