



Thunder Bay Regional Health Research Institute

2023-2024 Annual Report



Thunder Bay Regional
Health Research
Institute

Exceptional **care** for
every patient, every time.

Message from the Board Chair and CEO



As we know, research and innovation are major contributors to providing quality health care. What we do is driven by the unique needs of patients living in our region and with this, collaboration is key - both in delivering health care and in developing innovations. That's why we highlighted the Research, Innovation & Learning pillar of our Hospital; to recognize the value of finding and learning new innovations, especially homegrown technologies and ideas to address local and regional challenges. We're so proud of the work we've done this year to meet those challenges.

In that spirit of collaboration, the Thunder Bay Regional Health Research Institute (TBRHRI), Thunder Bay Regional Health Sciences Centre, and Thunder Bay Regional Health Sciences Foundation came together in late May 2023 to explore new ways to revolutionize health care through innovation that builds on advancing partnerships through clinical integration for the people of Northwestern Ontario.

On the topic of revolutionizing health care, we would like to congratulate Dr. Alla Reznik and her team for the successful clinical trial of Radialis' low-dose positron-emission mammography

(PEM) at the University Health Network's Princess Margaret Cancer Centre. Dr. Reznik's team plans to study how PEM can monitor Neoadjuvant Systemic Therapy in breast cancer patients to determine effectiveness of treatment faster. A separate study will investigate categorizing tumours for aggressiveness in prostate cancer patients.

We are pleased to inform that much research moving forward will be done using our new 3T MRI unit, designated for both research and clinical use. After some commissioning challenges, we completed new upgrades to the MRI suite in 2023. Many thanks to those who contributed financially including FedNor, Northern Ontario Heritage Fund Corporation, and the Thunder Bay Regional Health Sciences Foundation.

We want to send congratulations as well to Dr. Christopher Mushquash, Chief Scientist, TBRHRI. He contributed to recent research investigating a community-based, self-report health app for identifying support needs for children from a rural First Nation. The subsequent paper, "Community-based Screening and Triage Connecting First Nations Children and Youth to Local Supports: A Cross-sectional Study", was published in CMAJ Open in December 2023. Further research will be required, but this initial study showed that the app has great potential.

Also this year, we brought back the Health Research Speaker Series based on its past success.

This virtual speaker series showcased various research topics from leaders in their field including, Rabail Siddiqui, who presented "TBRHRI Research Support Services", Dr. Hazem Elmansy, who presented on "My Bladder Health Matters", Dr. David Savage, who presented on "Using Billing Data to Describe Physician Practices for Health Human Resource Planning", and Dr. Travis Marion, who spoke about "The Application of the Adverse Events Severity System in Northwestern Ontario".

We are pleased to highlight just a few of the ongoing research projects and successes we have had this year as we continue to build a sustainable research program, driven by innovation and regional needs, and supported through partnerships and collaborations.

Dr. Andrew Dean

Board Chair, Thunder Bay Regional Health Research Institute Board of Directors

Dr. Rhonda Crocker Ellacott

President and CEO, Thunder Bay Regional Health Sciences Centre
CEO, Thunder Bay Regional Health Research Institute

Board of Directors

(as of March 31, 2024)

Executive:

Dr. Andrew Dean
(Chair; Ex-Officio, VP Research and Innovation, Lakehead University)

Dr. David Marsh
(Vice-Chair; Ex-Officio, Vice-Dean of Research, Innovation and International Relations, NOSM University)

James Peotto
(Treasurer)

Ex-Officio:

Dr. Rhonda Crocker Ellacott
(CEO, TBRHRI)

Dr. Tim Larocque
(Director of Applied Research and Innovation, Confederation College)

Dr. Christopher Mushquash
(VP Research, TBRHSC, and Chief Scientist, TBRHRI)

Directors:

Dr. Jocelyn Bel

Peter Bishop

Dr. Erin Cameron

John Dixon

Andrew Ross

Dr. Sheldon Tobe

Community Member:

Dr. Mark Henderson
(Thunder Bay Regional Health Sciences Foundation Board of Directors Representative)

Message from the Vice President Research and Chief Scientist



This past year was one to be proud of at the Thunder Bay Regional Health Research Institute (TBRHRI).

Through our collaborative partnerships, there is cutting-edge research happening right here in Northwestern Ontario. Our partnerships are currently growing through researcher cross-appointments with Lakehead University and NOSM University, as well as with some new collaborations between our current scientists. Through these connections, we create more opportunities for our researchers and trainees to develop highly specialized and innovative projects. At TBRHRI, we are building a unique research environment that addresses local and regional needs with global applications.

We are pleased to report that Dr. Alla Reznik and her team successfully completed the Radialis Low-Dose (LD) Positron-emission Mammography (PEM) clinical trial at the University Health Network's Princess Margaret Cancer Centre. The study demonstrated that the unit had 96% sensitivity, similar to MRI, but with a false-positive rate of just 16% compared to 62% for MRI.

Dr. Michael Campbell and Dr. Jinqiang Hou, in partnership with

their teams, released findings on a specific family of enzymes linked to cancers. Aurora kinases A, B, and C are enzymes that play a large role in cell division. Previous research found that problems with these enzymes have led to aggressive cancers including lung, breast, and colorectal. Dr. Hou continues his research to target these enzymes using radioisotope tracers produced in our Cyclotron. Eventually, the goal is to treat these cancers using Aurora kinases inhibitors.

Dr. Mitch Albert and his team continue their research into Hyperpolarized Chemical Exchange Saturation Transfer (HyperCEST), an innovative approach to boost the signal of hyperpolarized ¹²⁹Xe MRI and increase efficiency. Their research was the cover article of ChemPhysChem's December 7, 2023 issue. Dr. Albert recently added Dr. Vira Grynko and Rubiya Mohammed to his team.

Since our last update, Dr. Michael Campbell and his team have continued their search for additional radioisotope and related radionuclides usage cases. In 2023, he co-authored a paper investigating the use of PET with an ¹⁸F radiotracer to identify biomarkers associated with concussion. Currently, diagnosing a concussion can be difficult. PET represents a promising diagnostic imaging method to develop a more definitive test

for concussions and other mild traumatic brain injuries.

We are also pleased to report that Dr. Brianne Wood and her team are researching the unique factors involved with delivering health care in Northern Ontario. This work highlights how data systems often overlook contexts of northern, rural, and remote areas. Dr. Wood's research is expected to allow local health leaders to better allocate resources and capacities for underserved areas in our region, in turn improving health outcomes. Dr. Wood received a \$100K grant for her project "Mobilizing and Evaluating a Multi-Level Learning Health System: Examining the Influence and Impacts of Northern, Rural, and Remote Context".

Thank you to all the scientists, teams, and staff who have worked so hard this year and who have accomplished so much. I look forward to seeing how far we can advance our research projects this year.

Dr. Christopher Mushquash
Vice President Research,
Thunder Bay Regional Health
Sciences Centre
Chief Scientist, Thunder Bay
Regional Health Research
Institute

Scientists

Dr. Christopher Mushquash

Vice President Research, Thunder Bay Regional Health Sciences Centre and Chief Scientist, Thunder Bay Regional Health Research Institute; Canada Research Chair in Indigenous Mental Health and Addiction, and Professor in the Department of Psychology at Lakehead University and the Division of Human Sciences at NOSM University

Dr. Mitchell Albert

Lakehead University/ TBRHRI Research Chair in Molecular Imaging and Advanced Diagnostics Professor of Chemistry, Lakehead University Adjunct Professor of Biology, Biotechnology, Health Sciences, and Physics, Lakehead University Adjunct Professor of Medical Sciences, NOSM University Scientist, TBRHRI

Dr. Michael Campbell

Lakehead University/ TBRHRI Research Chair in Radiochemistry for Molecular Imaging and Advanced Diagnostics Assistant Professor, Department of Chemistry, Lakehead University Scientist, TBRHRI

Dr. Jinqiang Hou

Lakehead University/ TBRHRI Research Chair in Radiochemistry Assistant Professor in the Department of Chemistry, Lakehead University Scientist, TBRHRI

Dr. Alla Reznik

Canada Research Chair in Physics of Molecular Imaging Associate Professor, Department of Physics, Lakehead University Scientist, TBRHRI

Associate Scientists

Dr. Sasha Bubon

Dr. Guillem Dayer

Dr. Yurii Shepelytskyi

Dr. Brianne Wood

Dr. Christopher Mushquash, PhD, C. Psych

Vice President Research, Thunder Bay Regional Health Sciences Centre and Chief Scientist, Thunder Bay Regional Health Research Institute; Canada Research Chair in Indigenous Mental Health and Addiction, and Professor in the Department of Psychology at Lakehead University and the Division of Human Sciences at NOSM University



