

YOUR IMPACT

SUNNYBROOK'S HOLLAND BONE AND JOINT PROGRAM



Celebrating an icon: Dr. Marvin Tile, 91, holds a portrait of himself in the operating room. In his nearly 60-year career at Sunnybrook, Dr. Tile not only improved the prognosis for thousands of patients he personally cared for – and countless more around the world who benefitted from his efforts – he stood out as an educator and mentor to the next generation of leaders.

A message of gratitude from our high-performing team

As Chief of the Holland Bone and Joint Program, I have the honour of leading one of North America's top high-performing teams in musculoskeletal care, education and research. Our team approach is why we are trusted to take on complex injuries and cases that cannot be managed elsewhere.



What an honour to also hold the title of the Marvin Tile Chair in Orthopaedic Surgery. When the endowed Chair was first established in 2004, at the time it was in recognition of its namesake's 40 years of invaluable contributions to healthcare. Twenty years later, Dr. Tile is still lecturing, and the Chair carries on his legacy by investing in the most promising lines of inquiry.

While Dr. Tile himself is a giant in this field, he just as passionately believes building a strong team is the key to success, which is why he has always happily invested his own time in mentoring the next generation of leaders. This work doesn't happen overnight – and not without generous donor support.

Dr. Tile was appointed to Sunnybrook's surgical staff in 1966, and by 1968, he was asked to become the Chief of Orthopaedic Surgery. Dr. Tile agreed, so long as Sunnybrook, which didn't have an emergency department at the time, would commit to building a trauma unit onsite. This was one act of many along his way toward leading a transformation in the delivery of trauma care in Canada. His profound influence continues to this day.

This report shares updates from great leaders inspired by Dr. Tile. As you read on, I hope you see your generosity at work, and how it translates into research and care just as trailblazing as the leaders across our team.

A handwritten signature in blue ink, appearing to read 'Albert Yee'.

Dr. Albert Yee

Chief, Holland Bone and Joint Program
Division Head, Marvin Tile Chair in Orthopaedic Surgery

Many pieces, only one Marv Tile

Dr. Marvin Tile had a profound impact on countless patients, including Marjorie Larmon who had severe arthritis. The care she received from Dr. Tile made such a difference she refused to see any other doctor, and regularly made the 150-kilometre trek from Burgessville, Ont., for her appointments.

To express her gratitude, Marjorie designated a gift in her Will with one request: that it be used to improve Sunnybrook how Dr. Tile saw fit.

Marjorie's gift set into motion investment in research, renovations and the naming of the Dr. Marvin Tile Fracture Clinic.

Kathy Cox also remembered Dr. Tile years after the care he provided. The three-time Canadian parachuting champion fractured her tibia and fibula on a landing gone wrong. She was lucky to be alive, and thanks to Dr. Tile, she not only survived the high-profile incident, she went on to win a world championship.

Years later, Kathy was named to the Order of Canada, and Dr. Tile recalls she was the first person to reach out to him when he himself was named to the distinguished hall in 2009.



ARE TWO SURGICAL PLATES BETTER THAN ONE?

As the Marvin Tile Chair in Orthopaedic Surgery, Dr. Albert Yee is passionate about supporting the next generation of leaders. Funds from the Chair support four researchers, including Dr. Ujash Sheth, who is leading a new trial investigating novel approaches to repair collarbone fractures.



Dr. Ujash Sheth conducted a first-of-its-kind study.

Orthopaedic Surgeon Dr. Ujash Sheth is leading a promising trial that has the potential to change how collarbone fractures are treated.

Currently, when surgeons are tasked with repairing a broken collarbone, they typically use a single large plate to stabilize the bone. While effective, that plate can be painful and irritating, and often requires a second operation for related symptoms.

“Despite technological advances in implant design, nearly one in four patients with a surgically fixed collarbone ultimately undergoes removal of their implant,” says Dr. Sheth.

A growing body of literature has demonstrated that using two smaller plates may work better, but more research is needed, which is why Dr. Sheth and his team conducted the first study of its kind into the effectiveness of the two approaches.

The resulting clinical trial is nearly complete and the early returns are so promising that the results have attracted the attention of three other hospitals.

