

NORTHERN HEALTH RESEARCH

# THE SCOPE



**Research and Reconciliation**

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**Nutrition and**  
Autism Spectrum Disorder

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**Familiar Faces**  
ED use for Chronic Pain



Northern Ontario  
School of Medicine

École de médecine  
du Nord de l'Ontario

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# WELCOME TO *THE SCOPE*

Scope can be defined as: the range of one's perceptions, thoughts, or actions; the geographical or perceived area covered by a given activity; or, a viewing instrument such as a microscope or telescope. In most modern usages of the word scope, there is a unifying theme of examination or investigation. In this case, Scope includes all of these ideas. Research at the Northern Ontario School of Medicine (NOSM) is reflective of the School's mandate to be socially accountable to the diversity of Northern Ontario.

For years, Canadian health research took place primarily in large cities. This meant that there were many health questions that were going unanswered in Northern Ontario, including questions about the incidence of chronic disease, outcomes for patients with mental illness and how work in industries such as mining or forestry affect one's health. Also left unanswered were specific questions about the health of Francophone and Indigenous communities in the North, two groups that have historically not been well-represented in health research.

The subjects being studied are as varied as the geographic area of NOSM's wider campus of Northern Ontario and as diverse as the researchers themselves: faculty members in the School's Human, Medical, and Clinical Sciences Divisions, residents, medical students, a broad range of health-professional learners and collaborators who conduct leading-edge health research not just in the lab, but in communities, hospitals, health clinics and administrative offices across the region. Since 2003, NOSM faculty members have published more than 2,340 scholarly articles which aim to answer questions that will have a positive impact on the health of Northern Ontarians.

Although this publication cannot provide the full scope of exciting research happening across Northern Ontario, we hope it provides a glimpse into some of the work being done with a view of improving the health of people in Northern Ontario and beyond.

## The Scope Research Newsletter of the Northern Ontario School of Medicine

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# WELCOME TO *THE SCOPE*

## A Message from Dr. Penny Moody-Corbett Associate Dean of Research



Dr. Penny Moody-Corbett

The Northern Ontario School of Medicine (NOSM) was established as a strategy to address the health needs of the people of Northern Ontario, improve access to quality care, and contribute to the economic development of the region.

The most obvious thing the School does to achieve this is educating future physicians. NOSM was founded on the idea that by educating physicians in the North, they would stay in the North upon graduation. Over thirteen years later, we know that idea is working.

But NOSM also has a population of affiliated researchers who are working hard to impact the health of people and communities in the North.

From the beginning, the School—and in turn its Founding Dean and CEO Dr. Roger Strasser—recognized that a thriving culture of research in Northern Ontario would allow us to attract, retain, and most importantly, train the next generation of scientists here in the North. Roger has been key in establishing and fostering relationships with communities and scientists across the region—relationships which are crucial to research at NOSM.

The School hosted two Indigenous Research Gatherings, 2008 and 2016, to acknowledge past experiences, conduct ceremonies for healing, and build on collaborative, participative and meaningful approaches to community-based research. The Northern Health Research Conference (NHRC) will be held for the 14<sup>th</sup> consecutive year September 20-21 in Little Current, Manitoulin Island. Close to 150

NOSM medical students have received funding through the Dean's Summer Student Research Awards program, which encourages students to get involved in research.

Research is also encouraged and promoted in the non-MD programs of NOSM, such as the Northern Ontario Dietetic Interns Program (NODIP) and health professional learners. Many of our faculty members supervise master's and doctoral students from Lakehead or Laurentian University interested in pursuing advanced research degrees.

Roger's impact on the evolution of research in the North is reflected in the stories in this issue of *The Scope*. Dr. Lorrilee McGregor is exploring the role of research in reconciliation; Barbara Gunka, a past recipient of the Dean's Summer Student Research Award, is contributing to a research project on emergency department use for chronic pain; Jo Beyers is working on a practise-based project on nutrition and autism spectrum disorder with NODIP interns; and Drs. Robert Ohle and Neelam Khaper both received major grants for their respective work, demonstrating the level of excellence of research in the North.