Publications

Young, N. L. et al (2023). Community-based screening and triage connecting First Nations children and youth to local supports: a cross-sectional study. *Canadian Medical Association Open Access Journal*. 11(6): e1148-54

Shield, K. et. al. (2023). New perspectives on how to formulate alcohol drinking guidelines. *Addiction* 10.1111/add.16316

Hempelmann Perez, S. et al (2024) An Environmental Scan of Mental Health Services for Indigenous Youth in Canada. *Journal of the Canadian Academy of Child and Adolescent Psychiatry*

Hicks, L., et al. (2024). Expanding our understanding of digital mental health interventions for Indigenous youth: An updated systematic review. *Journal of Telemedicine and Telecare*; doi: 10.1177/1357633X241239715

Ellington, L. et al (2024) Indigenous youth wellbeing: Risk and resilience (2024) *Child Abuse and Neglect*, 148, 1-4

Wei, A. et al (2024) Global Indigenous gender concepts, Gender-based violence and resilience: A scoping review. *Child Abuse & Neglect*, 148, 1-14

Russell, C. et al (2024). Examining inequalities to opioid treatment (OAT) take-home doses (THD): A Canadian OAT guideline synthesis and systematic review. *International Journal of Drug Policy*

Reynolds, A. et al (2024). Negative affect and drinking among Indigenous youth: Disaggregating within- and between-person effects. *Research on Child and Adolescent Psychopathology*

Kim, A. J., et al (2024). Clarifying the pathway from anxiety sensitivity to binge eating: The mediating role of depressive symptoms in a 3-week, 3-wave longitudinal study of undergraduates. *Eating Behaviors* 52, 101843. 10.1016/j.eatbeh.2024.101843

Mushquash, C., et al (2024) Global Indigenous Gender Concepts, Gender-Based Violence and Resilience: A

Scoping Review. *Child Abuse Negl* 2024 Feb;148:106185. doi: 10.1016/j.chiabu.2023.106185.

Reynolds, A. et al (2024) Understanding links between depression and alcohol use for Indigenous Youth: Disaggregating Within- and Between-person Effects. *Res Child Adolesc Psychopathol.*; 52(6): 865-876 doi: 10.1007/s10802-024-01173-1

Toombs, E. et al (2023). Intergenerational residential school attendance and increased substance use among First Nation adults living off-reserve: An analysis of the aboriginal peoples survey 2017. *Frontiers in public health*, 10, 1029139

Toombs, E. et al (2023). Looking beyond the individual-The importance of accessing health and cultural services for Indigenous women in Thunder Bay, Ontario. *PLOS ONE* 18(3): e0282484

Aker, A. et al (2023). The impact of a stress management intervention including cultural components on stress biomarker levels and mental health indicators among indigenous women. *Journal of Behavioral Medicine*, 10.1007/s10865-023-00391-0

Reynolds, A. et al (2023) The impact of cultural identity, parental communication, and peer influence on substance use among Indigenous youth in Canada. *Transcultural Psychiatry* 2023 Oct 5:13634615231191999. doi: 10.1177/13634615231191999

Kushnier, L. et al (2023). Culturally responsive evaluation: A scoping review of the evaluation literature. *Evaluation and Program Planning*

Quelch, J. et al (2023). Evaluating facilitators' experience in a stress-reducing intervention for Indigenous women with and without HIV. *Health and Social Care in the Community* 9219287

Grants

Canadian Institute of Health Research (CIHR) IYS-Net Phase 1: Building Learning Health System Networks "A learning health system to monitor, guide and advance quality of care, research and policy within Aire Ouverte, Quebec's integrated youth services initiative" Iyer, S., Mushquash, C., et al. CIHR Accelerating Clinical Trials: Trial Networks Grant "Canadian Network for Children and Youth Mental Health Trials"

Gallagher, L., Newton, A., Dimitropoulos, G., Hawke, L., Kimber, M., MacMaster, F., Mushquash, A., Mushquash, C., Sassi, R., Szatmari, P. Amount Awarded: \$187,500

Public Health Agency of Canada Preventing Gender-Based Violence Grant "Promoting Positive Healthy Youth Relationships" Hill, M. E., Hacquoil, A., Stewart, M., Nadin, S., Mushquash, C. Amount Awarded: \$1,000,000

One Child Every Child Strategic Catalyst Seedling Award. 2024-2027 "Applying Indigenous ways of being, knowing and doing to a talk therapy program for Indigenous youth, families and communities in Alberta" Lindenbach, D., Eaglespeaker, E. C., Dimitropoulos, G., Mushquash, C., Sipos, V., Wang, E., Arnold, P., Moore, E. K., Austin, A., Hews-Girard, J., Ehrenreich-May, J., O'Neill, T., Scammel, J., & Rose, T. Amount Awarded: \$50,000

Social Sciences and Humanities Research Council (SSHRC) Partnership Grant. 2023-2030

"Community-engaged Research in Education, Advocacy, & system Transformation for advancing health Equity (CREATE): The Transformative Potential of Socially Accountable Research Networks Locally and Globally"

Cameron, E., Anawati, A., LeBlanc, J., Marsh, D., Cheu, H., Galway, L., Dube, T., Allison, J., Strasser, R., Clithero, A., Preston, R., Sitter, K., Wood, B., Kennel, M., Greenwood, D., Simard, A., Kendall,

C., O'Hearn, S., Konkin, J., Woollard, B., Ranger, N., Barbeau-Rodrigue, D., Logozzo, J., Mushquash, C., Aubin, N., Ohle, R., Zelek, B., Moineau, G., Torres, N., Oyeyemi, T., Palsdottir, B., Boelen, C. Amount Awarded: \$2,426,000

CIHR - Transforming Health with Integrated Care (THINC) Implementation Science Team Grant. 2022-2027 "Early Intervention for Eating Disorders in Ontario Integrated Youth Services: Best Practices for Implementation, Adaptation, Evaluation and Spread" Amount Awarded: \$1,923,607

CIHR CG:SCYMHS - other specialized mental health and/or substance use health settings. 2022-2023 "Pathways for youth from emergency departments to community services" Amount Awarded: \$198,448

CIHR: Catalyst Grant: Standards for Children and Youth Mental Health Services-Indigenous-Led settings. 2022-2024

"Bridging the gap from "standards" to "wise practices" in youth mental health: Co-designing approaches for adapting and applying standards and learning health system thinking to support Indigenous youth and communities" Amount Awarded: \$200,000

CIHR: Clinical Trials Training Platforms - indirect costs. 2022-2025

Canadian Training Platform for Trials Leveraging Existing Networks (CAN-TAP-TALENT) Amount Awarded: \$1,078,562

CIHR: Clinical Trials Training Platform. 2022-2025

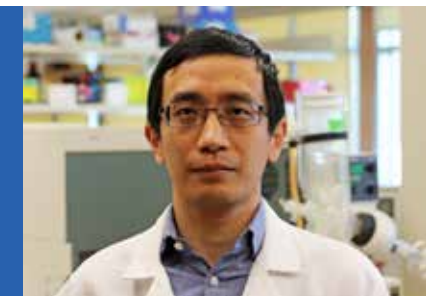
Canadian Training Platform for Trials Leveraging Existing Networks (CAN-TAP-TALENT) Amount Awarded: \$4,314,242

CIHR Project Grant. 2022-2025 "Pathways towards environmental justice: a community-academic research partnership to understand how past and present mercury exposure from fish consumption affects health and well-being in Asubpeeschosesewagong Netum Anishinabek (Grassy Narrows First Nation)" Amount Awarded: \$1,342,575

CIHR Catalyst Grant: Standards for Children and Youth Mental Health Services. 2023-2024 "Developing Standards for Implementing Stepped Care Models in Child and Youth Mental Health Service Systems" Amount Awarded: \$199,997

Dr. Jinqiang Hou

Lakehead University/TBRHRI Research Chair in Radiochemistry; Assistant Professor, Department of Chemistry, Lakehead University; Scientist, TBRHRI



Grants

Mitacs Elevate Postdoctoral Fellowship Program "Development and Evaluation of Novel Small Molecules Targeting Lysophosphatidic Acid Receptor 1 for the Treatment of Triple-Negative Breast Cancer" Dr. Jinqiang Hou - Academic Supervisor Postdoctoral Fellow - Wenjie Liu Amount Awarded: \$120,000

Publications

Liu, W. et al (2024) Lysophosphatidic acid receptor 1 (LPA1) antagonists as potential migrastatics for triple negative breast cancer; *ChemMedChem*, e202400013

Huang, J., at al (2024) Synthesis and Evaluation of [18F] AIF-NOTA-c-DVAP: A Novel PET Probe for Imaging GRP78 in Cancer. *Molecular Pharmaceutics* DOI:10.1021/acs.molpharmaceut.3c01228

Kovacs, A.H. et al (2023) Aurora B Inhibitors as Cancer Therapeutics, *Molecules* 28(8), 3385

Zheng, B.X. et al (2023) A Cytoplasm-Specific Fluorescent Ligand for Selective Imaging of RNA G-quadruplexes in Live Cancer Cells *Chemistry-A European Journal*. e202300705. IF: (5.02)

Zhao, D. et al (2023) Selective targeting of Aurora kinase B over A: Uncovering the structural basis for inhibitor specificity through molecular dynamics simulations. *Journal of Molecular Structure*. 1292, 136178 (IF:3.86)

Xu, Y. et al (2023) Bioinformatic assay reveal the potential mechanism of Guizhi-Shaoyao-Zhimu decoction against rheumatoid arthritis and mild-to-moderate COVID-19. *Methods and Programs in Biomedicine*. 238, 107584.

