

2025 RESEARCH ANNUAL REPORT

RISING UP

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Rising Up

Across Northern Ontario, each day begins with a sense of possibility. A new day rising brings new ideas, new questions, and new opportunities to improve health and well-being. That spirit is reflected in this year's theme, *Rising Up*.

At NOSM University, our research is grounded in the North and shaped by communities, informed by lived experience, and focused on the realities of rural, remote, Indigenous, and Francophone populations. As outlined in our Strategic Plan, *Rooted in the North*, we are committed to strengthening research that advances health equity and drives meaningful change across the region.

In 2025, we are seeing that work rise in both scale and impact. Our faculty, learners, and partners are advancing research that addresses some of the most pressing challenges facing Northern Ontario, including the opioid crisis and inequities in access to care, as well as improving clinical decision-making, cancer outcomes, and health workforce sustainability. This work is collaborative, community engaged, and increasingly connected to national and global research efforts.

A defining strength of our research enterprise is how it brings people and systems together. The work of the Dr. Gilles Arcand Centre for Health Equity, along with initiatives such as AI-NORTH and our expanding network of partnerships, demonstrates how knowledge is being generated and mobilized in ways that are directly relevant to Northern communities. These efforts reflect a shared commitment to ensuring that research does not remain theoretical, but is translated into action.

We are also seeing continued growth in our research environment. Increased external funding, expanded collaborations, and strong learner engagement through our graduate programs are helping to build a sustainable and responsive research ecosystem. This growth reflects both the strength of our people and the increasing recognition of the value of research rooted in Northern contexts.

Importantly, research at NOSM University is fully integrated with our education and clinical missions. It informs how we train future health professionals, how we partner with communities, and how we contribute to health system improvement. This integration is central to our identity as a socially accountable medical university.

As you read this report, I hope you see both the depth of work underway and the collective momentum behind it. Our research community continues to rise thoughtfully, collaboratively, and with purpose, helping to build a healthier and more equitable future for Northern Ontario.

Thank you to all who contribute to this work and to the continued advancement of research at NOSM University.

Dr. David Marsh

Vice President, Research & Graduate Studies
NOSM University



Researcher Showcase



Dr. Sujeenthar Tharmalingam Announced as Assistant Dean, Research

NOSM University announced the appointment of Dr. Sujeenthar Tharmalingam as Assistant Dean, Research on October 20, 2025. An Associate Professor, Dr. Tharmalingam has made significant contributions to **advancing molecular biology** and mentoring learners at NOSM University. In this new role, he leads initiatives that strengthen the University's research environment and supports innovative discoveries across Northern Ontario.

"I am honoured to take on the role of Assistant Dean, Research at NOSM University," says Dr. Tharmalingam. "Research plays a vital role in improving health outcomes in Northern Ontario, and I look forward to supporting faculty, learners, and partners as we continue to expand NOSM University's research impact."

Dr. David Marsh, Vice-President, Research and Graduate Studies, extended his congratulations: "Dr. Tharmalingam brings both passion and experience to this role. His commitment to scientific excellence and mentorship will continue to enhance NOSM University's research partnerships."

A sincere thank you to Dr. T.C. Tai for his outstanding leadership as Assistant Dean, Research, over the past seven years. His dedication has laid a strong foundation for the continued growth of research at NOSM University. Dr. Tai transitioned to the role of Division Head for both the Human Sciences and Medical Sciences Divisions at NOSM University.

Researchers Mark Two Decades of Tracking MD Students' Success

When NOSM University opened its doors in 2005, it premiered a new model of distributed, community-engaged medical education in Northern Ontario. Established with an explicit social accountability mandate to improve health equity, NOSM University educates future physicians, dietitians, and health-care professionals for practice in rural, Northern, Francophone, and Indigenous communities.

As part of NOSM University's social accountability mandate, researchers began tracking students and graduates to understand the long-term impacts of the model by conducting a longitudinal research study that is now internationally

renowned. The study, called the Health Education and Workforce Impact study (HEWIS), surveys medical students in the first and fourth years of the MD program to understand their preferences, reasons for attending NOSM University, where they want to practise, and more.

“It’s designed to help us understand not just the decisions that they make in their career, but why they make them,” says Dr. Brian Ross, NOSM University Professor.

In May, Dr. Ross, along with co-collaborators Margaret French, and Drs. Sarah Newbery and Erin Cameron, **published findings** from 20 years of the study. Their results show that 51.3 per cent of NOSM University graduates have stayed in Northern Ontario to practise, and among graduates who stayed, the majority have chosen family medicine. The percentage of NOSM University MD graduates choosing family medicine is among the highest of all Canadian medical schools and is dramatically higher than the percentage of Canadian medical students who choose family medicine on average.

“In their first year, most students express a desire to become family doctors, and we successfully retain the vast majority,” says Dr. Ross. “However, among those who initially indicate an interest in other specialties, approximately 40 per cent ultimately choose family medicine.

“If Canada has a family medicine problem, we have a solution,” he continues.

Dr. Ross partly attributes these high rates to compulsory rural community placements throughout Northern Ontario. The mandatory third-year Comprehensive Community Clerkship requires medical students to spend approximately eight months living and learning in a Northern Ontario community and undertaking clinical experience anchored in family practices.

The tracking study offers valuable insights into what strategies are effective and how NOSM University is fulfilling its mandate. It also sheds light on the factors influencing whether graduates of NOSM University’s programs remain in Northern communities after training or choose to leave. Dr. Ross says that the data can also be used to attract prospective students and medical residents and strengthen retention across all specialties.

“Much of this evidence demonstrates that our model works. It achieves its goal and is worth the investment due to its success,” adds Dr. Ross.

The research team is also collecting data on medical residents—physicians who have completed their MD degrees and are enrolled in mandatory specialty training, such as family medicine—which is currently being prepared for analysis. Dr. Ross hopes this information will provide further insights into how retention rates can be increased across the North. “The essence of the tracking study is to understand what graduates do and why, enabling us to design programs and processes that will retain more doctors in Northern Ontario where they are needed.”



Advocating for Compassionate Opioid Treatment in the North

The opioid crisis in Northern Ontario touches many lives and communities. Defined by high rates of opioid-related deaths, overdoses, and substance use

disorders, the crisis is made worse by limited access to health care in remote and rural communities.

As a researcher of Opioid Use Disorder and Opioid Agonist Treatment, Dr. Kristen Morin knows that stigma can prevent people from seeking help and treatment. For nearly 15 years, Dr. Morin has studied how people with substance use disorders utilize the health-care system and access services. She is a research scientist with the Health Sciences North Research Institute (HSNRI) and an Assistant Professor at NOSM University.

“The opioid crisis is one of the biggest health equity issues of our time,” she said.

Dr. Morin’s interest in researching opioid use and health equity was sparked early in her career during a placement at a community clinic. Dedicated to helping vulnerable populations, including sex workers and unhoused individuals, she says it really opened her eyes to the health equity issues that exist. “It made me question why someone born into a certain situation faces so many barriers, while I don’t—simply because I was born into different circumstances,” says Dr. Morin.

This question led her to take a population level approach to researching health equity through longitudinal studies and publishing over 30 peer-reviewed articles. Her **most recent publication** looked at the impact of a transitional housing program on people who use substances and experience homelessness in Sudbury.

Dr. Morin gave the keynote address at the [2025 Northern Health Research Conference](#). An annual conference that brings together health-care professionals, students, residents, and community-based researchers to learn about research in Northern Ontario. Titled Respecting lives, enhancing care: Addressing the opioid crisis with compassion, Dr. Morin's presentation focused on Opioid Agonist Treatment (OAT) as an effective method for treating people with Opioid Use Disorder and the importance of compassion in treating people.

"My talk aims to move beyond stats and remind us that the issue is ultimately about real people," she said. "I want people to take away that there is humanity to this crisis too."

Dr. Morin wants health-care professionals to see Opioid Use Disorder as another chronic illness and treat people equitably. In addition to health-care professionals and researchers, she notes that community organizations and social services also play a role in addressing the crisis.

"The future would be to continue to collaborate with the broader spectrum of providers that impact people who use drugs and take a community centered approach to the issue," she said.