Over the past 15 years, the roots of research have taken hold in the North. As we prepare for the end of his last term as NOSM Dean and CEO, I am pleased that this year we will award the first Dr. Roger Strasser NHRC Student Travel Award. With this next phase of exploration and discovery, I would like to extend my thanks to Roger. Because of his commitment to research, I know we will continue to flourish in the future and continue with the school's vision of *Innovative education and research for a healthier North*.



**Dr. Lorrilee McGregor joined NOSM as a full-time faculty member in 2018.**

## RESEARCH AND RECONCILIATION

Throughout history, health research has largely ignored Indigenous people's perspectives and knowledge. Outside researchers have often proceeded without engaging with, or gaining informed consent from, the communities or individuals.

The Manitoulin Anishnaabek Research Review Committee (MARRC) serves as a community research ethics board for the First Nation communities of Manitoulin Island.

The committee, chaired by Dr. Lorrilee McGregor, Assistant Professor of Indigenous Health at the Northern Ontario School of Medicine, is comprised of representatives from the Manitoulin First Nation communities including Elders, academic and community researchers, and representatives from Indigenous organizations. The MARRC evaluates proposed research projects on Manitoulin Island to ensure they respect Anishinaabek values and reflect the communities' vision for culturally appropriate research.

"Research is supposed to be about healing; we're not supposed to be re-traumatizing people," says McGregor. "When we evaluate a research project, we're looking at how our communities are going to be protected. What is the researcher's approach in terms of the Seven Grandfather Teachings? How are they going to act when they're in the communities? Are there going to be improvements in health as a result of this research?"

McGregor joined NOSM as a full-time faculty member in July 2018. Though the role of research in reconciliation was not her primary research focus when she joined the School, it was not long after that the Social Sciences and Humanities Research Council put out a call for proposals to address the Truth and Reconciliation Commission of Canada's Calls to Action, specifically Call to Action 65, which calls on the SSHRC to establish a national research program to advance understanding of reconciliation.

“WHEN WE EVALUATE A RESEARCH PROJECT, WE’RE LOOKING AT HOW OUR COMMUNITIES ARE GOING TO BE PROTECTED. WHAT IS THE RESEARCHER’S APPROACH IN TERMS OF THE SEVEN GRANDFATHER TEACHINGS? HOW ARE THEY GOING TO ACT WHEN THEY’RE IN THE COMMUNITIES? ARE THERE GOING TO BE IMPROVEMENTS IN HEALTH AS A RESULT OF THIS RESEARCH?”

The MARRC submitted a proposal and received funding to host a conference to engage Anishinaabek people on Manitoulin Island in a dialogue about research and reconciliation. The conference took place on Manitoulin Island in February 2019.

“Reconciliation is a huge issue, and one of the things that I heard at the conference was that there’s a lot of skepticism about it,” says McGregor. “The TRC was out in communities and people were sharing their experiences, but Indigenous people still feel that the truth hasn’t been heard. And so one of the roles of research in reconciliation is to get that truth out there.”

As with other areas of the relationship between Indigenous and non-Indigenous people, the truth will come from revisiting the past, as well as new, culturally safe research projects, she says.

“Indigenous people have our own research approaches that are different, and we have our own perspectives and world views. Research that’s been done in the past that hasn’t been collaborative, or involved the communities at all, really need to be opened up for reinterpretation from an Indigenous perspective.”

McGregor says the issue of research in reconciliation is not just a local one, but a regional and a national one, and that she hopes she can expand her work beyond Manitoulin Island to communities across Northern Ontario.

“NOSM, because of its vast network, is well positioned to influence and reach so many Indigenous communities here in Northern Ontario,” she says. “Being here and having the connections and supports through the School will enable me to work with a wider range of communities than I have before.”



# MAKING A DIFFERENCE STARTS WITH YOU.

This spring, NOSM will celebrate its 52<sup>nd</sup> Indigenous MD graduate. Your donation made to NOSM's Indigenous Bursary Program will help ensure more Indigenous physicians practise in Northern Ontario. Making a difference starts with you.

**Visit the NOSM website at [nosm.ca/donate](https://nosm.ca/donate) to support Indigenous medical students.**

Thank you, merci, miigwetch for believing in the dream of a medical school in Northern Ontario and for sharing this journey with us.



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Dr. Neelam Khaper, an Associate Professor of Physiology at NOSM, studies the role of oxidative stress in the development and progression of cardiovascular disease.