Zhao, D. et al (2023) Selective Targeting of Aurora Kinase B over A: Uncovering the Structural Basis

for Inhibitor Specificity through Molecular Dynamics Simulations. *Journal of Molecular Structure*. 1292, 136178 (IF:3.86)

Xu, Y. et al (2023) Bioinformatic assay reveal the potential mechanism of Guizhi-Shaoyao-Zhimu decoction against rheumatoid arthritis and mild-to-moderate COVID-19. *Methods and Programs in Biomedicine*. 2023, 238, 107584. (IF: 7.03)

Patents

Lysophosphatidic Acid Receptor Antagonists for Breast Cancer Treatment. United States Provisional Application No: 63/488,599. 2023

Dr. Mitchell Albert

Lakehead University/TBRHRI Research Chair in Molecular Imaging and Advanced Diagnostics; Professor of Chemistry, Lakehead University; Adjunct Professor of Biology, Biotechnology, Health Sciences, and Physics, Lakehead University; Adjunct Professor of Medical Sciences, NOSM University; Scientist, TBRHRI



Awards

Postdoctoral Fellow Excellence Award 2024 (Award to Yurii Shepelytskyi)
Rita Undergraduate Research Conference Oral Presentation, First place in the Science and Environmental Studies Faculty category Award to Aaron Hodgson
Wiley - Top Downloaded Article [Hyperpolarized 129Xe imaging of the brain: Achievements and future challenges]
Grants
NSERC Discovery Grant
"Hyperpolarized Xenon MRI Biosensor Development Program"
PI: Dr. Mitchell Albert
Amount Awarded: \$145,000
INOVAIT
"Intelligent PET Low-Dose Brain Imaging"
PI: Michael Waterston
Dr. Mitchell Albert
Amount Awarded: \$1,985,330
NOAMA Clinical Innovation Opportunities Funds (CIOF) Grant
"Vascular Cognitive Impairment Detection Using Hyperpolarized Xenon-129 Brain MRI Imaging"
Dr. Mitchell Albert
Amount Awarded: \$49,036

Publications

Batarchuk V. et al (2024) Hyperpolarized Xenon-129 Chemical Exchange Saturation Transfer (HyperCEST) Molecular Imaging: Achievements and Future Challenges. *Int J Mol Sci.* 25(3): 1939
Batarchuk V. et al (2024) Novel Hyperpolarized 129Xe R3-Noria-methanesulfonate Supramolecular Cage at 3.0T MRI. *Imaging Network Ontario Symposium 2024 Proceedings*; 158
Batarchuk V. et al (2024) Hyperpolarized Xenon-129 Chemical Exchange Saturation Transfer (HyperCEST) Molecular Imaging: Achievements and Future Challenges. *Int J Mol Sci.* 2024;25(3): 1939
Shepelytskyi, Y. et al (2023) R3-Noria-methanesulfonate: A Molecular Cage with Superior Hyperpolarized Xenon-129 MRI Contrast. *ACS Sensors*
Grynko, V. et al (2023) Cucurbit[6]uril Hyperpolarized Chemical Exchange Saturation Transfer Pulse Sequence Parameter Optimization and Detectability Limit Assessment at 3.0T. *ChemPhysChem*

Shepelytskyi, Y. et al (2023) R3-Noria-methanesulfonate: A Molecular Cage with Superior Hyperpolarized Xenon-129 MRI Contrast. *ACS Sensors*
Grynko, V. et al (2023) Cover Profile: Cucurbit[6]uril Hyperpolarized Chemical Exchange Saturation Transfer Pulse Sequence Parameter Optimization and Detectability Limit Assessment at 3.0T. *ChemPhysChem*. 24(23):e202300828
Matheson, M. et al (2023) Longitudinal follow-up of postacute COVID-19 syndrome: DLCO, quality-of-life and MRI pulmonary gas-exchange abnormalities. *Thorax*, 78(4), 418-421
Mikowska, L. et al (2023) Revealing a Third Dissolved-Phase Xenon-129 Resonance in Blood Caused by Hemoglobin Glycation. *Int. J. Mol. Sci.*, 24(14),1311

Patents

Albert MS., Shepelytskyi Y., Batarchuk V., Reznik A., Hodgson A. A System And Methods For Organ-targeted Multinuclear Functional And Molecular Magnetic Resonance Imaging (submitted to patent offices in US, CA, and EU)

Dr. Brianne Wood

Social Accountability and Learning Health System Associate Scientist, NOSM University/TBRHSC/TBRHRI



Awards

Northwestern Ontario Innovation Centre, RBC Innovation Hero of the Year [nominated]

Publications

Wood B, et al (2023). Northwestern Ontario OHT Data Framework. Prepared for All Nations Health Partners Ontario Health Team and Rainy River District Ontario Health Team, as part of the OHT Impact Fellowship
Daneshmand R, Acharya S, Zelek B, Cotterill M, Wood B. (2023). Changes in Children and Youth's Mental Health Presentations during COVID-19: A Study of Primary Care Practices in Northern Ontario, Canada. *Int. J. Environ. Res. Public Health*, 20, 6588

Grants

Northern Ontario Academic Medical Association (NOAMA)
"Integrating AI in Primary Care: Assessing Needs and Enhancing Education and for Family Physicians in Northern Ontario"
PI: Dr. Barbara Zelek
Dr. Brianne Wood
Amount Awarded: \$58,670
Northern Ontario Academic Medical Association (NOAMA)
"Collaborative Quality Improvement in Adolescent Mental Health During the COVID-19 Pandemic: A Geographic Analysis of Administrative Health Data"
[regional competition]
Co-PI: Dr. Brianne Wood,
PI: Dr. Barbara Zelek
Amount Awarded: \$50,000

Integrated Knowledge Translation Research Network:
"A Northern Ontario strategy to optimize health data and artificial intelligence for public health, population health, and primary health care."
PI: Dr. Brianne Wood
Amount Awarded: \$10,000
CIHR Project Grant:
"Efficacy of antioxidant therapy in mild to moderate SARS-CoV-2 infection: An experimental arm of the CanTreatCOVID adaptive platform trial".
PIs: Drs. Benita Hosseini, David J. Jenkins, Andrew D. Pinto
Dr. Brianne Wood (Collaborator)
Amount Awarded: \$100,000

Dr. Michael Campbell

Lakehead University/TBRHRI Research Chair in Radiochemistry for Molecular Imaging and Advanced Diagnostics; Assistant Professor, Department of Chemistry, Lakehead University; Scientist, TBRHRI



Publications

Liu, W. et al (2024) Lysophosphatidic acid receptor 1 (LPA1) antagonists as potential migrastatics for triple negative breast cancer. *ChemMedChem* 2024, e202400013
Agyei, Clifford; Robertson, Craig; Campbell, Michael; MacKinnon, Craig
Simple thiazole-based ligands for palladium(II) Suzuki-Miyaura aryl

cross-coupling catalysts
Canadian Journal of Chemistry

Invited Talk

Neutron Activation Using a Medical Cyclotron
Michael G. Campbell, Branden Mandaric, Sarah Tribe, Michaela Coccimiglo, Bradley Vis, Stephen Kinrade

11th International Conference on Isotopes – Saskatoon SK, July 2023
Co-Chair of session on use of isotopes at 11th International Conference on Isotopes