From Antwerp to Arizona: NOSM University Researchers Propel Paediatric Traumatic Spinal Cord Injury Findings Worldwide



Traumatic spinal cord injury (tSCI) is a catastrophic neurological condition, frequently imposing lifelong disability on those affected - especially children. Despite this, reliable data on paediatric tSCI is limited, leaving critical gaps in our understanding of its epidemiology and outcomes.

Dr. James Crispo, Assistant Professor in the Human Sciences Division, and Matthew Redmond, a second-year medical student, are working to change this.

Early management of tSCI plays a critical role in patient outcomes. However, delivery and receipt of tSCI care is not necessarily universal. Using administrative health data from both ICES North (Ontario, Canada) and the Agency for Healthcare Research and Quality (United States), Dr. Crispo and Mr. Redmond are collaborating with leading clinical experts, epidemiologists, and data analysts to examine trends and pathways specific to care for children with tSCI.

Their research has already revealed key findings, particularly regarding acute care for paediatric tSCI. One of their studies revealed that approximately 1 in 4 children diagnosed with tSCI was discharged home from the emergency department after injury, with the most common tSCI causes attributed to falling (43.0%), sports (29.7%), and motor vehicle crashes (20.5%). These findings have garnered international attention and were first presented last September at the 2024 International Spinal Cord Society Annual Scientific Meeting in Antwerp, Belgium. Dr. Crispo further showcased this novel work during an oral presentation at the American Spinal Injury Association Annual Scientific Meeting in Scottsdale, Arizona on June 4, 2025.

Building on their research momentum, Mr. Redmond was selected to deliver an oral presentation on his research at the 2025 International Spinal Cord Society meeting in Gothenburg, Sweden in October. He presented findings from his study describing major operating room procedures after tSCI hospitalization among children, including by type and proportion of admissions. Also presenting at the meeting, Dr. Crispo shared findings on paediatric tSCI incidence and characterization based on analyses completed in collaboration with investigators at ICES North.

Both looked forward to sharing their latest findings with international audiences of clinicians, researchers, and individuals with lived experience. As their research evolves, they hope to shine more light on tSCI care pathways in an effort to improve long-term health outcomes and promote health equity.

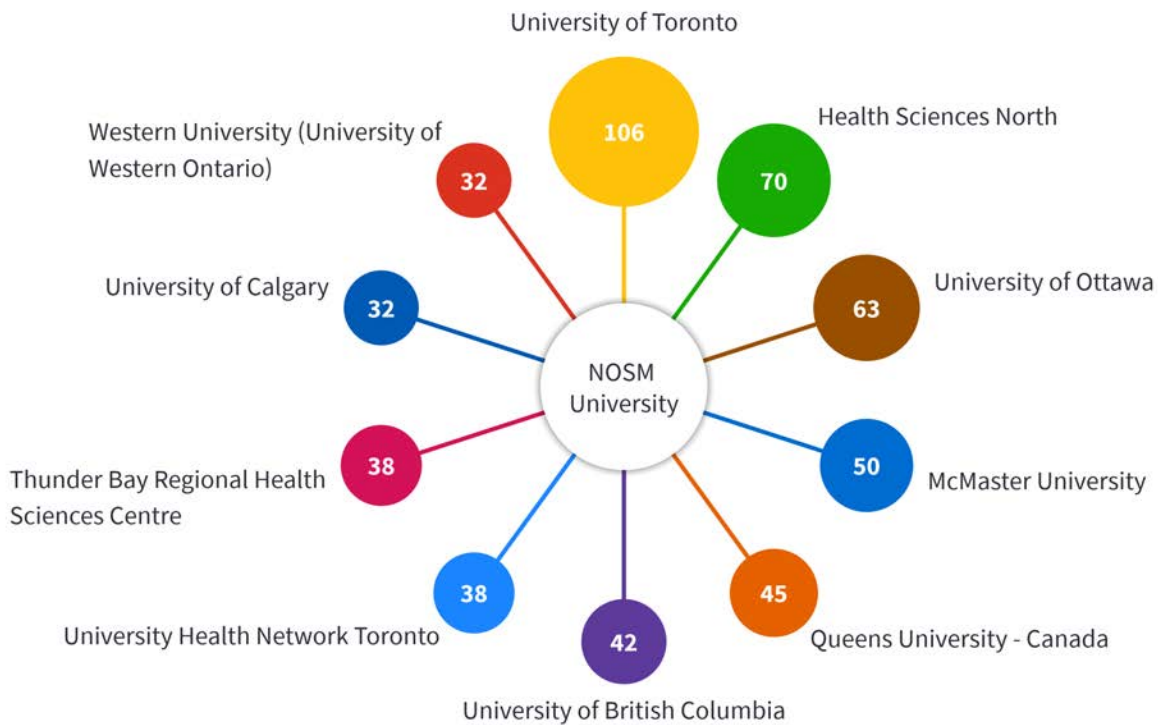
Research Priorities

Themes	Research Priorities
Clinical and Translational Health	<ul style="list-style-type: none">• Cardiovascular• Cancer• Surgery• Primary Care
Biomedical and Basic Sciences	<ul style="list-style-type: none">• Environmental Health• Physiology, Biological Systems and Functions• Disease Process, Diagnostics and Therapeutics
Population and Public Health	<ul style="list-style-type: none">• Chronic Disease• Rural Medicine• Health Services• Social Determinants of Health
Humanities and Social Sciences	<ul style="list-style-type: none">• Indigenous Peoples' Health• Francophone Health• Health Professions Education

Collaborations by Organization

Top Collaborating Academic Organizations

NOSM U's most frequent collaborating organizations in 2025.



*Data retrieved from InCites® (© 2025 Clarivate)

From the top, clockwise:

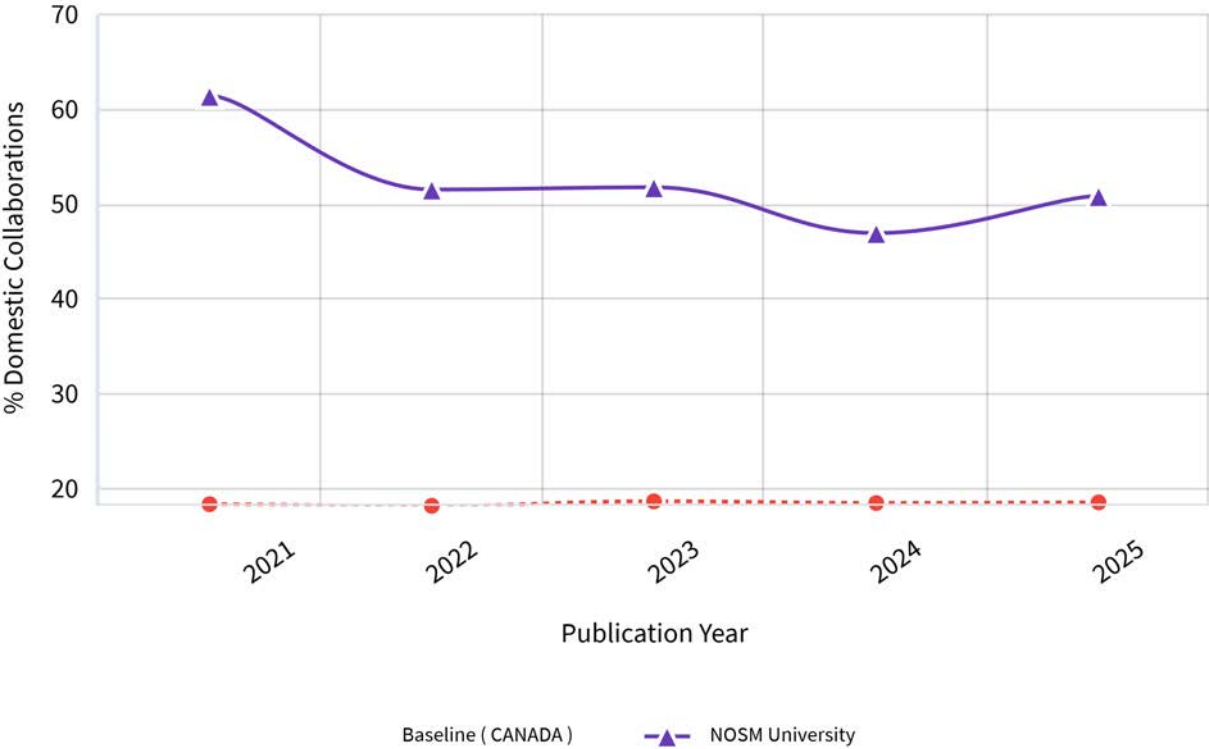
- University of Toronto
- Health Sciences North
- University of Ottawa
- McMaster University
- Queen's University
- University of British Columbia
- University Health Network Toronto
- Thunder Bay Regional Health Sciences Centre
- University of Calgary
- Western University

Domestic Collaborations per Year

NOSM University researchers are more likely to engage in collaborations with researchers at other Canadian institutions, when compared to the baseline for Canada.

