

niagarahealth research office

ANNUAL **REPORT**



2018
/2019

NIAGARA HEALTH RESEARCH OFFICE

Research has a profound impact on the health and wellbeing of the people who live in our communities. Health research provides important information about disease trends and risk factors, outcomes of treatment, patterns of care, and health care costs and usage to name a few. This is what fuels us to do more. Our journey to become a community-based research and academic centre began several years ago. Niagara Health established a dedicated Research Office to strengthen our research and academic partnerships and set out to conduct research that would inform care, inspire innovation and create environments of collaborative learning.

Research Office Goals:

- To build healthcare learners' and professionals' skills and confidence in conducting health research
- To promote interprofessional collaboration in research
- To establish research networks with partners in the community to improve integration of primary and acute health services
- To improve health through knowledge translation

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CONNECTIONS: RESEARCH AT NIAGARA HEALTH



Research and academics are priorities at Niagara Health – part of our commitment to building a healthier Niagara.

Our increasing focus on research and academics is transforming healthcare in Niagara and enhancing patient experiences and outcomes.

As a community-based academic centre, Niagara Health has an important role to play in fostering research and making it accessible to people in our region. We have ambitious goals for research at Niagara Health.

We are building a culture of research here. But this work cannot be done alone. Partnerships and collaboration are how we become community leaders in health innovation and research.

Our connections to Brock University, Niagara College and McMaster University create extraordinary opportunities for our learners.

Our partnerships with the St. Joseph Health System and the Research Institute of St. Joe's open new doors to research and to resources.

These connections link us to the world of health research beyond our borders.

Health research conducted in Niagara, with the benefits of spreading beyond the hospital and beyond our region. That is extraordinary.

Angela Zangari

Interim President, Executive Vice President, Finance and Operations

ADVANCING RESEARCH IN NIAGARA

Niagara Health's Research Office is a hub for medical and interprofessional research being done in the region. It is a great pleasure to present this first annual report on research at Niagara Health.

This report highlights some of the great work being done by researchers at our hospital, covering the five pillars of research at Niagara Health, namely:

- Critical care
- Emergency medicine
- Cardiology
- Oncology
- Urology

In all these areas, we see how research benefits our patients locally, while also informing care practices beyond our region.

The past year has had many highlights. Chief among them would be Research Day, hosted at our St. Catharines Site, with our partners at the Research Institute of St. Joe's. For the first time, we gathered dozens of researchers, academics, clinicians and other stakeholders to demonstrate the importance of medical and interprofessional research in our community hospital setting.

We hope you enjoy learning about our work, and how we're making an impact on health care at Niagara Health.

Zeau Ismaíl,
Director, Interprofessional Practice, Ethics & Research
Niagara Health

Dr. Jennífer LY Tsang,
Research Lead, Intensivist, Niagara Health
Co-Director, Critical Care Research, Niagara Health



Dr. Jennifer Tsang



Zeau Ismail

PATIENTS BENEFITING FROM ICU RESEARCH



Niagara Health's Intensive Care Unit is home to research conducted by members of the team

The Intensive Care Unit at Niagara Health is a trailblazer for conducting research in a community hospital setting. Launched in 2015, the ICU research program features a multidisciplinary team, including physicians, nurses, pharmacists, physiotherapists, respiratory therapists and dietitians.

Under the leadership of Dr. Erick Duan and Dr. Jennifer Tsang, the team has completed four multicentre studies and is currently conducting eight multicentre studies, many of these being international. This has provided patients in Niagara with opportunities to participate in research studies that would otherwise only be available in academic centres.

By participating in multicentre studies, they contribute to the scientific community as a whole, by helping understand how these studied treatments may be applied to a broader population, including patients in community hospitals. By bringing leading-edge, rigorously designed scientific studies to Niagara Health, they help drive local innovation, quality improvement, and a deeper job satisfaction from bedside clinicians dedicated to furthering best practices in patient care.