Dr. Alla Reznik

Canada Research Chair in Physics of Molecular Imaging; Professor, Department of Physics, Lakehead University; Scientist, TBRHRI



Year in Review



Grants

OICR Investigator Award
Amount Awarded: \$2,500,000

Mitacs Accelerate Proposal:
“Advanced technologies for breast imaging”

Dr. Alla Reznik – Academic Supervisor
Interns: Harutyun Poladyan, Janos Rado, Mikhail Vostokov, Galina Nagicheva, Anirudh Shahi
Amount Awarded: \$360,000

INOVAIT
“Intelligent PET Low-Dose Brain Imaging”

PI: Michael Waterston
Dr. Alla Reznik, Pedro Rosa-Neto (McGill), Ur Metser,
Amount Awarded: \$250,000

CFI JELF
“Low-dose direct conversion radiation medical imaging detectors”
Amount awarded: \$312,500

Publications

Freitas, V. et al (2024). Breast Cancer Detection Using a Novel Low-Dose Positron Emission Digital Mammography System. *Radiology: Imaging Cancer* 6(2)

Baldassi, B. et al (2024) Image quality evaluation for a clinical organ-targeted PET camera *Frontiers in Oncology* (14)

Freitas, V. et al (2023) Abstract P2-09-01: An Emerging Technology for Breast Cancer Detection - Preliminary Data of Breast Cancer Detection using Novel Low Dose Positron Emission Mammography; *Cancer Res* 83 (5 Supplement)

Clinical Trials and Commercialization

Radialis’s organ-targeted PET system has undergone upgrades specifically tailored for prostate imaging. The upgrades encompass a larger separation between the detector heads and an expanded distance from the system enclosure to the imaging area, establishing a designated dead space for arms and torso.

Completed: Pilot clinical trial at UHN-PMCC, ClinicalTrials.gov Identifier: NCT03520218 “Evaluating Positron Emission Mammography Imaging of Suspicious Breast Abnormalities” The results have been published in *Radiology: Imaging Cancer* (2024, 6:2).

Subsequently, on February 9, 2024, the Radiological Society of North America News published an article titled “Novel Technique Has Potential to Transform Breast Cancer Detection,” and *Radiology* published an Editorial Commentary titled “Low-Dose Positron Emission Mammography: A Novel, Promising Technique for Breast Cancer Detection”, summarizing the trial outcomes and acknowledging benefits of our technology low-dose PEM technology.

The first commercial prototype of Radialis’s organ-targeted PET system is under assembly and currently testing.

Molecular Imaging within Sight

A technique being refined by researchers in Thunder Bay that provides razor sharp images of the lungs and blood flow images of the brain could revolutionize the future of personalized medicine, leading to earlier and more precise detection of different types of cancers and brain-related diseases.

The approach, referred to as hyperpolarized (HP) xenon-129 molecular imaging, promises more detail and sensitivity than other imaging techniques and does it instantaneously.

This specific area of research – the imaging of blood flow in tissue, a process called “perfusion” – involves a patient inhaling xenon, a colourless, odourless gas used as a contrast agent for the imaging of soft tissues. The xenon is specially prepared in a polarizer to boost the magnetic resonance imaging (MRI) signal and is dispensed in a bag. With the subject holding their breath, the MRI monitors how the xenon dissolves and moves through blood vessels.

This technique was used to examine patients who suffered from “long COVID”, with symptoms ranging from breathlessness to “brain fog,” including headaches and dizziness. Utilizing xenon MRI, researchers were able to determine that not

enough oxygen was getting into the red blood cells and, from there, to other organs.

Albert explains, “That means they have a deficiency of getting oxygen into the bloodstream. That’s why they have poor ventilation. That’s why they were breathless. That’s why they had fatigue – their muscles, their cells weren’t getting enough oxygen. So we were able to get clues using our technique to help solve the mystery.”

At the same time, Albert and his team at TBRHRI started doing brain imaging, since that’s the organ with the highest blood flow. Focusing on people with Alzheimer’s disease, xenon imaging revealed that these patients had lower cerebral blood flow, as well as indicating atrophy or shrinkage of the grey matter. As a result, Albert’s team has proposed a biomarker that could monitor these types of diseases.

Hyperpolarized xenon-129 MRI paves the way for modern MRI into the realms of functional and molecular imaging, identifying a specific type of cancer and non-invasively reduces the amount of false-positive diagnoses and cuts down on the need for biopsies.

In doing so, this gives hyperpolarized xenon-129 MRI a unique opportunity to become

a potential pillar for future personalized medicine and early-stage disease detection. Future development in this field can revolutionize modern health care and diagnostics.

In simple terms, the technique increases the xenon signal by several factors of magnitude. And by directing xenon in and out of the centre of large molecules, called “supermodular cages,” they could offer more detailed images of metabolic processes as they’re occurring.

At the molecular imaging level the technique is so sensitive that we can see very, very small tumours and early-stage metastases wherever they go in the body.

Much of this work has been supported by grants from, among others, the Natural Sciences and Engineering Research Council of Canada (NSERC), the Ontario Research Foundation, the Ministry of Health, and Mitacs.

This molecular imaging technology is still at the experimental stage and is now in pre-clinical testing, Albert says, adding that his team is also collaborating with specialists in respirology and neurology for testing on patients with different ailments.



Health Research Speaker Series

As part of our commitment to bring awareness to the importance of clinical research and connecting research to clinical practice, the Health Research Speaker Series returned to TBRHRI with a series of seminars that were hosted by various professionals.

The first session featured Rabail Siddiqui, with her talk “Research Support Services at Thunder Bay Regional Health Research Institute”.

The second session was “My

Bladder Health Matters, presented by Dr. Hazem Elmansy, MD, MSc, FRCSC, Associate Professor and Program Director of the Minimally Invasive Urologic Surgery Fellowship Program, NOSM University.

The third session was provided by Dr. David Savage, an Emergency Physician at TBRHSC and Assistant Professor at NOSM University, presenting on “Using billing data to describe physician practices for health human resource planning”.

The final presentation was “The Application of the Adverse Events Severity System in Northwestern Ontario” by Dr. Travis E. Marion. Dr. Marion is an Assistant Professor in the Division of Clinical Sciences at NOSM University and the current Spine Surgery Medical Lead at TBRHSC.

All presenters have extensive experience and research in their areas of expertise.

Research Seed Funding Competition

The Thunder Bay Regional Health Sciences Centre (TBRHSC) and Thunder Bay Regional Health Research Institute (TBRHRI) Research Seed Funding competition aims to support promising health research, with the goal of advancing research outcomes and capacity. This competition applies to basic science, clinical research, social inquiry, humanities scholarship, or other health research that addresses needs of our patients Northwestern Ontario. Below are the successful applicants for the upcoming fiscal year.

Understanding the perceptions of Regulated Health Care Professional’s current workload and associated/influencing variables in a hospital setting in Northwestern Ontario: An interdisciplinary perspective

Primary Applicant: Andrea Raynak RN, PhD(c), Director, Nursing Practice, TBRHSC

Co-Investigators: Brianne Wood, PhD, Associate Scientist, TBRHRI, Holly Freill MSc RD, Interprofessional Educator, TBRHSC, Brittney McLaughlin MN, RN, Interprofessional Educator, TBRHSC

Background: Emerging evidence indicates that workload is an important factor that influences the retention of regulated healthcare professionals in an acute care hospital setting. Supporting research has primarily explored regulated health care professionals’ experiences pre-pandemic and amidst the pandemic, which can be argued to have influenced their perceptions of workload.

Examining the Rate of Inflammatory Breast Cancer (IBC) within a Northwestern Ontario Population

Primary Applicant: Dr. Adrien Chan, Medical Oncologist, TBRHSC, Assistant Professor, NOSM University

Co-Investigators: Dr. Olexiy Aseyev, Medical Oncologist, TBRHSC, Associate Professor, NOSM University, Ms. Samantha G. Ribey, UG1, NOSM University

Background: Inflammatory breast cancer (IBC) is a rare but aggressive form of breast cancer with a high risk of metastasis and a low survival rate. Early detection and treatment of IBC is extremely pertinent to improve patient outcomes. Many factors determine the treatment of IBC, including hormone status (estrogen and progesterone), human epidermal growth factor receptor 2 (HER2) status, and cancer staging. The population of Northwestern Ontario (NWO) has been shown to have higher rates of cancer diagnosed at a later stage, leading to poorer health outcomes. There are no statistics on the rate of IBC in a NWO population.