% Domestic Collaborations per Year, 2021 - 2025

Domestic research collaborations at NOSM U are more frequent than the Canadian average.



*Data retrieved from InCites® (© 2025 Clarivate)





The Dr. Gilles Arcand Centre for Health Equity

The Dr. Gilles Arcand Centre for Health Equity establishes new partnerships, and advances an embedded networked approach, to move the needle on health equity

With the completion of the **Dr. Gilles Arcand Centre for Health Equity's Strategic Plan (2025–2030)**, the Centre formalized a bold and unifying vision: a connected, healthy Northern Ontario built on strong local relationships and world-class health equity data, research, and knowledge in action. Grounded in Northern priorities and guided by community voices, the Centre's mission affirms its commitment to advancing health equity across the region through evidence-informed action and meaningful partnership.

Central to this work is a partnered and embedded networked approach, recognizing that sustainable improvements in health equity cannot occur in isolation. By working alongside communities, health systems, policymakers, educators, and researchers, the Arcand Centre is working to strengthen collective capacity, deepen trust, and ensure that knowledge generated in the North translates into action for the North. Much of the Centre's success to date can be attributed to this relational, collaborative model.

In 2025, the Centre demonstrated the strength of this approach through significant achievements aligned with NOSM University's social accountability mandate. By advancing policy leadership and advocacy, driving research and innovation grounded in community-identified priorities, and supporting education that better aligns medical training with local and regional health needs, the Arcand Centre contributed meaningfully to improving health equity outcomes across Northern Ontario.

These highlights reflect more than individual accomplishments, they represent the power of coordinated networks working together to address systemic inequities. Through partnership, shared accountability, and a commitment to knowledge in action, the Arcand Centre continues to help shape a healthier, more equitable future for Northern Ontario.

The following four feature projects speak to the breadth of work happening at the Centre and across the Centre's four pillars—research, education, community, and advocacy.

Research Pillar: Workforce Challenges and Insights on the Recruitment and Retention of Paramedics in Northern Ontario

In 2025 the Northern Ontario Learning Health Systems (NOLHS) Network, led by Dr. Brianne Wood, partnered with Ornge on a study to better understand how to optimize the paramedic workforce and generate timely insights to improve staffing in Northern and rural settings. The study examined facilitators and barriers to the recruitment and retention of (flight) paramedics in Northern Ontario, and outlined actionable strategies to help Ornge strengthen Ontario's paramedic workforce by re-envisioning how flight paramedics are trained, recruited, and supported over the long term. Importantly, many recommendations extended beyond Ornge alone and called for collaboration with local, provincial, and national system partners to co-create high-quality care systems that improve access to health care for all populations. The report is available at arcandcentre.ca.

Education Pillar: Advancing an Innovative Workforce Model Aligning Municipal Priorities with Student and Faculty Engagement

After three years of implementation, the CIHR funded project led by Dr. Erin Cameron to support community-campus engagement started to see the fruits of its research. Not only were the activities having impact, the overall model showed evidence of strengthening alignment between municipal priorities and student and faculty engagement. Findings indicated the project strengthened cross-sector trust, enhanced civic engagement, built career-ready skills, and advanced local health equity. The model was a collaborative initiative between the City of Thunder Bay, NOSM University, Lakehead University, and Confederation College. The initiative brought together students, faculty, and community partners to co-create solutions to real-world civic challenges through applied learning projects, giving students hands-on experience with contributing to tangible value to the City of Thunder Bay and its constituents. Overall, the project outcomes included: 172 collaborative projects; 1,191 students engaged; 53 faculty members involved; 55 community partners mobilized. Many felt this project was more than a pilot, but a growing movement towards applied models that can support civic engagement and workforce innovation for local community flourishing.

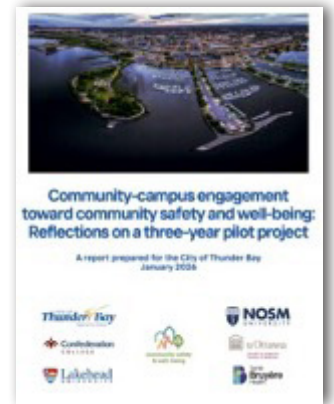
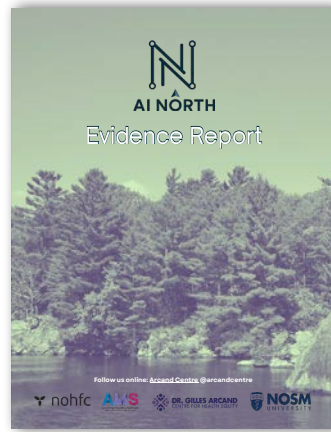
Community Pillar: A Collaborative Regional Approach to Advance Anti-racism in Youth Mental Health Care

In 2025, a shared commitment to advancing health equity across Northeastern Ontario sparked a powerful collaboration. With operational funding from Ontario Health, the Nipissing Ontario Health Team (OHT) partnered with seven Northeastern OHTs and the Arcand Centre to reimagine and renew the 2017 Northern Health Equity Strategy. What began as a strategic investment quickly became a region-wide call to action—uniting researchers, frontline clinicians, and health system leaders around a common goal: to confront racism and address persistent health inequities across the North.

Central to this work was the creation and rollout of a region-wide anti-racism training program for pediatric specialists, rural generalists, family practice providers, and their teams. A mixed-methods rapid review laid the groundwork, offering a clear snapshot of how racism is experienced within the region and highlighting practical, evidence-informed approaches to strengthen anti-racism efforts in pediatric care. To ensure the work remained accountable to lived experience, a Black, Indigenous, and People of Colour (BIPOC) Youth Advisory Committee was established—elevating youth voices, deepening community insight, and helping shape a path forward rooted in authenticity, relevance, and lasting impact.

Leadership and Advocacy Pillar: AI-NORTH Publishes Evidence Report, Recommendations for Next Steps for Socially Accountable AI in the North

The AI-North Network convenes researchers, practitioners, and communities to advance socially accountable, place-based Artificial Intelligence (AI) in Northern Ontario. Its work focuses on building research capacity, strengthening advocacy, and turning knowledge into action to ensure AI development reflects Northern realities and priorities. In 2025, AI-North expanded its growing community of practice through regular events, workshops, and publications. Key insights from several projects were shared through an **Evidence Report**. For more information or to connect with the Arcand Centre, please visit: arcandcentre.ca.



NOSM University and Research Institute Partners Awarded Prestigious CIHR Project Grant

Health equity is central to the mission of NOSM University and its partners. Through community-engaged, evidence-informed research, faculty and collaborators are addressing real-world challenges that affect the accessibility, quality, and fairness of health care—particularly in rural, remote, and Northern communities.

The Canadian Institutes of Health Research (CIHR) has awarded a research group affiliated with NOSM University a Project Grant totaling \$803,251, reflecting the strength of collaboration and the impact of research rooted in local realities. Dr. Erin Cameron, Professor and Director of the Dr. Gilles Arcand Centre of Health Equity at NOSM University, in partnership with Ottawa’s Bruyère Health Research Institute, received the grant for the project A Place-based Framework for Equitable Health Service Delivery.

The project explores how geographic, health, and social data can improve the equity and effectiveness of the delivery of health services. By drawing on an existing place-based approach and incorporating community voices, the team aims to create a new framework that can guide more equitable service delivery in diverse settings.

This new framework will be refined through a pilot implementation in Thunder Bay, where it will be shaped by local data and lived experience. The goal is to build a model that can be adapted and scaled to improve equity in health-care systems across Canada. The project also highlights the strength of NOSM University’s research partnerships with community organizations, which bring together clinical care and education in ways that directly benefit Northern Ontarians.