Potential for Canada-wide study

To Dr. Sheth, the appeal is obvious: “Lowering the risk of plate removal would greatly improve our patient comfort experience,” he says.

Now Dr. Sheth and his team are leveraging donor funding to secure support to expand the study to more participating hospitals in Canada.

In a review published in *The British Elbow & Shoulder Society*, Dr. Sheth highlights information that he hopes will inform the rest of the trial.

The review demonstrated that two smaller plates provide adequate stability and can lead to similar bone healing as a larger single plate, while having a significantly lower risk of re-operation.

Comparing post-surgery outcomes

The trial isn’t Dr. Sheth’s only promising research venture.

Dr. Sheth helped establish the Sunnybrook Orthopaedic Upper Limb (SOUL) Program. SOUL is spearheading a study evaluating the satisfaction of patients who are discharged on the same day of their surgery with a nerve catheter to reduce pain versus patients who are admitted to hospital for overnight observation.

Feedback from patients undergoing same-day shoulder replacement surgery has been positive.

Dr. Sheth’s work to improve fracture repair outcomes and enhance the patient care experience is all thanks to the support of the Marvin Tile Chair in Orthopaedic Surgery.

Our donor community is making a difference for patients and their families. Thank you.

THIS BLACK BOX SHINES A LIGHT

Much like how airlines analyze black box data for clues on how to improve, our teams are using recordings during surgical procedures to train expert teams.

Small cameras installed in the operating room and in surgical lights can continuously record audio, video, patient vitals and X-ray imaging for teaching purposes. Installation of this technology was made possible thanks to leadership investment from the Wyss Medical Foundation. All data is protected with privacy-safe software.

Recording hip fracture surgeries is the first step of this initiative, led by Dr. Portia Kalun, Dr. Hans Kreder, Dr. Markku Nousiainen, Dr. Normand Robert, Dr. Albert Yee, Dr. Cari Whyne and Dr. Marvin Tile. Thus far, the team has developed an assessment framework for surgical competence and integrated the new technology in clinical and simulation operating room settings. They have also collaborated with the anaesthesia, nursing and radiation technology teams to identify champions for the development of role-specific and team-specific assessment tools.

The Sunnybrook team is also partnering in research looking at safety threats and resilience supports in the operating room with other investigators in the University of Toronto's Temerty Faculty of Medicine, supported by a federal grant of \$710,000 to expand its work.

Looking ahead

The team will soon develop assessment tools to collect comprehensive metrics that capture team performance from the data collected in the clinical OR and look at their relationship to patient outcomes.



Members of the Holland Bone and Joint Program, from left, Drs. Cari Whyne, Markku Nousiainen, Portia Kalun and Normand Robert in the simulation OR.

“ Our anticipated results will help establish best practices for delivering expert care to all orthopaedic patients.”

– Dr. Cari Whyne, Director of the Holland Bone and Joint Research Program

USING AI TO IMPROVE POST-SURGICAL CARE

As the Feldberg Chair in Spinal Research, Dr. Joel A. Finkelstein is using machine learning to better understand why the path to recovery is different for everyone.

Dr. Joel A. Finkelstein knows a successful spinal surgery is just one part of the journey toward recovery. His research focuses on what impacts a patient's rehabilitation after they leave the operating room. With the support of the Feldberg Chair, Dr. Finkelstein and his team are leveraging machine learning to improve outcomes.

The role of mental health in recovery

When Dr. Finkelstein and his team used a scoring system to measure outcomes in spinal surgery, they found patients who score high in terms of physical function don't necessarily score as high in terms of their overall satisfaction with their recovery.

To examine why, they are using machine learning to populate patient appraisals before and after spinal surgery, to figure out possible causes, such as a "low mental health score." Dr. Finkelstein presented this promising work at the International Society for Quality of Life Research in Oct. 2023.