The Incidence and Risk Factors of Hepatocellular Carcinoma in Northwestern Ontario: A Retrospective Cohort Study

Primary Applicant: Dr. Joseph Del Paggio, Medical Oncologist, TBRHSC, Assistant Professor, NOSM University

Co-Investigator: Dr. Jordan Green, Gastroenterologist, TBRHSC, Assistant Professor, NOSM University

Background: Hepatocellular carcinoma (HCC) is a rare

malignancy with a significantly poor prognosis if not detected early, manifesting as the second most common cause of cancer-related deaths. The incidence of HCC has been increasing worldwide, including in Canada and Ontario, based on data from 2015. However, the incidence of HCC has not been examined in Ontario since 2013, making the available data more than 10 years old.

Opioid Sparing Effects of Regional Blocks in Outpatient Rotator Cuff Surgery: A Prospective Cohort Study

Primary Applicant: Dr. Jubin Payandeh, Orthopaedic Surgeon, TBRHSC, Assistant Professor, NOSM University

Co-Investigators: Dr. Neil Thomas, Orthopaedic Surgery Resident, NOSM University, Dr. Michael Riediger, Orthopaedic Surgeon, TBRHSC, Assistant Professor, NOSM University, Mr. Sacha Dubois, Assistant Professor, NOSM University, Ms. Rabail Siddiqui, Research Development Coordinator (Acting), TBRHRI, Ms. Lahama Naeem, Orthopaedic Research Development Officer (Acting), TBRHRI

Background: Rotator cuff injuries are common shoulder disorders that can significantly impact one’s ability to accomplish daily activities due to debilitating pain. Treatment for rotator cuff injuries may involve surgery which can cause significant post-operative pain, leading to a reportedly high rate of post-operative opioid use. However, there is some evidence that use of peripheral nerve blocks (PNBs) can potentially reduce the dose and need for opioids post-operatively.

Data Analysis Framework Collaboration in Action

An ongoing initiative led by NOSM University’s Centre for Social Accountability (CFSA) with the Northwestern Ontario Health Teams (OHTs) is working to fill a major health human resources gap.

Dr. Brianne Wood and Dr. Erin Cameron, Academic Director at CFSA, worked with health care partners throughout Northwestern Ontario to create a data framework for regional health care systems. This framework informs how data is used to improve the coordination and integration of health care in order to

impact health at a population level. The goal is to support people who need to be knowledgeable about the health system as a whole — such as decision-makers, policymakers, and clinicians — with research.

The work builds on existing partnerships between NOSM University, TBRHRI, All Nations Health Partners OHT, Rainy River District OHT, the Northwestern Ontario Integrated Care Working Group, and the Rapid Improvement Support Exchange.



Thunder Bay Regional Health Sciences Centre & Thunder Bay Regional Health Research Institute

Thunder Bay Regional Health Sciences Centre (TBRHSC) is a 425-bed acute care facility and academic health sciences centre. As the only tertiary health care provider in the region, Thunder Bay Regional Health Sciences Centre provides comprehensive care to more than 245,000 people in a region the size of France. TBRHSC teaches the next generation of health care providers and advances medical research through the Thunder Bay Regional Health Research Institute (TBRHRI). Patients benefit from interprofessional teams of dedicated health care providers and access to leading-edge medical technology and clinical trials. TBRHSC is proudly affiliated with Lakehead University, Confederation College and NOSM University.

TBRHSC operates on sacred land. We respectfully acknowledge that we work on the traditional lands of the people of Fort William First Nation. This land is the territory of the Anishinabek Nation and is home to the Robinson-Superior Treaty of 1850. Today, Thunder Bay is the home to many Indigenous Peoples from across Turtle Island and we are grateful to have the opportunity to work together in this community and on this territory. We are committed to embedding equity, diversity and inclusion in all the care, education and research that we do. We believe that our differences are key to our growth as an organization and a community, and to our ability to develop innovative approaches to deliver exceptional care to patients, every time



STRATEGIC PLAN



Exceptional care for every patient, every time.

For the first time ever, Strategic Plan 2026 is a joint plan for Thunder Bay Regional Health Sciences Centre (TBRHSC) and Thunder Bay Regional Health Research Institute (TBRHRI). As the inaugural joint strategic plan, it is the foundation on which significant progress in patient care and health research will be made.

This plan was built on extensive engagement with patients, families, the public, volunteers, staff and health service providers. Updated Mission, Vision and Values statements reflect the input received, while responses were clear that the organizations' philosophy needs to remain the same: patients at the centre of everything we do. TBRHSC is committed to upholding its position as a leader in Patient and Family Centred Care by introducing the principles of co-design into care planning to ensure care better reflects the needs of the patients and families.

Strategic Plan 2026 is an evolution that builds

on the successes of the previous strategic plan, with focused strategic pillars identified during stakeholder consultations, including Equity, Diversity, & Inclusion, Patient Experience and Staff Experience. A clear emphasis on Research, Innovation, & Learning will help prioritize and integrate research efforts, build research capacity and create an environment that better supports research, innovation, teaching, and learning. The strategic enabler Sustainable Future is critical to the organizations' financial health and future success, and includes supporting expansion of digital health, creation of a clinical services plan, advancing partnerships and system integration, and achieving operational sustainability.

With this strategic plan, TBRHSC and TBRHRI will strive for continuous improvement, driven by the needs of the patients and families served, and the commitment to exceptional care for every patient, every time.

For a closer look at our Strategic Plan 2026, check out this video:

https://youtu.be/3C_LFcYeBo8



MISSION:

We provide quality care to patients and families, supported and advanced by research, innovation, and education that is responsive to the needs of the population of Northwestern Ontario.

VALUES:

DIVERSITY

We foster a people-centred environment that is inclusive of all.

COMPASSION

We show empathy, compassion and respect by acknowledging ourselves as learners in understanding the experiences of others, and by considering the needs, thoughts and feelings of those we serve and with whom we work.

EXCELLENCE

We deliver the highest quality service in every encounter and in all our work.

INNOVATION

We embrace continual learning and improvement to drive positive change.

ACCOUNTABILITY

We sustain and reinvest in our mission and communities by wisely planning for and managing our resources.

PHILOSOPHY:

Patients at the centre of everything we do.

VISION:



OUR STRATEGIC DIRECTIONS:

- Equity, Diversity, & Inclusion**
We all belong
- Patient Experience**
Empathy, compassion, and respect in every encounter
- Staff Experience**
This is where we want to work, grow, and thrive
- Research, Innovation, & Learning**
Driven by the needs of our patients, our staff, and our communities

Sustainable Future Ensuring our Healthy Future

Equity, Diversity, & Inclusion

We all belong

We are strengthening our commitment to Equity, Diversity, & Inclusion (EDI) to ensure we provide the best possible health care experience for patients and families across Northwestern Ontario.

We are taking action to create a culturally safe and compassionate environment for all patients, families, and staff. Initiatives include mandatory cultural safety training related to Indigenous health and EDI to foster an inclusive space for all. This includes ensuring inclusivity of all equity-deserving groups, including Indigenous Peoples and those within the 2SLGBTQIA+ community.

Additionally, to further assist patients and families visiting our Hospital we have partnered with Anishnawbe Mushkiki, and Grand Council Treaty #3 to hire Indigenous Care Coordinators. This partnership will help Indigenous Peoples navigate the health care system and transition back to their home communities by working with local community supports. The Indigenous Care Coordinators are responsible for providing a range of health and mental health navigation, advocacy, discharge planning and support services to Indigenous Peoples accessing health and mental health services while being an inpatient at Thunder Bay Regional Health Sciences Centre.

Outlined in this section are additional examples of the actions that we have taken in alignment with Strategic Plan 2026. The implementation of these initiatives will provide a positive experience for not only patients and their families but also for our staff, to ensure everyone is treated with compassion, respect, and empathy in every encounter.

For a closer look at our Equity, Diversity, & Inclusion pillar, check out this video:

<https://youtu.be/dLIEoLL8UM>



An EDI View in Everything We Do

To further our commitment to building an environment where we all belong, we are ensuring all policies and procedures are reviewed with an EDI lens by having representatives from the EDI Steering Committee sit on the Policy and Procedure Committee. The goal of this work is to ensure all policy renewals and new policies and procedures have been vetted through the EDI guidelines, and are inclusive and thoughtful across EDI practices. With this change, policies renewed, amended and all new policies, will be sent to the EDI committee to ensure alignment with our strategic priority of embedding Equity, Diversity and Inclusion in everything we do.