Drs. Cameron and Claire Kendall are co-principal investigators on the project, with co-investigators including partners from the City of Thunder Bay, Thunder Bay Regional Health Research Institute, the Thunder Bay District Health Unit, and numerous health providers and educational institutions across Northern Ontario. This project represents the ongoing commitment of NOSM University’s research community to foster collaboration with regional partners to address the unique health-care needs and experiences of Canadians.

“This CIHR-funded project exemplifies how collaboration, innovation, and social accountability can lead to transformative change in health care,” says Dr. David Marsh, Vice-President, Research and Graduate Studies. “By working together across institutions, disciplines, and communities, NOSM University and its partners are advancing research excellence and helping to build a more equitable health system for all Northerners.”



Research Chairs



Dr. Darrel Manitowabi, Hannah Chair in the History of Indigenous Health and Indigenous Traditional Medicine

Dr. Darrel Manitowabi is an Associate Professor and is the inaugural NOSM University and Associated Medical Services Hannah Chair in the History of Indigenous Health and Indigenous Traditional Medicine and was renewed for a second five-year term effective July 1, 2025.

Since 2022, Dr. Manitowabi has been actively collaborating with healers, helpers, Elders, and health-care administrators in gatherings to advance capacity building. With colleagues at Western University and the Sarnia-Lambton Ontario Health Team, a gathering of healers was held at Aamjiwnaang (Sarnia First Nation) on August 18-19, 2025. This initiative included financial contributions from Western University (Dr. Nicole Redvers) and Ontario Health.

Dr. Manitowabi continues the Indigenous Medicine Stories podcast, which features the lived experiences of Elders, healers, helpers, and practitioners. This past year, the podcast was nominated for Outstanding Indigenous Series at the Canadian Podcast Awards.

He is in the final year as co-lead of a \$461,651 CIHR grant with Dr. Marion Maar, Professor, Human Sciences Division, on community responses to support opioid recovery. Recent research activities involved oral history interviews with Wiikwemkoong Unceded Territory Elders on past approaches to wellness.

In 2025, Dr. Manitowabi collaborated with researchers from Brock University and Queen's University on the environmental, archival, and oral history of the 18th-century great fire on Manitoulin Island. This interdisciplinary research involves dating core samples from island lakes to correlate fire events and other historical environmental changes using charcoal analysis. Scientific analysis is currently underway.

Since 2020, he has been part of the Centre for Addictions and Mental Health Shkaabe Makwa Leadership Circle, and since 2022, he has been a committee member with the Chiefs of Ontario Data Champions Advisory Committee, and in 2025, he served as a committee member of an Ontario Health cultural safety consultations. He completed his service as a mentor (helper) to Indigenous health leaders as part of a pilot initiative

with McMaster University. Since 2022, he has been a team collaborator in hosting the annual Manitoulin Island Treaties Gathering, a hybrid community, academic, and ceremonial gathering held in May of each year, with a forthcoming event in May 2026. In 2025, he became the Vice-President of the Canadian Society for the History of Medicine and joined the Board of the Ontario Strategy for Patient-Oriented Research (SPOR) Support Unit. He is also a Representative-at-large (Aboriginal) on the Canadian Association of University Teachers (CAUT) Executive.

He annually supervises a NOSM University summer medical student research award on Indigenous health histories, and is currently supervising 7 PhD students (Laurentian University) and 1 Master of Medical Studies student (NOSM University).

Recent Publications

Wood, B., Zelek, B., Daneshmand, R., Kennel, M., Myles, S., O'Loughlin, R., **Manitowabi, D.** 2026. Integrating Indigenous data sovereignty principles into learning health systems: Framework analysis and survey of Canadian practice-based research and learning networks. *Annals of Family Medicine* (In press).

Manitowabi, D. 2025. Colonialism and Indigenous Peoples. In *Handbook on the Social Determinants of Health*, edited by Toba Bryant and Dennis Raphael. Edward Elgar Publishing.

Wabie, J., Walker, J., Monague, H.N., Elliot, M., Stevens, P., Carlson, E., **Manitowabi, D.**, Rowe, R. 2025. Niigaaniwin: Vision and Spirit of our Journey. *Turtle Island Journal of Indigenous Health* 1(4): 9-24.

Creative Works

Manitowabi, D. 2022-Present. *Indigenous Medicine Stories* Podcast. Michael McDonnell (producer), with Associated Medical Services, Inc. (Anne Avery).



Dr. Robert Ohle, Heart and Stroke Foundation/NOSM University Chair in Indigenous and Rural Health Research

In 2025, Dr. Ohle's work as the Heart & Stroke Foundation/NOSM University Chair in Indigenous and Rural Health Research focused on advancing scalable, equity-oriented solutions to improve cardiovascular and stroke outcomes in Northern Ontario. This year marked a progression from tool development and advocacy toward national validation studies, implementation research, and strengthened Indigenous research partnerships.

Building on prior development of the Sudbury Vertigo Risk Score (SVRS), the team initiated a national, multi-centre validation study across seven hospitals in Canada. This study was intentionally designed to build research capacity across Northern Ontario, with Thunder Bay, Sault Ste. Marie, and North Bay participating as active sites. By strengthening collaborative research infrastructure across the North, this initiative advances stroke risk stratification science while expanding NOSM University's role in coordinated, multi-site clinical research. The SVRS aims to improve identification of posterior circulation stroke among patients presenting with dizziness—an especially critical need in rural and remote settings where limited access to advanced neuroimaging can necessitate costly transfers or delayed specialist assessment.

Cardiac arrest research expanded significantly this year, grounded in the reality that survival from out-of-hospital cardiac arrest in many Northern Ontario communities remains approximately half the national average, with rates near 5% in some regions. The single most important modifiable determinant of survival is early bystander cardiopulmonary resuscitation (CPR); however, access to formal CPR training is limited in many rural and remote and Indigenous communities due to geographic distance, cost, and workforce constraints. In response, Dr. Ohle's team published multiple peer-reviewed studies examining CPR training as scalable public health infrastructure.

Through simulation modelling and implementation analyses, they evaluated the feasibility and projected population impact of public CPR training kiosks in Northern Ontario communities. Importantly, they also assessed the real-world impact of public-access CPR training delivered through a Science North exhibit in Sudbury, demonstrating an approximately 10% absolute increase in bystander CPR rates in the community following implementation. Together, this work reframes resuscitation education from episodic, instructor-led courses to sustained, accessible infrastructure aimed at increasing bystander response capacity and improving survival outcomes across the North.

Nationally, Dr. Ohle was part of the group that developed the Canadian best-practice guidance for acute heart failure. His goal was to ensure recommendations are applicable and actionable in rural and remote practice environments. In partnership with Heart & Stroke, he also continued advocacy efforts to secure permanent Ontario Health Insurance Plan (OHIP) coverage for natriuretic peptide testing for heart failure diagnosis—an initiative with the potential to improve early detection, reduce avoidable hospitalizations, and strengthen equitable access to care across Ontario.

Strengthening Indigenous research partnerships was a key priority in 2025. In collaboration with Dr. Joseph LeBlanc, Associate Vice President, Equity & Inclusion, and Rylee Restoule, the Health Sciences North Foundation Coordinator in Indigenous Health Research, they conducted an environmental scan of Indigenous Patient Navigators across Northern Ontario to better understand the supports available to patients navigating complex cardiovascular and stroke care pathways.

Dr. Ohle's program of work resulted in 16 peer-reviewed publications, supervision of 10 undergraduate, graduate, and medical students, and over \$800,000 in secured grant funding, reinforcing NOSM University's leadership in rural and Indigenous cardiovascular health research.

HSN and NOSM University Researchers Awarded CIHR Grant to Improve Emergency Care for Patients with Dizziness

Patients across Northern Ontario and beyond will benefit from new research led by Health Sciences North (HSN) and NOSM University, funded through a major grant from the Canadian Institutes of Health Research (CIHR).

Dr. Robert Ohle, an Emergency Physician, Vice-President of Academic and Research Impact at Health Sciences North Research Institute (HSNRI), and NOSM University Chair in Indigenous and Rural Health Research, was awarded a \$757,350 CIHR Project Grant for his study: Validation of a Clinical Risk Score to Identify Emergency Department Patients with Serious Causes of Dizziness. Dr. Ohle is the principal investigator on the study.