In addition to multicentre studies, locally led studies allow them to explore targeted interventions in order to benefit their patients in Niagara directly. Pain, agitation and delirium (PAD) are often experienced by critically ill patients and could lead to worsened patient clinical outcomes. Dr. Tsang, along with a team of dedicated health professionals, led the PAD Program with the aim to improve PAD assessment and patient clinical outcomes. The importance of this work was reflected by the receipt of a competitive provincial research grant to support the program. The results of this important work were disseminated to the scientific community through international medical conferences and peer-reviewed medical journals.

The Three Wishes Program, led by Dr. Benjamin Tam and a team of health professionals, is a research program that strives to provide compassionate palliative care to ICU patients. This innovative program has been very well received. It has garnered support from hospital volunteers and staff, community partners, and a competitive provincial research granting agency.

The ICU research program at Niagara Health has grown over the last four years and has become a leader in community hospital ICU research in Canada.

Building on her experience gained at Niagara Health, Dr. Tsang is leading a national movement to increase research capacity in ICUs at community hospitals across Canada with the aim to benefit more critically ill patients nationwide.

Mercedes Camargo Penuela,
Research Co-ordinator



REDUCING RISK THROUGH EVALUATIVE RESEARCH



*Dr. Shira Brown, Deputy Chief of Emergency Medicine
South Niagara & ED Transformation Lead*

Niagara Health consists of five hospitals, three emergency departments, three intensive care units, and two urgent care centres. With approximately 160,000 emergency department visits annually, it is estimated that 500 of these visits will involve patient intubation – the insertion of a tube to assist with breathing.

Occasionally, complications from intubation may arise. A difficult airway (DA) exists when a patient has trouble with ventilation and intubation, causing a lack of oxygen supply. In fact, research shows that respiratory-related events, such as a difficult airway, are twice as common outside of the operating room.

Managing a DA outside of the operating room, particularly across a multi-site hospital system, is no easy task. Initial research at Niagara Health revealed several challenges, including limitations on staff-skill mix, lack of available resources, and varying levels of assistance that complicates the process of managing respiratory problems.

To overcome these issues, researchers and clinicians established a standardized approach to reduce the risks associated with difficult airways. Led by Dr. Shira Brown, South Niagara Chief of Emergency Medicine, the Difficult Airway Committee aimed to tackle this system-wide issue through evaluative research, training, establishment of new guidelines, and other resources.

Dr. Brown chaired the Difficult Airway Committee, which brought together members from respiratory therapy, ENT specialists, critical care, anesthesia, simulation design, emergency medicine, paediatrics, nursing education, and many other areas, including several researchers. Their mission statement, “Right people, right equipment, right timing: No failed airway,” guided the group’s vision.

A DA risk assessment led to the creation of a new set of procedures for adult and paediatric patients experiencing a difficult airway. The procedures were accompanied by purpose-built medical supply carts containing the necessary equipment needed for each stage of the DA procedures. Training material was

developed, and strategies to encourage staff to participate in training were implemented. For example, Continuing Medical Education (CME) credits were offered to increase learner attendance. Once a critical mass had received the new training, the program was officially launched.

To date, follow-up research has shown a reduction in morbidity and mortality related to failures in airway management since the launch of the Difficult Airway Pathway strategy at Niagara Health. A reassessment of staff comfort, knowledge, and skills for managing DA shows a marked improvement.

Thanks to the efforts of a coalition of researchers and medical professionals, backed by sound evidence and supported by senior management, Dr. Brown and her colleagues were able to identify risk, design and implement solutions, and ultimately improve the effectiveness of DA responses at Niagara Health.



HELPING PATIENTS WITH STENTS STAY STRONG




Dr. Natalia Pinilla Echeverri and Dr. Adnan Hameed, *Niagara Health*

Atherosclerosis – the build-up of plaque lesions in the blood vessels – can lead to various cardiovascular problems, such as heart attack, stroke, aneurism, and other complications. One common method to treat atherosclerotic lesions is through the use of a stent – a medical device that is implanted inside a blood vessel using a catheter. Stents use a scaffold mesh design, allowing them to expand in place, opening up blockages and increasing blood flow to areas affected by plaque lesions.