Cultural Safety at TBRHSC

A Cultural Safety Educator works directly with our Hospital's Indigenous Health Hub and TBRHSC staff, students and volunteers to improve cultural awareness and education across the organization. The role helps to advance Equity & Inclusion initiatives for other equity-deserving groups that access services at TBRHSC.

The Cultural Safety Educator will support the implementation of the new program Repairing the Sacred Circle: an Indigenous Cultural Awareness and Education Primer. This locally focused content will introduce concepts, in a sharing circle format, related to colonization, race, racism, implicit bias, and stereotypes and how they contribute to health inequities for Indigenous Peoples.

The introduction of a Cultural Safety Educator has proven to be key in building awareness to cultural differences.

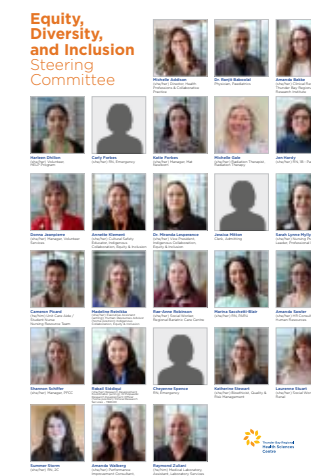
This regionally specific training aligns to our Strategic Plan 2026 - Providing a culturally safe experience for all patients and staff.



National Day for Truth and Reconciliation

Leading up to the National Day for Truth and Reconciliation on September 30, our Hospital's Indigenous Collaboration, Equity and Inclusion portfolio organized various events to honour the Survivors and recognize the importance of Truth and Reconciliation. Events for staff included beading, drumming, and educational opportunities, with an Indigenous Craft and Food Vendor Market open for staff and the public. As part of our commitment to Truth and Reconciliation, and the seven Calls to Action under health, we are continually working towards creating an environment of inclusion, equity and compassion at our Hospital.

Equity, Diversity & Inclusion Steering Committee



TBRHSC has implemented an Equity, Diversity, & Inclusion Steering Committee. This committee includes staff, professional staff, learners and volunteers from across our Hospital, focused on improving experiences for patients and staff through an EDI lens. This Committee was developed in order to foster an organizational culture of EDI by creating and implementing an action plan that will address racism and discrimination that leads to inequities throughout our Hospital.

The Committee is dedicated to ensuring our Hospital is a safe space for all, and focused on improving experiences for Indigenous Peoples and people who identify within the 2SLGBTQIA+ community.

Patient Experience

Empathy, compassion, and respect in every encounter



Specialized Care through the Infant & Neonatal Transport Team

TBRHSC has received funding to establish a dedicated Infant & Neonatal Transport Team. This specialized team will be available 24 hours a day, 365 days a year to deliver timely transport services across the North to acutely ill neonatal and paediatric patients up to age one. The dedicated team will work in partnership with Ornge and the other provincial neonatal and paediatric transport teams to ensure paediatric patients within our region have their clinical needs addressed more quickly.

Transport medicine is a new and exciting endeavour for TBRHSC, particularly for this patient population. Use of specialized transport equipment is required along with a significant amount of clinical training and skills building, and extensive aeromedical training. Once developed, the team will be responsible for assisting our small and rural regional partners in the stabilization of acutely ill infants, as well as the delivery of high-quality care throughout the entirety of the transport. These paediatric patients will be transported to a higher level of care, including TBRHSC and/or other tertiary centres as appropriate. This team will also support transportation from TBRHSC to tertiary hospitals as well as can assist with patient repatriation.

Currently, patients often face lengthy transfer times, which often exceed the provincial benchmark. The addition of the TBRHSC Infant and Neonatal Transport Team will ensure paediatric patients within our region have access to quality care in a timely manner and will have a very positive impact on infant health across the North, particularly those in remote communities.

Optimizing Treatment by Advancing Models of Care

At our Hospital, our focus on Patient Experience drives staff to come up with innovative models of patient care. In August of 2023, the Heart Failure Clinic was established as a pilot project that connects patients presenting to our Hospital with heart failure to a rapid access outpatient clinic.

The goal is to optimize treatment, improve quality of care and reduce the rate of hospital admissions or readmissions. In this advanced care model, patients are identified by a nurse practitioner (NP) and cardiologist in the emergency room or if admitted on an in-patient unit to determine the best plan of care. Upon discharge, the team will follow up on the interventions initiated in Hospital through the outpatient Heart Failure Clinic. Though the project is ongoing, the team expects this initiative - providing extensive care coordination and support - will lower Emergency Department visits and optimize care for patients.

Digital Health Solutions for Better Stroke Care

TBRHSC, in collaboration with Aurora Constellations, are providing timely access to treatment for patients who present with a suspected acute stroke in Northwestern Ontario.

The Ontario Centre of Innovation (OCI) announced funding through the Innovating Digital Health Solutions Program (IDHS). The digital health solutions funding is aimed at fast-tracking digital health innovations in Ontario and the work of our Stroke Department resulted in one of the 13 approved projects designed to revolutionize health care delivery across the province.

The funding of this health solution will enable timelier and coordinated care for patients presenting to our Hospital with a suspected acute stroke.

WHAT WE WILL DO

Treat each person with compassion, respect, and empathy.

HOW WE WILL DO IT

- Develop and implement the framework for co-design.
- Embrace patient-centred communication principles.

WHAT WE WILL DO

Focus relentlessly on quality.

HOW WE WILL DO IT

- Develop an annual Quality Improvement Plan.
- Incorporate quality best practices.
- Review a summary of patient safety events.
- Assess current services through the lenses of consistency, coordination, and transitions.

WHAT WE WILL DO

Become experts in caring for patients with complex care needs.

HOW WE WILL DO IT

- Improve coordination, care, and support for patients with complex health issues.
- Develop a Substance Use and Addictions Strategy.

HOW WE WILL MEASURE IT

- Increase positive patient experience survey results.
- Improve quality of care and reduce preventable harm.
- Improve access, care, and support for patients with complex care needs in collaboration with our partners.

Staff Experience

This is where we want to work, grow, and thrive

WHAT WE WILL DO

Retain, recruit and support the people needed to shape our future.

HOW WE WILL DO IT

- Improve physical and emotional safety, and violence prevention.
- Achieve a safe and just culture that encourages open dialogue.
- Update our current wellness plan.
- Monitor our staff vacancy rates and enhance recruitment processes.
- Implement recruitment processes to reflect Equity, Diversity, & Inclusion.
- Implement an Interprofessional Collaborative Model of Practice.

WHAT WE WILL DO

Support the ongoing development of our current and future leaders.

HOW WE WILL DO IT

- Ensure staff have access to professional development resources and opportunities.
- Implement a leadership development framework.

HOW WE WILL MEASURE IT

- Increase positive staff experience survey results.
- Improve staff engagement.
- Recruit and retain necessary staff.



Roaming Education for Staff

TBRHSC is capturing the interest of staff across the Hospital by fostering education using an innovative approach.

Roaming Education for Staff (REFS) is a three-pronged education and training initiative:

1. **Roaming Education** - where a small group of content experts travel throughout the Hospital to different departments with attention grabbing snacks, followed by a spontaneous education session on the month's topic of choice.
2. **Lunch and Learns** - these opportunities occurred throughout the year to join in on this brief but energized quick learn.
3. **On the Spot Travel** - to different departments where the REFS team provides simulations by running mock codes.

The content is intended to be inclusive to as many professions as possible. Attendees include pharmacists, physiotherapists, occupational therapists, medical radiation technologists (MRTs), registered respiratory therapists (RRTs), nurses, students, residents, housekeeping and staff from health records.

The initiative has enabled a better opportunity for the delivery of education and training for all staff with a goal of improved care for all patients.



2023 Engagement Survey

The 2023 Engagement Survey provided staff and professional staff with an opportunity to deliver feedback on successes and identify areas where improvement can enhance the work culture.

The key areas of focus were a result of over 93,285 unique data points and identified areas that will assist in shaping our culture and having an improved staff experience. The results also show that many staff experience positive work-life balance, teamwork, respect, and diversity – these are the cornerstones we will build upon. The insight gained from the feedback will allow us to build on the successes and make improvements to enhance the work culture.

Building Leaders Leadership Development

TBRHSC has recently partnered with Humber College to introduce the Humanistic Leadership Development Program. This program is designed to support the needs of staff by emphasizing open communication, empathy, and understanding. The program has already garnered significant interest, with more than 50 leaders and emerging leaders registering in the initial two cohorts. Our organization is dedicated to providing opportunities like this one and more to our leaders as part of the professional development aspect of the Leadership Development Program.



Improving Care and Fostering Positivity

The implementation of Quality Huddles have played a pivotal role in driving quality and safety to the forefront, and building capacity at the department level.