Dizziness is one of the most common reasons people seek emergency care in Canada, accounting for more than 500,000 visits each year. While most causes are benign, dizziness can sometimes indicate potentially life-threatening conditions. Accurately diagnosing which patients are at serious risk can be challenging, often resulting in unnecessary transfers to larger centres and delays in critical treatment.

“CIHR's investment is a strong recognition of the high-calibre research happening here in Northern Ontario,” says Dr. Ohle. “Validating the Sudbury Vertigo Risk Score in real-world emergency settings will give clinicians across the country a reliable tool that directly improves patient care.”

Together with co-investigator Dr. Ravinder-Jeet Singh, Stroke Neurologist at HSN and NOSM University Associate Professor, and a team of NOSM faculty and clinicians across Northern Ontario, Dr. Ohle is working to validate the Sudbury Vertigo Risk Score (SVRS). This clinical decision-making tool will help emergency physicians identify high-risk dizziness patients more quickly and confidently.

“This is an important study focused on the emergency department population,” says Dr. Singh. “One of the serious causes of dizziness is stroke, and this study is designed to validate a clinical risk score to help identify who might be having a stroke versus another cause of dizziness. If validated, it could have a significant regional impact on how we assess and manage patients presenting with dizziness, particularly in smaller rural sites that lack access to medical imaging,” he added.

The project demonstrates the strength of the Academic Affiliation Agreement between HSN and NOSM University, which enables clinical care, academics, and research to work hand-in-hand for the benefit of patients.

“This is exactly the type of innovation our partnership with Health Sciences North was designed to foster and reinforces the important role of the medical university,” says Dr. Michael Green, President, Vice-Chancellor, Dean and CEO of NOSM University. “When research, teaching, and clinical practice come together, patients—especially those in rural and Northern communities—see the direct benefit.”

By validating the SVRS, the research team aims to reduce unnecessary hospital transfers, shorten wait times, and keep patients closer to home while ensuring that those who need specialized care are identified quickly and safely.

“CIHR’s support of this project reflects the national importance of research happening here in Northern Ontario,” says David McNeil, HSN and HSNRI President and CEO. “This is a strong example of how collaboration between HSN and NOSM University leads to discoveries that improve patient outcomes locally and across the country.”

Additional co-investigators making up the research team of NOSM University faculty for the pan-northern study include Dr. Sarah McIsaac from Health Sciences North, Dr. David Savage from Thunder Bay Regional Health Sciences Centre and ICES North, Dr. Taylor Lougheed from North Bay Regional Hospital and Dr. Mohamed Abbasy from Sault Area Hospital. If successfully validated, the Sudbury Vertigo Risk Score could be implemented nationwide, ensuring patients everywhere benefit from this Northern Ontario-led innovation.



Graduate Studies

Master of Medical Studies (MMS) Course-based Stream Student Reflections

The MMS course-based stream is designed to equip health-care professionals with essential research skills in a flexible format. Tailored for practicing clinicians and students who may not wish to undertake a research thesis, this stream focuses on developing strong foundational competencies that can be applied across a range of health-care settings.

Students undertake an independent study project that centers on conducting a comprehensive literature review on a topic of their choice. Through this process, they learn how to search, appraise, and synthesize scientific evidence, gaining the ability to critically evaluate existing research and to identify gaps in knowledge.

By engaging with scholarly sources and methodological concepts, students build the confidence needed to interpret research findings and translate them into meaningful clinical or academic applications. Ultimately, the MMS course-based stream supports learners in strengthening their analytical thinking and evidence-informed decision-making—skills that are increasingly vital in modern health-care environments.

Since opening admissions in 2024, the course-based Master of Medical Studies stream has enrolled 16 students and in December 2025, Ethan Horner was the first student to complete the course-based stream. Ethan reflected on his experience as an MMS student:

“My overall experience with the course-based Master of Medical Studies program was very positive. All of my professors were extremely knowledgeable and timely when it came to responding to emails. I loved the formatting of most classes as I got to write a lot of papers which came back with extensive feedback to improve my future writings. The grading was tough but also fair which is expected from a Masters degree program. My favorite instructor was Dr. Sujeenthar Tharmalingam, an instructor I was lucky to have three courses with. He gave lots of feedback and encouraged me to reach out when I had any questions about my writing. He always responded promptly. “My career goal is to become a physician in Northern Ontario (where I was born and raised). This degree helped immensely with teaching the intricacies of ethics in medicine and research. It gave me so many tools to work with if I ever wanted to pursue medical research down the line. It also ensured that I knew just how complex medical research can be in tight knit, rural communities and the biases that come with it. Overall, the degree was filled with essential knowledge for any aspiring researcher or health-care professionals that wish to find a career in the North.”

Recent MMS Thesis-based Graduate

On December 9, 2025, Dr. Amal Osman successfully defended her Master of Medical Studies thesis titled *Evaluation of Hepatitis C virus screening in infants at risk of vertical transmission born in Thunder Bay*. Dr. Osman was supervised by Dr. Naana Jumah, Associate Professor, Clinical Sciences Division; and Dr. David Savage, Associate Professor, Clinical Sciences Division, with Dr. Marina Ulanova, Professor, Medical Sciences Division, serving as a supervisory committee member. With appreciation to Dr. Gillian Alton, epidemiologist at the Children's Hospital of Eastern Ontario (CHEO) Research Institute and Better Outcomes Registry & Network (BORN) Ontario, who served as Dr. Osman's external thesis examiner.



Congratulations Dr. Osman!

Faculty Spotlight

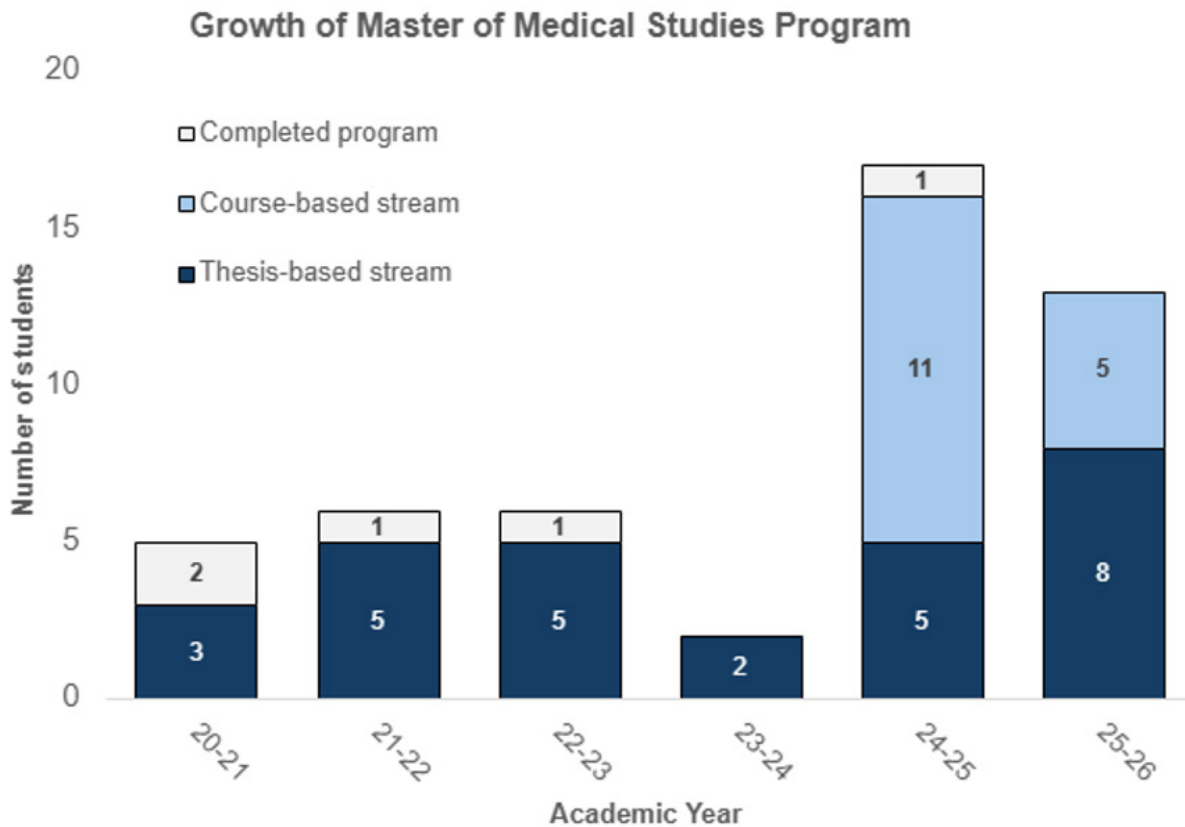
There are a variety of opportunities for faculty to engage with Graduate Studies at NOSM University. Faculty members can design and teach graduate-level courses, supervise students in the thesis stream, serve on thesis committees, and support program governance by serving on committees.