## OXIDATIVE STRESS AND CARDIOVASCULAR DISEASE

Dr. Neelam Khaper, an Associate Professor of Physiology at the Northern Ontario School of Medicine, joined the School in 2005. Her general research interests include cardiovascular pathophysiology and the novel therapeutic approaches of heart failure using experimental models, specifically the role of oxidants and antioxidants in cardiac remodeling. She has two main objectives to her research that comprise of the characterization of cellular and molecular mechanisms of cardiac remodeling, as well as the study of the redox-inflammatory synergy in various pathophysiological conditions.

“My research is focused on investigating the role of oxidative stress in the development and progression of cardiovascular disease,” says Khaper. “Oxidative stress refers to an imbalance between the production of free radicals and the antioxidant defenses. We are particularly interested in studying cardiac adaptation in terms of cardiac remodeling in progression of cardiovascular disease.”

According to Khaper, the risk and clinical significance of cardiac iron overload due to chronic transfusion is well known and documented in literature. “Cardiac iron overload is associated with cardiovascular mortality and morbidity,” says Khaper. “Excess iron leads to oxidative stress and

ultimately cardiac dysfunction and heart failure.” Khaper and her team have been able to demonstrate that a component of flaxseed with antioxidant potential was cardioprotective in an experimental model of cardiac iron overload.

Khaper recently received the Guilbeault Award for her research. “With this award, we will be investigating the antioxidant potential of resveratrol—an antioxidant that is found in grapes—in an experimental model of age-related macular degeneration (ARMD). Oxidative stress plays a crucial role in the pathogenesis of ARMD and this award will support our ongoing research in the area of oxidative stress.”

This research on age-related macular degeneration has great clinical relevance, as it is the most common cause of vision loss in North America and Europe. “There is strong evidence for the role of nutritional supplements for patients with ARMD,” explains Khaper. “This study may provide some insight into the role of antioxidants in preventing the progression of age-related macular degeneration. With the aging population in North America and Europe, this study has great clinical relevance.”

**Dr. Robert Ohle is an emergency medicine physician at Health Sciences North and Assistant Professor of Emergency Medicine at NOSM.**



## NEW ACUTE AORTIC SYNDROME GUIDELINES REFLECT NORTHERN PERSPECTIVE

A group of clinicians and researchers from Northern Ontario are leading the development of national guidelines for diagnosing and treating acute aortic syndrome.

Dr. Robert Ohle, an emergency medicine physician at Health Sciences North and Assistant Professor of Emergency Medicine at the Northern Ontario School of Medicine, received a grant from the Northern Ontario Academic Medical Association (NOAMA) to adapt and improve existing American and European guidelines for acute aortic syndrome.

Acute aortic syndrome is a condition caused by a tear in the aorta, the largest blood vessel in the body. Once the aorta is torn, blood can then leak up or down, blocking the blood flow to the vessels the aorta supplies, and depending on the placement of the tear, a number of the body's essential organs.

It's rare—only 6-10 cases of acute aortic syndrome present at HSN per year, according to Ohle—and therefore can be difficult to diagnose.

“Acute aortic syndrome can look like a lot of other, more common diagnoses, including a heart attack, a blood clot in the lungs, or a stroke, so the diagnosis is often delayed and sometimes missed,” said Ohle. “That can lead to poor patient outcomes, so our goal is to standardize the approach to the diagnosis.”

The first major guidelines for acute aortic syndrome were published by the American Heart Association in 2010. A second set of guidelines were published by the European Society of Cardiology in 2014.





## ACUTE AORTIC SYNDROME IS RARE—ONLY 6-10 CASES OF ACUTE AORTIC PRESENT AT HSN PER YEAR—AND THEREFORE CAN BE DIFFICULT TO DIAGNOSE

The physicians who developed those guidelines were primarily cardiologists and surgeons as opposed to emergency physicians and rural physicians, who are the target in terms of improving diagnosis, according to Ohle.

“We are leading a working group composed of physicians, surgeons and patients from across Canada. We took the existing guidelines and assessed their strengths and weaknesses, updated them with studies that have been published in the intervening years, and made them more applicable to Canadians, to emergency physicians and also to physicians who practise in rural or remote communities,” he said.