While stents are an effective treatment for atherosclerotic blood vessels, there can be some adverse outcomes. Patients with chronic lung disease, diabetes, uncontrolled dyslipidemia, as well as those who smoke tend to experience complications more frequently. Advancements in stent design have lowered the risk of complications, with bare-metal stents now surpassed by drug-eluting stents that have a drug coating to assist in healing. While these drug-eluting stents have improved outcomes, the permanent polymer coating can present some long-term challenges for patients.

Thankfully, Niagara Health researchers, including Dr. Adnan Hameed, Dr. Natalia Pinilla Echeverri and Dr. Michael Tsang, are part of a team of clinician-researchers testing the next generation of stent technology called SYNERGY™. The research is being led by Dr. Sanjit Jolly from Hamilton's Population Health Research Institute.

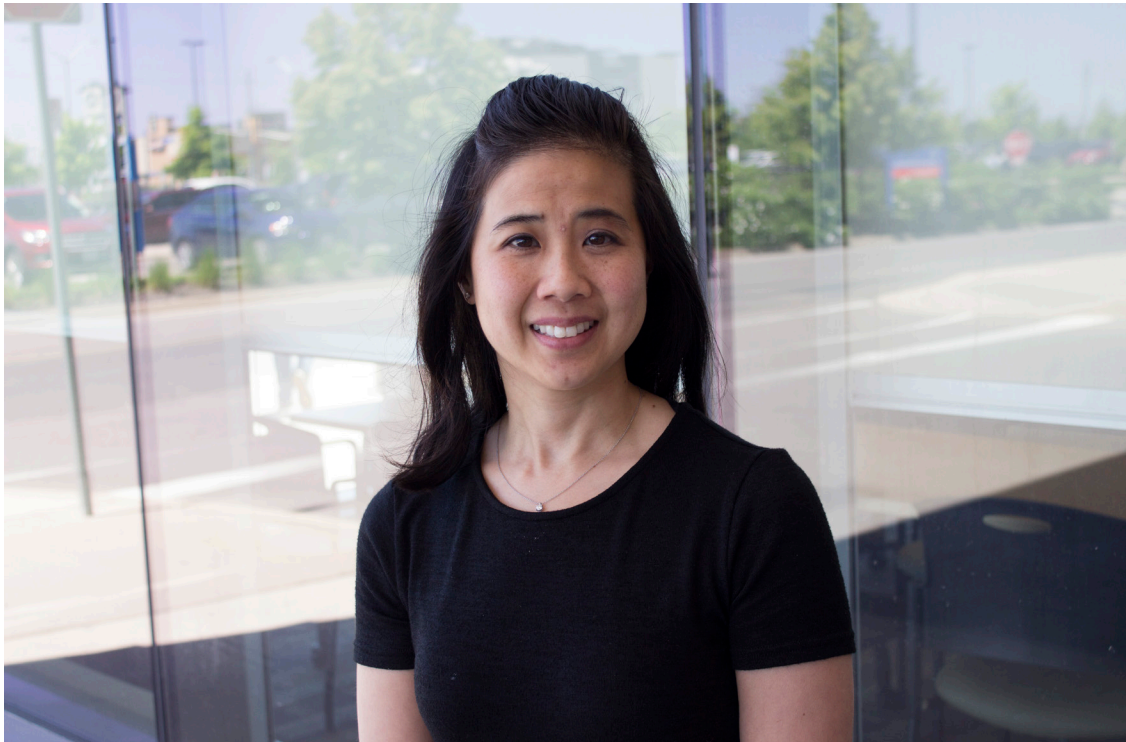


SYNERGY™ is a drug-eluting stent technology, which features a new bio-absorbable polymer coating. After a few months, this polymer coating dissolves, decreasing the inflammatory response and the possibility of abnormal growth that might lead to adverse complications, such as a blood clot. The SYNERGY™ stent is part of the CLEAR SYNERGY (OASIS 9) trial.