Dr. Kristen Morin, Assistant Professor, Medical Sciences Division, reflects on her experience teaching in the Master of Medical Studies program:

"I taught the Independent Study/Advanced Topics course in Winter 2025. I found it to be a particularly rewarding teaching experience. The independent study format allowed for meaningful one-on-one engagement with students, enabling tailored mentorship that aligned with each student's interests, learning goals, and career trajectories. I valued the opportunity to support students through close supervision, iterative feedback, and guided skill development, particularly in areas such as research design, critical appraisal, and scholarly writing. This format also allowed for flexibility and responsiveness, helping students translate theory into applied, real-world research questions. Overall, I found the mentoring aspect of the independent study especially fulfilling and see this model as a strong approach for fostering deeper learning, confidence, and professional growth among trainees."



Growth of the MMS Program



New Partnership Provides Students with More Learning Opportunities

NOSM University's **Master of Medical Studies (MMS)** program **partnered with Brock University's Master of Public Health program** to create more learning opportunities for students. This partnership allows MMS students to enrol in the Public Health courses at Brock University, and for Brock Public Health students to enrol in MMS courses.

"Our partnership with Brock University will empower our learners with specialized public health knowledge and skills, enhancing their ability to address the unique health-care challenges in the North," says Dr. Alex Moise, Assistant Dean, Graduate Studies at NOSM University.

"By combining our biomedical and clinical strengths with Brock's expertise in areas like epidemiology, health promotion and environmental health, we can foster innovative research, improve health-care delivery, and enhance the health and well-being of communities across the North."

The MMS program, delivered entirely online, provides foundational research skills for learners interested in asking and answering health-care questions. Students were able to enrol in courses at Brock University starting in September 2025.



Sponsored Research Funding

Internal Awards

Research Awards Committee

The Research Awards Committee consists of NOSM University faculty members who develop and adjudicate internal research awards and prizes, and recommend award recipients to the Vice President, Research and Graduate Studies. The Committee reviewed a total of 54 award applications in 2025.

The Committee extends sincere appreciation to the members whose terms ended:

- Dr. T.C. Tai: Professor, Medical Sciences Division & Assistant Dean, Research (Chair)
- Dr. Mohammed Shurrab: Assistant Professor, Clinical Sciences Division
- Dr. Scott Sellick: Associate Professor, Human Sciences Division
- Dr. Neelam Khaper: Professor, Medical Sciences Division

Their service ensured the continued integrity, transparency, and rigor of the internal awards processes.

In October, the following faculty were appointed to the Committee:

- Dr. Sujeenthar Tharmalingam: Associate Professor, Medical Sciences Division & Assistant Dean, Research (Chair)
- Dr. Lorrilee McGregor: Associate Professor, Human Sciences Division
- Dr. Pooya Payandemehr: Assistant Professor, Clinical Sciences Division
- Dr. Tom Kovala: Associate Professor, Medical Sciences Division

2025 Internal Faculty Research Awards

Award	# Applications Funded	\$ Amount Funded
Research Development Fund	6	\$49,875
Educational Research Fund	2	\$8,000

Research Development Fund

Under the terms of the Ontario Public Service Employees Union (OPSEU) Local 677 Unit 1 collective agreement, annual funding for **Research Development Grants** is provided through a competition restricted to OPSEU Local 677 Unit 1 members. The Research Development Grant funding opportunity is provided to enhance their scholarly productivity. The 2025 recipients were:

- Dr. Gayle Adams Carpino for her project *Northern Students, Shared Solutions: Exploring Hybrid Interprofessional Learning for Educational Innovation and Community Health*
- Dr. Douglas Boreham for his project *Advancing precision in transarterial radioembolic therapies: biological profiling of novel radionuclide microspheres*
- Dr. Geoffrey Hudson for his project *A Devastating Marine Accident & its Social History of Medicine Afterlife: SS Asia, Lake Huron, 1882-2025*
- Dr. Alexander Moise for his project *Development of an In Vitro Intestinal Model to Quantify Carotenoid Absorption and Conversion*
- Dr. Brian Ross for his project *Barriers and Enablers to Men's Mental Health Service Use in Northern Ontario*
- Dr. Sujeenthara Tharmalingam for his project *Advancing a CRISPR-Enhanced Point-of-Care Diagnostic Assay for Fluconazole-Resistant Candida Species in Northern Ontario*

Education Research Fund

The Education Research Fund is a seed funding opportunity for building capacity and accelerating partnerships that address priority health professional education needs that are responsive to Northern Ontario. The spirit of this award prioritizes support for new and emerging medical educators.

The 2025 recipients were Dr. Tara Baron and Dr. Clare Cook for their project titled *Supporting education in a growing, distributed, low-resource environment: Identifying motivators, enablers, and barriers to engaging with CPD*, and Dr. Melanie Squarzolo for her project titled *Resident-Faculty Collaborative Teaching Shift (ReFaCTS): Enhancing Medical Education Through Peer-Led and Faculty-Guided Learning*.

2025 Internal Learner Research Awards

Award	# Applications Funded	\$ Amount Funded
Summer Medical Student Research Award	15	96,000
Mach Gaensslen Summer Medical Student Research Award	5	26,500
Dr. Gilles Arcand Centre for Health Equity Summer Medical Student Research Award	3	22,500
AMS Health Care Summer Medical Student Research Award	1	7,500
Drs. David and Teresa Marsh Graduate Student Scholarship	1	1,000
Dr. Roger Strasser NHRC Travel Award	1	1,000
UME Student Open Access Publication Fund	4	9,298
Total	30	163,798

NOSM University Summer Medical Student Research Awards

Aalto, Hannah – *The Rural Nursing Workforce Crisis: Developing a Retention Framework*

(Supervisor: Dr. Lily DeMiglio)

Alzahrán, Mohamed – *Assessing the Financial Impact of Medically Necessary Travel for Rural Northern Ontario Residents*

(Supervisor: Dr. Lily DeMiglio)

Coccimiglio, Michaela – *A Northern Ontario Rural Maternity Care Action Framework: Determining Factors and Solutions to our Rural Obstetrical Service Closures*

(Supervisor: Dr. Eliseo Orrantia)

Coté, Émélie – *The Burden of a Cancer Diagnosis for Patients In Northeastern Ontario.*

(Supervisor: Dr. Stacey Santi and Dr. Lacey Pitre)

Files, Katona – *Identifying Master Regulators of Radiation Resistance in Triple-Negative Breast Cancer as Novel Therapeutic Targets*

(Supervisor: Dr. Sujeenthara Tharmalingam)

Gibbs, Alicia – *Classifying Immune Related Adverse Events in Cancer Treatment Using Electronic Records*
(Supervisor: Dr. Christopher Verschoor)

Greve, Peter – *Wheels, Wings, and Rotors: Understanding Challenges and Identifying Solutions to Improve High-Acuity Interfacility Patient Transport in Rural Northern Ontario*

(Supervisor: Dr. Eliseo Orrantia)

Hull, Samantha – *Biological Dysregulation as a Predictor of Immunotherapy Related Toxicity*

(Supervisor: Dr. Christopher Verschoor)

Jones, Allison – *Exploring the Role of Artificial Intelligence Scribes in Medical Education: Perceptions, Utilization, and Integration in Northern Ontario*

(Supervisor: Dr. Barbara Zelek)

Kelly, Kassandre – *Pilot Study to Validate Ctdna as a Biomarker for Colorectal Cancer Detection*

(Supervisor: Dr. Sujeenthara Tharmalingam)