“We’ve made suggestions about next steps that aren’t in the other guidelines, or are there in different contexts,” he said.

“For example, if you’re working somewhere where in order to get a CT scan, you have to fly somebody to a larger centre, and it’s going to take away one of your nurses and affect patient care within your department, you need to take into account the probability of the diagnosis combined with the resources you have.”

“Guideline committees don’t often include community or rural physicians. Publishing a national guideline that comes out of the North, including rural and remote physicians, acknowledges that transferring someone for imaging may be more difficult than in an urban centre, it’s a really great thing that will have a positive impact on patients, says Ohle.



## NUTRITION AND AUTISM SPECTRUM DISORDER

Leadership and interns from the Northern Ontario Dietetic Internship Program (NODIP) at the Northern Ontario School of Medicine are researching and developing a nutrition curriculum for health care providers working with families whose children have autism spectrum disorder.

There are currently no Canadian clinical practice guidelines for nutrition in the treatment of autism spectrum disorder, says Jo Beyers, a Research Consultant with NODIP and a faculty lecturer in the Human Sciences Division at NOSM.

In the absence of those guidelines, NODIP is collaborating with Child and Community Resources (CCR) to develop a program of eight modules, each on different topics related to nutrition and autism. To date four NODIP interns have been instrumental in the research and development of the curriculum.

“We knew firsthand that there weren’t any existing nutrition guidelines that could be shared with those working directly with families affected by autism spectrum disorder, so we started the project by doing an environmental scan,”

she says. “What we found was that there weren’t any comprehensive educational resources we could point service providers to.”

They also heard from service providers that they felt they had a lack of knowledge on the subject. So after completing the initial eight modules, the team piloted the program with CCR staff to find out what worked for them, what didn’t and what could be improved. One of the next steps in the project is the content validation phase. The NODIP team will survey registered dietitians who have expertise in autism and nutrition in order to get their feedback on the modules.

The modules will be available online and can be downloaded, making them accessible to people across the region, including dietitians and other care providers practising in rural and remote areas.

“If you’re in downtown Toronto, you can go to a paediatric clinic and meet with an interdisciplinary team,” says Beyers. “In the North, we have to rely on innovative ways to get our



**Jo Beyers is a Research Consultant with NODIP and a faculty lecturer in the Human Sciences Division at NOSM.**

THERE ARE CURRENTLY NO CANADIAN CLINICAL PRACTICE GUIDELINES FOR HEALTH CARE PROVIDERS WORKING WITH FAMILIES WHOSE CHILDREN HAVE AUTISM SPECTRUM DISORDER.

information out, so this train-the-trainer approach is one way we can do that.”

Research is a core competency in the NODIP program. Beyers says she includes NODIP interns in research as part of their training because she wants them to be asking questions throughout their careers as practising dietitians.

“When they are working in their field, they need to be asking, ‘Why are folks not showing up at my clinic?’ or ‘How come that client didn’t get the blood result I expected?’” she says. “I want them to always ask questions, and then know how, in an evidence-informed way, to seek an answer to that question.”

Providing service providers with evidence-informed curriculum will also help counter misinformation about nutrition and autism spectrum disorder, and will ultimately have a positive impact on clients, says Beyers.

“A lot of what the curriculum focuses on is dispelling myths that are out there, and in a lot of ways gives care providers the tools they need to be able to address any misconceptions or misunderstanding about what evidence actually exists in this area,” she says.

As the project continues and the team explores next steps, Beyers says she also wants to incorporate the perspective of people and families affected by autism spectrum disorder into the curriculum.

“We’re seeing a real movement in the disability community, centred around the idea of ‘nothing about us without us,’” she says. “NOSM has a mandate to be socially accountable to the people of Northern Ontario, and one of our academic principles is inclusivity, so to me that means we have a responsibility to include the autistic community’s perspective in this work.”



## FAMILIAR FACES: EMERGENCY DEPARTMENT USE FOR CHRONIC PAIN IN THUNDER BAY

Two medical students at the Northern Ontario School of Medicine are studying the demographics and characteristics of chronic pain high-frequency users of the Thunder Bay Regional Health Sciences Centre (TBRHSC) Emergency Department.