The trial is primarily testing two drugs – colchicine and spironolactone – in patients who have experienced ST elevation myocardial infarction (STEMI), a blockage of one or more of the coronary arteries that supplies blood to the heart. Colchicine may be able to reduce the size of the heart attack and reduce the risk of further heart attacks and strokes. Spironolactone may prevent heart failure and reduce the risk of dying after a heart attack. Cardiology research at Niagara Health has brought CLEAR SYNERGY and other research opportunities closer to home. Currently, when patients in the Niagara region experience symptoms consistent with acute heart attack, they are sent to Hamilton General for further diagnosis and treatment. By growing capacity to conduct innovative research, patients who have been recruited to studies after receiving treatment in Hamilton will be able to continue their clinical and research follow-up at Niagara Health's St. Catharines Site.

Researchers are hopeful that clinical trials, including CLEAR SYNERGY, will have an impact on the future of cardiac care and cardiovascular health for patients in the Niagara region and beyond.

THE NEXT GENERATION OF ONCOLOGY TREATMENT



*Dr. Linda Lee, Medical Oncology and
Oncology Trials Research Lead, Niagara Health*

In the care of patients with cancer, Niagara Health always strives to provide extraordinary care. This includes trying to help people who have been affected by cancer to live longer and live better.

Our oncology researchers are involved in clinical trials and quality improvement research that spans several themes. This includes research on improved access to local care, evaluation and optimization of current treatment practices, as well as enabling patients to become partners in their care.

Niagara Health's oncology department has a 30-year track record of participating in national and international clinical trials. Most recently, we have been investigating new systemic treatments aimed at improving survival including immunotherapy, the use of novel radiation therapy treatments and techniques, and the impact of lifestyle changes on cancer recurrence.

Currently, Niagara Health has nine actively recruiting trials and 11 trials in follow-up, with a total of 169 patients. This type of research improves access to care locally by providing treatment options over and above the standard of care. In turn, our patients have contributed to larger national and international research projects that advance science and medicine.

STARTS WITH CLINICAL RESEARCH PARTICIPATION

The CRC-6 trial is one recent example of a ground-breaking clinical trial conducted at our hospital. This trial examined six versus three months of adjuvant chemotherapy in colon cancer patients. An adjuvant is a drug or immunological agent that modifies the effect of other medicines, which can make some treatments more effective. In a pooled analysis, it was determined that three months was as effective as six months in reducing colon cancer recurrence in selected low-risk patients. These results were published in the New England Journal of Medicine in 2018.

The PA-6 trial was another revolutionary study that examined the use of gemcitabine versus FOLFIRINOX chemotherapy as adjuvant treatment for pancreatic cancer. This practice-changing research demonstrated a significant improvement in the survival of pancreatic cancer patients treated with FOLFIRINOX, becoming the new standard of care. In 2018, the results of this study were also published in the New England Journal of Medicine.

Oncology research at Niagara Health has helped create academic partnerships that enhance our ability to conduct local research for the benefit of our community. For over five years, Niagara Health has been running the CO-20 clinical trial, in collaboration with Brock University's Department of Kinesiology, looking at a structured exercise program to help restore the health of patients who have undergone curative chemotherapy for colon cancer. This type of research benefits patients by promoting a healthier lifestyle and empowers patients to be partners in their own care.

By engaging in multicentre clinical trials and fostering partnerships with academic institutions, such as Brock University and McMaster University's Michael G. DeGroote School of Medicine, the Niagara region is seeing the benefits of these extraordinary efforts that improve oncology care and change lives.



BUILDING THE FUTURE OF UROLOGIC CARE




Dr. Ian Brown, *Chief of Surgery*

Extraordinary innovation. Investment in the future. These are two key components of Niagara Health's 10-year strategic plan. In keeping with this vision, the Research Office has been working to grow the breadth of research conducted at Niagara Health. We are pleased to announce the newest research pillar of Niagara Health – Urology.