Labranche, Emilie – *Characterizing family physician, pediatrician and obstetrician and gynecologist practices in northern Ontario: a retrospective cohort study using administrative billing data*
(Supervisor: Dr. David Savage)

Liu, Shirley – *Quality Improvement Project for Eliminating Preoperative Anemia in Patients Undergoing Hysterectomy and Myomectomy at Health Sciences North*
(Supervisor: Dr. Karen Splinter)

Maisonneuve, Sabrina – *Comfort Care for Emotional Freedom: Evidence-Based Psychiatric Solutions That Provide Hope and Healing in Terminal Diagnoses*
(Supervisor: Dr. Chiachen Cheng)

Redmond, Matthew – *Determinants of Major Surgical Intervention Following Traumatic Spinal Cord Injury Among Children in the United States: A Nationwide Study Using Electronic Health Data*
(Supervisor: Dr. James Crispo)

Ribey, Sarah – *Protecting Access to Care: Identifying, Strengthening, and Sharing Strategies to Bolster Resilience and Prevent the Closure of Northern Ontario's Remaining Rural Obstetrics Programs*
(Supervisor: Dr. Eliseo Orrantia)

Mach Gaensslen Summer Medical Student Research Awards

Curwin, Angelina – *Evaluating a Transitional Housing Program for People Who Use Substances (Pwus) Who Experience Homelessness and Live with a Mental Health Issue*
(Supervisor: Dr. Kristen Morin)

Lewis, Alexis – *Investigating Frailty as a Correlate of Adverse Events and Survival in Cancer Patients Receiving Immunotherapy*
(Supervisor: Dr. Christopher Verschoor)

McKellar, Madison – *Assessing Implementation and Effectiveness of Community of Practice Ketamine-Assisted Therapy (CoP-KaT) to Address Burnout and Mental Health Challenges among Frontline Workers in Rural Northern Ontario*
(Supervisor: Dr. Ryan Patchett-Marble)

Ribey, Samantha – *Examining the Rate of Inflammatory Breast Cancer (IBC) within a Northwestern Ontario Population*
(Supervisor: Dr. Olexiy Aseyev)

Rosso, Christopher – *Use of Dihydropyrimidine Dehydrogenase (Dpyd) Genomic Testing Before Treatment with 5-fluoropyrimidines in Cancer Patients*
(Supervisor: Dr. Ioannis Voutsadakis)

Dr. Gilles Arcand Centre for Health Equity Medical Student Research Awards

Campbell, Madyson – 1) *Does Reality Meet Expectations? Examining Patient Engagement in Medical Student Selection;*
2) *Canadian Network for Youth-Friendly Mental Health Services: Developing a Standard for Implementing, Evaluating, and Improving*
(Supervisor: Dr. Chiachen Cheng)

Robinson, Maxwell – *Artificial Intelligence for Diabetes Care: Advancing Health Equity Through Human-Centered AI in Northwestern Ontario*
(Supervisor: Dr. Barbara Zelek)

Stevenson, Paige – *Equity In Cancer Screening in Northwestern Ontario: Knowledge Translation to Optimize the Implementation and Scalability of Equity-Focused Cancer Screening Initiatives Identified in the All Nations Health Partners Ontario Health Team*
(Supervisor: Dr. Barbara Zelek)

AMS Healthcare Summer Medical Student Research Award

Lefebvre, Amy – *The significance of medicinal plants to Indigenous Peoples in Northern Ontario*
(Supervisor: Dr. Darrel Manitowabi)

Drs. David and Teresa Marsh Graduate Student Scholarship

Bazazo, Abdalla – *The Effect of Homelessness on the Opioid Agonist Treatment Retention Among Patients with Opioid Use Disorder: A Retrospective Cohort Study*
(Supervisor: Dr. Kristen Morin)

Dr. Roger Strasser NHRC Travel Award

Alzahran, Mustafa – Abstract Title: *Barriers to Newcomers' Access to Primary Care in Northern Ontario: A Rapid Review*
(Supervisors: Dr. Sheena Thakrar and Dr. Alexandre Anawati)

UME Student Open Access Publication Fund

Aalto, Hannah - Publication Title: *Real-World Effectiveness and Tolerability of Low Dose Naltrexone to Treat Chronic Pain: A Retrospective Cohort Study of One Pain Physician's Practice*

Hammond, Jonathan - Publication Title: *Intracardiac Cement Embolism After Percutaneous Vertebroplasty*

Patel, Kush - Publication Title: *Complete Lifestyle Medicine Intervention Program-Ontario: Implementation Protocol for a Rural Study*

Pynn, Emily - Publication Title: *Intracardiac Cement Embolism After Percutaneous Vertebroplasty*

External Awards

Externally Sponsored Research

# of new in 2025	Total amount
50	\$2,529,410

Active Externally Sponsored Research

# of all Active research funding in 2025	Total amount of all active research funding
174	\$23,254,179.29

New Sponsored Research Funding by Location

Location	# of Awards
Marathon	2
Muskoka	3
North Bay	1
Parry Sound	1
Sault Ste-Marie	1
Sudbury	24
Sudbury and Thunder Bay	3
Thunder Bay	15

New Sponsored Research Funding Awarded by Agency

Agency	\$ Amount	# of Awards
Canada's Immunotherapy Network (BioCanRx)	9,000	1
Canadian Institutes of Health Research (CIHR) Sub-award	25,000	1
Canadian Space Agency	20,000	1
Health Sciences Foundation	105,000	3
Natural Sciences and Engineering Research Council (NSERC)	30,000	5
New Frontiers in Research Fund	250,000	1
Northern Ontario Academic Medicine Association (NOAMA)	2,020,410	36
Northern Ontario Heritage Fund Corporation (NOHFC)	70,000	2
Total	2,529,410.00	50



The Health Sciences Library conducts an annual faculty publications search for peer-reviewed articles. The citations provided are a snapshot of what is available at the time the searches are conducted. Best efforts are made to identify and validate NOSM University-authored publications. The 2025 **NOSM University Faculty Publications Bibliography** represents the unique citations. Unique citations are articles listed only once in the bibliography, even if there were multiple NOSM University faculty who authored a particular article. NOSM University faculty members are bolded within each citation.

[View the Library Guide.](#)

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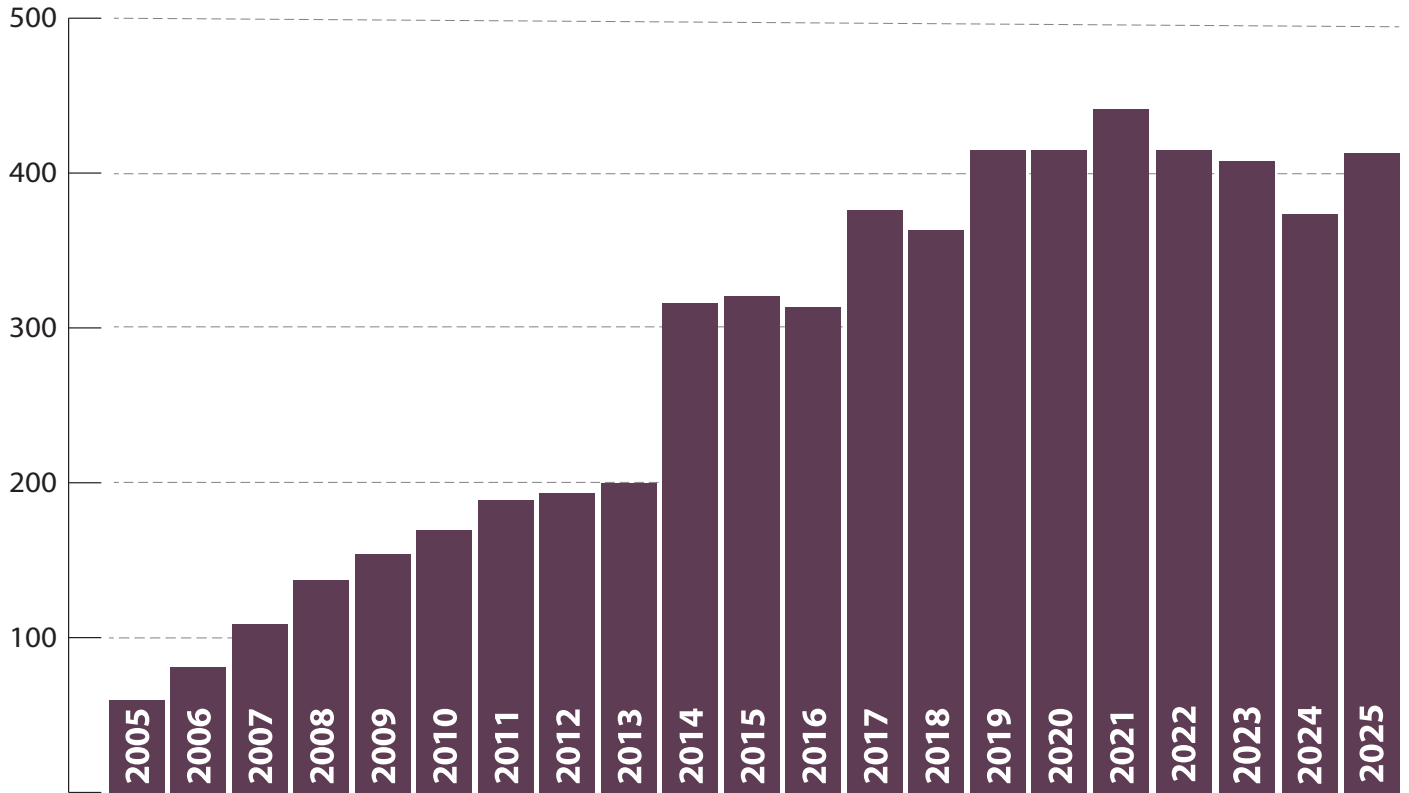
Total number of unique publications in 2025