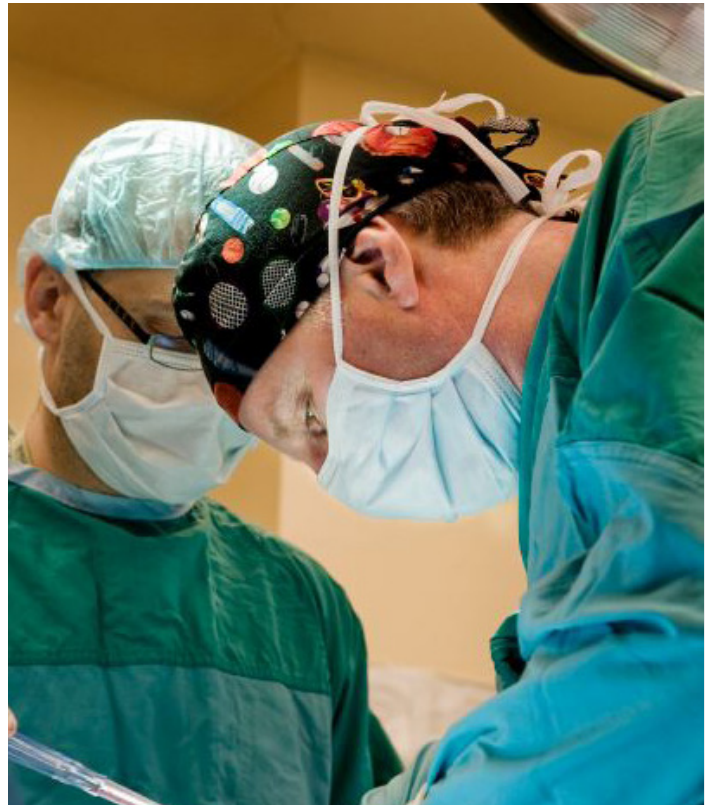
How virtual reality personalizes care

Thanks to support from the Feldberg Chair, the next phase sees surgical residents gaining access to a surgical simulation program that uses virtual reality (VR) to customize treatment plans.

"The software offers patient-specific simulation exercises, which can be personalized ahead of surgery," explains Dr. Finkelstein. "We can create the same pathology and spine anatomy based on an individual patient's CT and MRI scans."

Donor support was key to the funding received by the Holland Bone and Joint Program through INOVAIT, a pan-Canadian network focused on image-guided therapy and artificial intelligence and hosted at Sunnybrook Research Institute.

This work is being conducted in partnership with Luxsonic Technologies, a company dedicated to developing immersive technologies for medical education, training and healthcare delivery.



Dr. Joel A. Finkelstein in surgery.

Results from pre-and post-testing of residents' knowledge showed that VR simulation improved their understanding of anatomy.

The 3D animation allowed the trainees to interact with and explore anatomy more effectively.

Other emerging technologies

Dr. Finkelstein has completed training with VUZE, an advanced image-guided software for minimally invasive spinal surgeries.

"It uses real-time X-ray navigation and enables cross-sectional images that aren't yet possible with current approaches," he says. "We're very excited as we await Health Canada approval."

Dr. Finkelstein completed the training in Germany, and orthopaedic surgeon Dr. Jeremie Larouche will train on it next.

INTRODUCING THE INAUGURAL HOLLAND CHAIR IN MUSCULOSKELETAL CLINICAL RESEARCH

Jessica Widdifield, PhD, is focused on improving the health and quality of care for Canadians with arthritis and other musculoskeletal disorders.

In May 2023, Jessica Widdifield, PhD, was appointed as the Holland Chair in Musculoskeletal Clinical Research.

As chairholder, she will continue to advance her research as a Senior Scientist at Sunnybrook Research Institute and as an Associate Professor at the University of Toronto in health systems policy, management and evaluation, in the area of musculoskeletal health and arthritis.

In years past, we have shared how the transformational gift from Susanne and William Holland has allowed not only for the development of novel techniques and devices, but also ensured Holland Bone and Joint Research Program Director Dr. Cari Whyne could recruit the brightest and most promising scientists.

Dr. Jessica Widdifield is one of them. Known for her multidisciplinary approach to research, Dr. Widdifield's research program focuses on providing real-world evidence to enhance patient care and outcomes, health-system efficiency and sustainability for rheumatic and musculoskeletal diseases across the care continuum.

She is a passionate advocate for improving arthritis care locally and nationally, by drawing attention to gaps in care and the current human resource crisis affecting arthritis specialty workforces.