Niagara Health clinician-researchers are part of multi-centre, evaluative research projects in the field of urology. One of these projects involves testing a virtual prostate cancer clinic for enhanced survivorship care. Another project is assessing medical decision regret in patients with prostate cancer, by comparing overall regret at a multidisciplinary clinic versus the standard model of patient counselling.

Our urologists have also engaged in translational research projects, including one that seeks to analyze tumour markers in order to predict progression of prostate cancer. This research may lead to better foresight and tailored treatment plans for patients with various urologic cancers.

Through the Walker Family Cancer Centre, Niagara Health urology researchers have also been working with the Population Health Research Institute (PHRI) in Hamilton. A two-part prospective cohort study and randomized controlled trial called RADICAL PC is currently recruiting participants for this ongoing study.



The primary goal of the RADICAL PC1 prospective cohort study is to determine the prevalence of cardiovascular risk factors in men with prostate cancer who are being treated with androgen deprivation therapy (ADT). Androgens are hormones, such as testosterone and dihydrotestosterone, produced in the body by both males and females. Since they appear in larger quantities in men, androgens are often referred to as male hormones. ADT is one of the possible treatment options for prostate cancer, which can be accelerated by the presence of androgens. Doctors use ADT to drastically lower the levels of androgens in the bloodstream.

While the goal of ADT is to stem the aggressiveness of prostate cancer, the resulting hormonal changes can have several side effects, including decreased sexual desire, breast tenderness, osteoporosis, anemia, loss of muscle mass, weight gain, decreased mental acuity, and others.

For the RADICAL PC2 randomized controlled trial, the primary aim is to determine whether analysis of lifestyle risk factors – along with a modification strategy – can reduce the risk of cardiovascular complications for men newly diagnosed with prostate cancer, and those currently on ADT.

Collectively, this two-part study will help researchers understand the cardiovascular risks associated with ADT, and provide insight into techniques to manage those risks.

By expanding research into the field of urology, Niagara Health is bolstering its ranks with experts in urologic care to create a healthier Niagara.

NIAGARA HEALTH RESEARCH DAY



Healthcare moves at the speed of innovation. Medical research is the engine that drives that innovation, resulting in new medicines, techniques, procedures and technology – all with the goal of improving our health.

The old adage “think global, act local” was embodied November 14th at Niagara Health’s St. Catharines Site, which hosted the inaugural Niagara Health Research Day.

More than 100 researchers, students, academics and healthcare workers came to learn about medical research being done in Niagara and to hear the keynote address, delivered by Dr. Deborah Cook of St. Joseph’s Healthcare Hamilton and McMaster University.

Dr. Cook discussed the importance of conducting research in a community hospital, outlining successful studies from community hospitals and her experiences working with colleagues locally who are leading the way.

“Research leads to improved care for our patients,” said Dr. Cook. “I was excited to hear more about the many initiatives underway here at Niagara Health that are focused on improving the outcomes of patients in this region, through research. Research helps to support the culture of inquiry in an institution. Seeking answers to everyday problems that our patients and their families face is a rewarding road to travel.”



THE NEXT WAVE OF NIAGARA HEALTH RESEARCH

Students and researchers were also given the opportunity to present their research in a poster competition, with an awards ceremony to cap off the day. The winners were:

Dr. Brian Findlay and Linda Illes, Research Achievement Award, for their contributions to the 30-year record of accomplishment of strong participation in clinical trials for Niagara Health's Oncology Clinical Trials Program.

Dr. John Song, Lauren Habel, Michelle Lowry, Ann Van Vliet, Patty Welychka, Ruth Peters and Dr. Hala Hamed, Best Poster Award, for their poster "Improving Quality of Care for Total Hip Replacement Patients."