5834

Total number of unique publications 2005-2025

Faculty Publications

Total Number of Unique Articles Organized by Year, 2005-2025



What are NOSM University authors writing about?

Word cloud generated from the titles of NOSM University affiliated Web of Science documents.



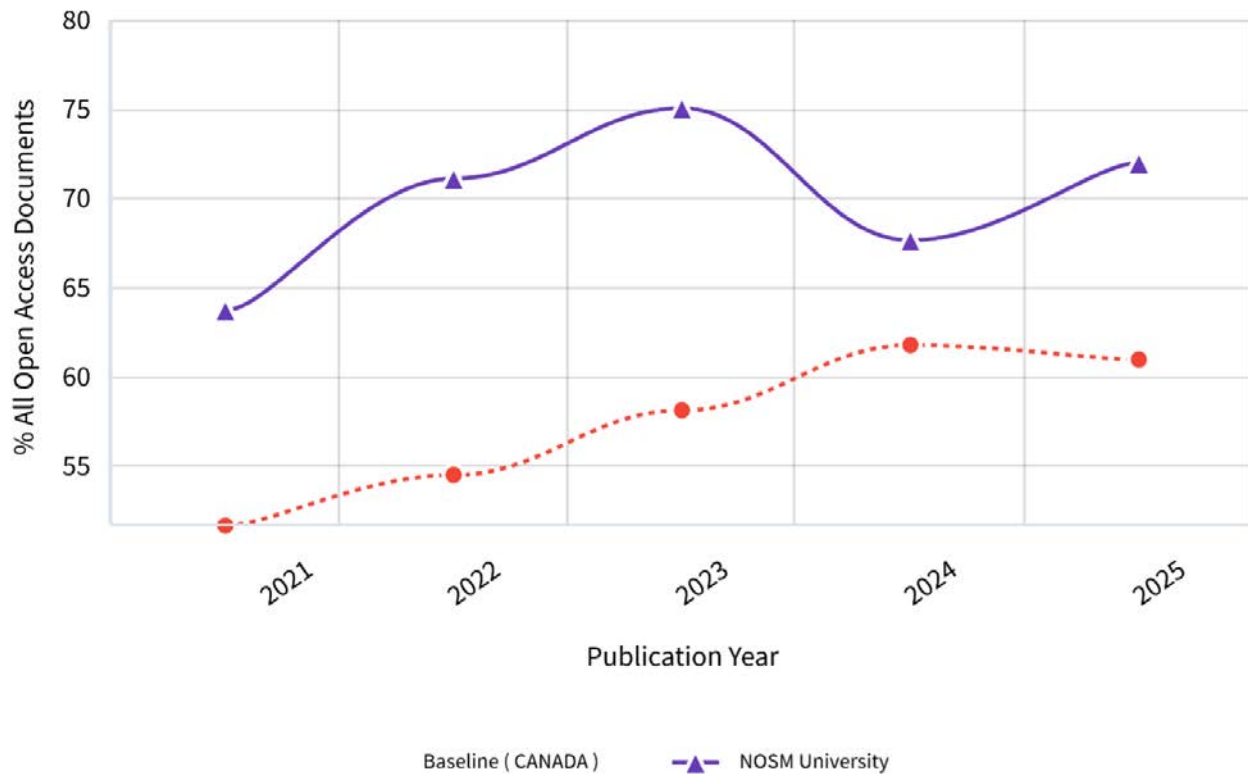
Open Access Research

Research published by NOSM University authors is usually more likely to be open access when compared to the Canadian **baseline**.

2021 – 2025

% Open Access Research, 2021 - 2025

Articles and review articles with a NOSM U author more likely to be Open Access compared to the Canadian average.



*Data retrieved from InCites® (© 2025 Clarivate)



Research Administration

In 2025, the Research Services Office received 1550 distinct email threads to research@nosm.ca, labresearch@nosm.ca, animalcare@nosm.ca, and nhrc@nosm.ca.

The team supported:

- 147 sponsored funding applications
- 45 REB applications
- 28 agreements

They helped NOSM University researchers obtain funding:

- 8 internal faculty awards (\$57,875)
- 36 internal student awards (\$160,298)
- 50 external sponsored funding received (\$2,529,410)
- 174 active externally sponsored awards

They're supporting the research laboratories:

- training and troubleshooting (200 hrs)
- maintenance and repairs (310 hrs)
- health and safety and process improvement (140 hrs)
- 14 faculty and students were onboarded
- 12 tours provided to a total of 80 visitors

And 368 subscribers received the 16 issues of the **Research Matters** newsletter. If you'd like to receive the newsletter, you can subscribe [here](#).



Northern Health Research Conference



NOSM University held its 20th annual Northern Health Research Conference (NHRC) from June 16 to 17, 2025 in Thunder Bay, Ontario, with an online option for those who could not attend in person.

With a total of 27 oral presentations and 44 posters, the 158 learners, faculty and researchers in attendance were able to learn about research activities happening across Northern Ontario, and network with their peers.

A thought-provoking keynote address titled “Respecting Lives, Enhancing Care: Addressing the Opioid Crisis with Compassion” was delivered by Dr. Kristen Morin, an Assistant Professor at NOSM University, a Health Sciences North Research Institute affiliated researcher, and an ICES North Fellow.

An informative Lunch and Learn session titled “The Ontario Health Study: A resource for cancer, disease and health research in Ontario and Canada” was delivered by Dr. Victoria Kirsh, the Interim Scientific Director at Ontario Health Study.

Research Themes	Poster Presentations	Oral Presentations
Clinical and Translational Health	16	6
Biomedical and Basic Sciences	11	7
Population and Public Health	11	11
Humanities and Social Sciences	6	3

Congratulations to the student winners:

- **Oral Presentation - Undergraduate** - Félix Lavigne “The Impact of Preoperative Optifast® Very Low Energy Diet (VLED) on Laparoscopic Colorectal Surgery: A Patient and Surgeon Perspective”
- **Oral Presentation - Graduate** - Amanda Keursten “Bioremediation and Sequestration of Gallium from Mining Tailings using *Pseudomonas fluorescens*”
- **Poster Presentation - Undergraduate** - Jonathan Hammond “Breast cancers with intermediate ER expression: Clinical and pathologic correlations and influence on outcomes”
- **Poster Presentation - Graduate** - Lucas Mrozewski “Impact of Northern Residence on Sepsis Outcomes”
- **Poster Presentation - In-Person** - Shirley Liu “Reducing the Rate of Preoperative Anemia in Elective Gynecology Surgery at a Northeastern Ontario Tertiary Care Centre”
- **Dr. Roger Strasser NHRC Student Travel Award** - Mustafa Alzahran

[View the poster submissions](#) on NOSMtv.