Quality Huddles are held once a week at minimum and provide a consistent forum for frontline staff and the interdisciplinary team to discuss patient safety and quality trends, opportunities for improvement and change ideas, support required from leadership, key performance indicators and to celebrate team successes.

The Quality Huddles were first implemented on the seven medical and surgical in-patient units starting in January 2023. Currently, they have expanded to nearly 30 departments (including non-clinical and outpatient areas) with plans underway to expand to potentially 10+ additional departments.

Through 2023, this included greater than:

- 450 huddles held;
- 4000 staff in attendance;
- 750 change ideas generated; and
- 450 change ideas implemented.

Staff are encouraged to highlight ideas that help improve their day and improve the patients' experience. It provides a forum for staff to share their innovative ideas, and the support needed to implement improvements within their department; no matter how big or small.

Preventing Workplace Violence

Our Hospital is committed to advancing the work of the Emergency Department Workplace Violence Prevention Committee and Task Force to advise and implement initiatives, programs and processes. This past year, success of the committee included the ongoing public anti-violence and education campaign, creation of a de-escalation room, recruitment of an Indigenous Patient Navigator with experience working with mental health and addictions and mental health enhancements, including access to a part-time peer support worker and police presence in the department. This project will continue forward with plans to implement a wellness training program facilitated by Canadian Mental Health Association.

Research, Innovation, & Learning

Driven by the needs of our patients, our staff, and our communities

WHAT WE WILL DO

Assess and prioritize our research efforts.

HOW WE WILL DO IT

- Prioritize research and assess current research initiatives.
- Enable opportunities for knowledge translation.

WHAT WE WILL DO

Enhance staff capacity and capability for research success.

HOW WE WILL DO IT

- Recruit researchers to address staffing gaps.
- Retain current staff and mentor new researchers.
- Establish an evaluation framework.

WHAT WE WILL DO

Create an environment supportive of research, innovation, and learning.

HOW WE WILL DO IT

- Encourage staff to lead and participate in research, innovation, and learning.
- Support continuous education and professional development.

HOW WE WILL MEASURE IT

- Increase patients enrolled or involved in research studies.
- Increase number of research publications, grants, and external funding.
- Increase number of learners.



The Cyclotron and Radiopharmacy Facility

Currently, TBRHSC's Cyclotron and Radiopharmacy facility is providing the residents of Northwestern Ontario with PET radiopharmaceutical (called FDG). FDG is used in the PET/Nuclear Medicine program for patient care at our as well as providing a research facility to produce new radiotracers, biomarkers and unique isotopes.

Unfortunately, the FDG is a short-lived radiopharmaceutical and cannot be transported over long distances.

To expand our use for areas affected by distance, we have formalized a collaborative research and development agreement with IsoSolutions.

The new partnership will enable the facility to develop and market long-lived radioisotopes that can also be transported over long distances to national and international research and clinical facilities. The funding of the project will allow growth of the facility by adding equipment and resources to develop long-lived isotopes.

The funding partners include IsoSolutions, the Northern Ontario Heritage Fund Corporation and Federal Economic Development Agency for Northern Ontario.

This research and development project has significant potential impacts to our 2026 Strategic Plan's Research, Innovation and Learning pillar.



Research Collaboration and Opportunities

The Research Facilities Navigator provides opportunity to extend our reach within the research realm and work with others looking for novel research and innovation opportunities. Thunder Bay Regional Health Research Institute is now listed within this registry, promoting the facilities and services available.

The Navigator, created and managed by the Canada Foundation for Innovation (CFI), is an online searchable directory of facilities in public research institutions across Canada. It provides opportunities to connect with researchers and industry leaders.

For us, this resource will also provide students and potential future employees with access to information about the health research facilities in Thunder Bay. This platform will impact our strategic directions of Research, Innovation and Learning by facilitating new research connections and Staff Experience by improving recruitment and engagement.



Research and First Nations Principles

The Fundamentals of OCAP® training course will be provided for the members of the Hospital's Research Ethics Board, as well as select research staff.

OCAP® stands for ownership, control, access, and possession as it relates their data and information. The Fundamentals introduces the OCAP® principles in a welcoming and culturally engaging way and takes learners on a journey through the importance of First Nations ownership, control, access, and possession of First Nations data.

This training furthers our organization's commitment to equity, diversity and inclusion by ensuring those involved in research oversight and implementation understand the expectations of our Indigenous patients, staff and community members.



Sustainable Future

Ensuring our Healthy Future



WHAT WE WILL DO

Advance digital health to improve patient and staff experiences.

HOW WE WILL DO IT

- Secure and implement the electronic health record.
- Determine required data systems.
- Implement a plan to meet information needs.

WHAT WE WILL DO

Advance Partnerships and System Integration.

HOW WE WILL DO IT

- Advance existing regional partnerships and programs.
- Pursue strategic partnership and integration opportunities.
- Be a voice and advocate for the needs of our entire region.

WHAT WE WILL DO

Develop a Hospital Clinical Services Plan to clarify our acute care and academic mandates.

HOW WE WILL DO IT

- Determine which current services are consistent with our mandates.
- Estimate our short and long-term service demand.

WHAT WE WILL DO

Achieve Operational Sustainability and Accountability.

HOW WE WILL DO IT

- Create an accountability framework.
- Provide training and supports to improve accountability.

HOW WE WILL MEASURE IT

- Prioritize our services and find operational efficiencies.
- Increase partnerships to improve and integrate care for patients.

Employee Time Keeping and Scheduling System

TBRHSC embarked on a new era of workforce management with the implementation of a new employee time keeping and scheduling system. This new system provides managers and employees with direct access to the time and attendance information they need, in real-time.

The project went live early in 2024, with opportunities for managers and staff to learn about the new system and specific user roles. This initiative aligns with creating a better staff experience and provides efficient processes for managers and staff for scheduling.

Digital Health

TBRHSC is committed to advancing digital health to improve our patient and staff experience and to enhance operations. With input from 1200 participants, our Digital Health team has established a forward-thinking “Digital Health Strategic Roadmap and Vision”. The approval phase is now complete.

Digital Health Phase 1: TBRHSC continues to work with our partners including Ontario Health Teams to create a true regional Health Record for timely access to clinical data and provide care across the care continuum.

Roadmap and Beyond: TBRHSC has been named the Lead for the North West Ontario Regional Cyber Security Operations Centre and is working with our partners to improve security of our health system. The Decision Support and Business Intelligence teams have already created a new actionable Data Flow Dashboard.



Ontario Health Teams and Regional Specialized Services Network

The Ontario government announced funding support to Ontario Health Teams (OHTs) in November 2023. As a part of this, our region will receive \$1.5 million to support regional work for the advancement of a truly connected system of care across the four OHTs in our region.

Thunder Bay Regional Health Sciences Centre, alongside St. Joseph's Care Group and other regional providers and academic partners, are working together to provide support to the OHTs through the Regional Specialized Services

Network in the areas of network leadership, project management, change management, decision support, Indigenous resources, digital health, and research and analytics supports.

The Regional Specialized Services Network will utilize this funding to ensure coordinated approaches for planning and delivering regional specialized services.

These services are required to ensure the full continuum of care is available to the OHT population, to advance regional enablers (i.e. digital

health, population health, data/management, etc.) and to provide support and scale to the region for functions that are not reasonable and feasible to do at a local/OHT level.

Specifically, the Regional Specialized Services Network will support Integrated Clinical Pathways for Lower Limb Preservation, Chronic Obstructive Pulmonary Disease and Congestive Heart Failure, as well as various primary care and regional digital initiatives that will support better connected care across Northwestern Ontario.

Strategic Plan 2026 Year 2 Progress Report

Overall Status Report

For the second year, we have made significant progress on all of our strategic priorities that are represented across all of our strategic pillars.

As we get further along in the strategic plan, we do have some projects that are tracking slightly behind. Through our annual review process, we have refined work plans and timelines to ensure deliverables will be met. We anticipate all will be completed within the duration of the strategic plan.