Julie Blain, Richard Singh, Dr. Abhirami Hallock, Dr. Adrian Ishkanian, Brenda Luscombe, Dr. Janice Giesbrecht and Robert McClory, People's Choice Poster Award, for their poster "Enhancing Access to Care: An Early Experience Report of the Orthopedic Radiation Oncology Clinic at Niagara Health."

PATIENT PERSPECTIVE

Former patient Lynne Dunham underlined the importance of cancer research at Niagara Health, expressing the value of having her treatment available in Niagara.

"It's a stressful time. At that point in your treatment journey, you have no idea if it's going to work," she said of the clinical trial she was a part of to potentially improve her care. "You're hoping. Everyone is being as positive as they can, but it is a stressful time. Research has improved conditions. There is hope now where there wasn't hope previously."

POWER OF PARTNERSHIP

BROCK, NIAGARA HEALTH TEAM UP TO IMPROVE HEALTH, WELLBEING



Brock University and Niagara Health launched a new partnership in March 2019 to increase opportunities to improve the overall health and well-being in our region and beyond.

The two organizations signed a Memorandum of Understanding (MOU) that places a heightened focus on research, which will help people stay healthy, improve both patient outcomes and the way healthcare is delivered, and create training and employment opportunities for Brock students and graduates.

Brock and Niagara Health have committed to collaborating in new ways to intensify their already-robust efforts in research and applied learning. The MOU allows the two organizations to bring

their respective strengths together and build an even stronger working relationship.

Brock and Niagara Health have a long history of collaboration related to teaching, learning, research and innovation, with an emphasis on improving health and the quality of healthcare delivery.

INTERPROFESSIONAL RESEARCH

MORE 2 EAT: PUTTING THE FOCUS BACK ON MEALTIME



Nearly half of all patients admitted to Canadian hospitals are malnourished. According to the Nutrition Care in Canadian Hospitals study, malnutrition is a wide-spread problem that if left untreated could cause a continuous circle of issues for patients. These patients experience longer hospital stays and are at higher risk for readmission within 30 days. The majority are seniors. As a result of our work with the University of Waterloo's More 2 Eat study, new processes were introduced at Niagara Health to assist our teams in identifying malnourished patients and supporting them with resources to improve nutrition both while in hospital and after they are discharged.

The program, recognized by the Health Standards Organization as a Leading Practice, also involves recruiting volunteers to provide added support and socialization to patients during mealtime.

Niagara Health is already seeing positive results. The average number of mealtime barriers identified by patients in hospital has been significantly reduced. The project also helps patients return home by connecting them with community supports like Meals on Wheels and grocery-delivery services, as well as community dietitian services.

MUSIC AND MEMORY: INSPIRATION IN EXTENDED CARE



The Music and Memory Program has made a big difference for residents at Niagara Health's Extended Care Unit (ECU).

Residents with cognitive impairments like dementia can sometimes experience agitation and depression. ECU staff and Brock University students introduced the Music and Memory Program to enhance the quality of life for residents. The team works with residents and families to create personalized music play-lists.

The program, which is also recognized as a Leading Practice by the Health Standards Organization, has helped to improve the mood and behaviour of residents and has been effective in reducing incidence of falls by creating more relaxing environments.

MEDICATION RECONCILIATION: PRIORITIZING PATIENT SAFETY

Medication discrepancies are very common and represent a major threat to patient safety. One solution to this problem is medication reconciliation.

The Agency for Healthcare Research and Quality-funded Multi-Center Medication Reconciliation Quality Improvement Study (MARQUIS), conducted at five U.S. hospitals, consolidated and rigorously evaluated best practices in a real-world setting.

Results showed significant reductions in potential harmful medication discrepancies. The MARQUIS toolkit, now refined based on lessons learned from the prior study, provides a scalable and testable approach to markedly improve medication safety.

Niagara Health is one of 18 hospitals where the MARQUIS toolkit is being implemented, using a mentored implementation model to rigorously evaluate the effects on medication discrepancies, and to evaluate the success of implementation.



niagarahealth foundation

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