One of Dr. Widdifield's goals is to accelerate how quickly patients can receive a diagnosis and treatment in order to prevent disease progression before joint damage can occur.

With physician shortages all across Canada, many patients are not receiving timely treatment which is negatively impacting patient outcomes.

“A key strategy to improve access to care and strengthen arthritis specialty workforces – including rheumatology and orthopaedics – is the integration of allied or interdisciplinary health providers with advanced training in arthritis care.”

In April 2023, Dr. Widdifield leveraged donor funding to secure a \$2-million grant from the Canadian Institutes of Health Research to guide the successful spread and scale of interdisciplinary models of rheumatology care province-wide in order to create a health system that will be more sustainable for the future.

“Re-designing the model of arthritis care in the community will hopefully help to alleviate pressures on hospitals and keep patients healthy; but also improve patient and provider experience, reduce health system costs and improve health equity,” she says.



Dr. Jessica Widdifield is equally dedicated to training the next generation of leaders.

Regenerating muscular tissues

As the body ages, its tissues begin to deteriorate. With donor support, Scientist Wilder Scott, PhD, is aiming to develop methods to enhance stem cell activity that will maintain the condition of musculoskeletal tissues over time and improve healing after injury. He is the newest recruit to the Holland Bone and Joint Program.

“Thanks to donors, I have the opportunity to investigate and enhance the healing and maintenance functions of the body,” says Dr. Scott. “The Holland Bone and Joint Program is the ideal place to make these discoveries because of its highly collaborative nature where research can be guided by, and therefore best serve, patient needs.”

Standardizing virtual rehab care

Advanced Practice Physiotherapist Dragana Boljanovic was thrilled to receive the Susanne and William Holland Award for Allied Health Professionals. She is adapting rehab delivery with the use of video calls. The results were impressive: 95 per cent of participants indicated that they were very satisfied with the virtual rehab format. Dragana’s efforts were recognized this year as a leading practice by Accreditation Canada.

The power of same-day surgery

While the typical hospital stay for a total joint replacement surgery at the Holland Centre is about a day and a half, we offer same-day surgery to eligible patients thanks in part to donor support for innovative techniques. Determining whether a patient is a candidate for same-day hip replacement surgery requires careful collaboration between the surgical and follow-up post-surgery teams. As a Centre of Excellence for hip and knee care, our priority is to provide patient care with safety top of mind. For the right patient, same-day joint replacement is one way to do that.



Our care team knows people often want to recover at home as soon as they can.

That’s what we did for Michael Hadju, who had a hip replacement and was home in time for an early dinner following surgery, recovery, an X-ray of his new hip and some rehab with a physiotherapist.

This is just one of many ways we are innovating care.

Collaborating to reduce wait times for hip and knee surgery

In April 2023, Sunnybrook's Holland Centre and Michael Garron Hospital teamed up to launch the Toronto Regional Arthroplasty Collaborative (TRAC) to help reduce wait times for hip and knee joint replacement surgery in the province.

By opening its operating room on weekends, the Holland Centre is providing pre-scheduled access to orthopaedic surgeons from other TRAC partnering hospitals, including Mount Sinai and St. Michael's Hospital, who joined the initiative in June 2023. "Our goal is to increase capacity to make hip and knee surgery more accessible," says Dr. Albert Yee, Chief of the Holland Bone and Joint Program.

"This collaboration is expected to create an additional capacity of 1,335 surgical cases per year to reduce the current hip and knee backlog by 25 per cent in the Toronto Region by March 31, 2024," says Ru Taggar, Co-Chair of the TRAC Executive Committee and Executive Vice President and Chief of Nursing and Health Professions Executive at Sunnybrook.



Orthopaedic surgeons Dr. Paul Wong (left) from Michael Garron Hospital and Sunnybrook's Dr. Markku Nousiainen (right) outside Sunnybrook's Holland Orthopaedic & Arthritic Centre – Ontario's Centre of Excellence for hip and knee replacements.

OUR THANKS TO YOU

Donors like you make Sunnybrook special. With your generous support of research, education and patient care, Sunnybrook's Holland Bone and Joint Program is saving and changing lives. **Together, we are transforming trauma care.**