On Track

Slightly behind schedule

Significantly behind schedule

Equity, Diversity & Inclusion	On Track 4 initiatives underway 1 complete
Patient Experience	On Track 5 initiatives underway
Staff Experience	On Track 5 initiatives underway
Research, Innovation & Learning	Slightly behind 3 initiatives underway
Sustainable Future	On Track 2 initiatives underway
	Slightly behind 2 initiatives underway

Strategic Indicators Year 2 Performance

<input checked="" type="checkbox"/>	Exceeding target for the number of patients and staff who self-identify as Indigenous. Have adjusted target for Year 3.	<input type="checkbox"/>	Measured baseline results for overall staff experience through employee and professional staff survey. For Year 3, will set improvement target for follow up survey.
<input type="checkbox"/>	Measured experience ratings for Inpatient and Emergency Department patients on "experience, views and beliefs acknowledged". For Year 3, have set a target of improvement over previous year.	<input type="checkbox"/>	Below target related to the number of investigator-initiated research studies informed by NWO population needs and applied to care. Indicator does not appropriately reflect intended results and significant research activity, and will be updated in Year 3.
<input type="checkbox"/>	Measured baseline results for overall positive experience ratings for Inpatient and Emergency Department patients. For Year 3, have set a target of improvement over previous year.	<input type="checkbox"/>	Developed new indicator to measure the number of patients made aware of, and participating in, research opportunities - to be launched in Year 3.
<input type="checkbox"/>	Measured baseline results for repeat visits to the Emergency Department for targeted complex medical conditions. For Year 3, selected target population and set a 5% improvement target.	<input type="checkbox"/>	Ongoing financial challenges. While we ended the year in a positive financial position we did not meet our ambitious goal related to percent operating gross margin.
<input checked="" type="checkbox"/>	Exceeding targets for measured reduction of patient harm.	<input checked="" type="checkbox"/>	Increased partnerships to improve and integrate care for patients. Exceeding targets for the proportion of patients aligned with regional programs/services.

At or better than target **Slightly below target** **Considerably below target**

Our Plan Forward Years 3 – 5

Based on our Annual Review cycle, we have made some minor refinements to project timelines and scope. We are excited to launch our upcoming strategic initiatives.

	2022/23				2023/24				2024/25				2025/26				2026/27				2027/28			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Strategic Directions / Enablers & Projects																								
Equity, Diversity & Inclusion (EDI)																								
EDI Steering Committee Development							Complete																	
Truth & Reconciliation Call to Action Principles																								
EDI Policy & Procedure Review & Adjustment																								
Cultural Safety Training for Staff																								
EDI Physical Environment Review																								
EDI Experience Sharing to Build Understanding & Respect																								
Indigenous Recruitment, Education Support & Related Strategies																								
Patient Experience																								
Seamless Transitions - Assess & Improve																								
Implement Substance Use and Addictions Strategies																								
Evolve Patient & Family Centred Care Using Co-Design																								
Focus on Quality																								
Support Improved Coordination & Support for Frequent Users																								
Staff Experience																								
Staffing, Vacancy Reporting & Recruitment																								
Enhance Leadership Development																								
Value Based Recruitment																								
Implement Healthy Workplace Strategies																								
Organizational Workplace Violence Prevention																								
Design & Implement Interprofessional Collaborative Model of Practice																								
Implement Strategies to Support a Safe & Just Culture																								
Research, Innovation & Learning																								
Research Prioritization & Operationalization																								
Researcher Staffing & Recruitment																								
Establish a Culture to Support Learning & Professional Development																								
Sustainability																								
Digital Health - Shared Vision, Electronic Health Record, and Ongoing Development																								
Build and Enhance Regional Partnerships																								
Develop Clinical Services Plan to Project Future Service Demand and Required Capacities																								
Develop Framework and Strategies to Support Sustainability & Accountability																								

Ensuring Accountability, Alignment and Focus

- At the initiation of SP2026, we implemented an annual review cycle to ensure that we regularly seek and consider data and feedback to guide our plan.
- Near the end of Year 2, we conducted stakeholder engagements and an annual scan of the environment to ensure our plan is still relevant and focused as we proceed.
- The annual review resulted in the following findings and recommended refinements:
 - Directions and initiatives remain relevant – no significant changes, other than timelines.
 - 1 initiative now complete and several nearing completion.
 - Continue communication and engagement efforts, internally and externally – celebrate successes!
- Robust feedback was provided by stakeholders and partners related to partnership opportunities/ enhancements, community and regional needs, communication and engagement, etc. All feedback has been noted and is being considered by Project Teams for ongoing implementation.

Our Cascading and Monitoring Plan

Senior Leadership

- Monthly progress reports and monitoring
- Quarterly deep-dive sessions (Strategic Performance Review Session)

Management and Staff

- Bi-weekly Strategic Alignment meetings + Monthly Town Hall updates
- Director and manager-led discussions and monitoring with teams
- Quarterly performance debriefs
- New: Quarterly "Celebrating Our Progress" poster updates for staff**

TBRHSC & TBRHRI Boards

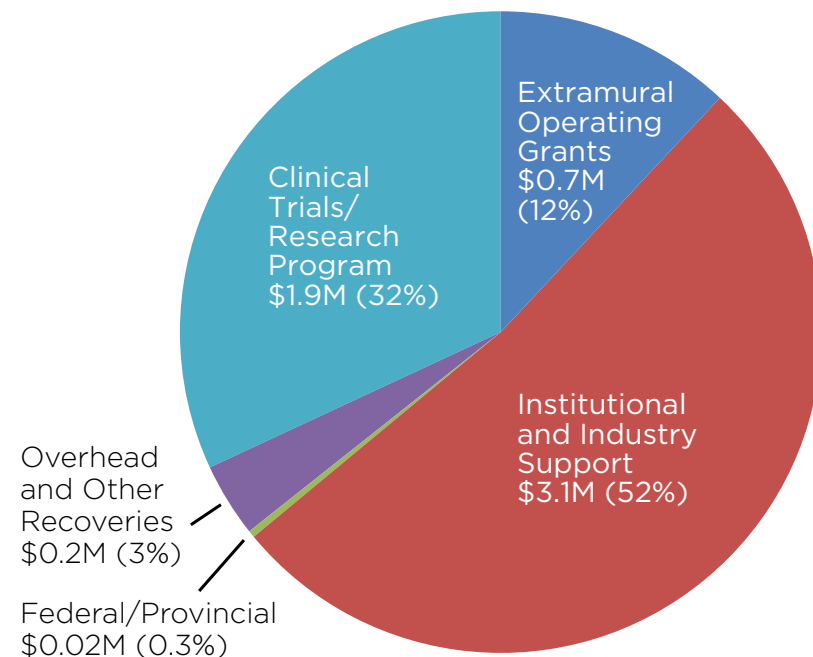
- Quarterly reporting
 - SP2026 Strategic Scorecard (10 strategic indicators and project status reports)
- Annual environmental scan, partner engagement, initiative and indicator refinements

Annual Community Partner Session

2023-2024 Financials

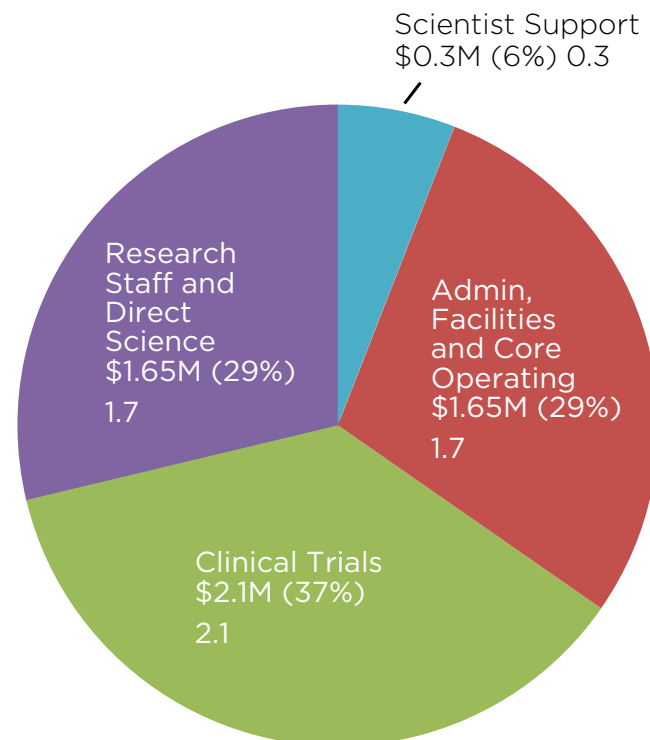
REVENUE SOURCES

Total = \$5.9M



EXPENSES

Total = \$5.7M



Funders and Partners

GOVERNMENT:



ACADEMICS:



NOT FOR PROFIT:



INDUSTRY:





Exceptional **care** for
every patient, every time.



Thunder Bay Regional
**Health Research
Institute**

980 Oliver Road
Thunder Bay, Ontario
Canada P7B 6V4
(807) 684-7223

www.tbrhri.ca