The study will also explore whether there are patterns to high-frequency use of the Emergency Department for chronic pain, and identify possible solutions to the issue.

Known as Familiar Faces, the study started at the Ottawa Hospital, led by Drs. Patricia Poulin and Cathy Smyth.

Dr. Bryan MacLeod, Associate Professor at NOSM and Pain Medicine Lead for St. Joseph's Care Group's Chronic Pain Management Program, is overseeing the research in Thunder Bay. Barbara Gunka and Ocean Nenadov, both third-year medical students at NOSM and members of MacLeod's research team, became involved as recipients of

the 2018 Dean's Summer Student Research Award and the Local Education Group Summer Student Research Award, respectively.

High-frequency use is defined as eight or more visits in a fiscal year. According to their research, patients with chronic pain were more often female than male, had more visits to the Emergency Department, had more and longer admissions to hospital after presenting in the Emergency Department, and were more likely to continue to be high-frequency users in the next fiscal year.

Their research also showed that only 4.5 per cent of the patients included in the study were involved in other pain management services.

Gunka said she was interested in chronic pain because of its pervasiveness in clinical practise.



“WE HOPE THAT OUR TEAM’S WORK CAN BE USED TO HIGHLIGHT THE DISPARITY IN INTERDISCIPLINARY CHRONIC PAIN CARE IN THUNDER BAY, AND IN NORTHERN ONTARIO AS A WHOLE.”

**Barbara Gunka and Ocean Nenadov, both third-year medical students at NOSM, are part of the team contributing to the project from Thunder Bay.**

“I hope to practise in Thunder Bay, and I think being aware of community services will strengthen my ability to care for my patients,” she said.

Exploring this topic is particularly important in Northern Ontario because TBRHSC has the highest Emergency Department usage in the North West LHIN, said Gunka.

“Previous research has shown that about 70 per cent of Emergency Department visits are prompted by pain,” she said. “Often there is a lack of community resources and primary care access which can lead to frequent, costly and ultimately avoidable Emergency Department visits and hospital admissions. In Northern Ontario, we don’t have the interdisciplinary services to meet the needs of our chronic pain population,” she said.

The research team has presented the data collected for the study at the TBRHSC first annual Research Day, NOSM’s Northern Health Research Conference, and to the Canadian Pain Society. The team is currently preparing the data for submission for publication in a scientific journal.

“This research has had a big impact on my medical education and I feel grateful for being included in such an important project,” said Nenadov. “We hope that our team’s work can be used to highlight the disparity in interdisciplinary chronic pain care in Thunder Bay, and in Northern Ontario as a whole.”

## WHAT'S NEW AT NOSM



### Dean and CEO Designate

Dr. Sarita Verma has been appointed the new Dean and CEO of the Northern Ontario School of Medicine (NOSM), effective July 1, 2019. Verma is currently Vice President, Education at the Association of Faculties of Medicine of Canada (AFMC) and until January 2016, was Associate Vice-Provost, Relations with Health Care Institutions and Special Advisor to the Dean of Medicine at the University of Toronto. Formerly the Deputy Dean of the Faculty of Medicine and Associate Vice-Provost, Health Professions Education, she is a family physician who originally trained as a lawyer at the University of Ottawa and later completed her medical degree at McMaster University. Verma will become the second Dean and CEO of the Northern Ontario School of Medicine after Dr. Roger Strasser leaves the role on June 30, 2019.



### Associate Dean, Graduate Studies

Dr. Darrel Manitowabi has been appointed as Assistant Dean, Graduate Studies for NOSM. Manitowabi is a citizen of the Wiikwemkoong Unceded Territory, and he currently resides in the Whitefish River First Nation. In 2018, he served as the Interim Director of Indigenous Affairs at NOSM. He is a faculty member of Laurentian University where he is an associate professor of anthropology in the School of Northern and Community Studies and holds a cross-appointment in NOSM's Human Sciences Division. He has a PhD in sociocultural anthropology, and comes with experience as a graduate supervisor and in graduate programming oversight from his positions at Laurentian University. He has conducted research and published in the areas of Indigenous diabetes, gambling, traditional medicine, and socioeconomic health interventions and he is currently collaborating in research examining cultural approaches to treatment of opioid addiction.



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