



The winter issue of YOUR IMPACT is here. In the summer, we at London Health Sciences Foundation (LHSF) introduced the new look and feel of our organization. With the rebrand now in full swing and pandemic restrictions easing, we are excited for the opportunity to get back into our hospitals to visually showcase the amazing people and inspiring work currently going on.

Inside this issue, you will be treated to a more intimate experience than ever before. From the labs innovating gene research, to the minds behind a brain and biobank, LHSF is both proud and grateful to share some of the latest developments coming out of London Health Sciences Centre (LHSC). To our donors: thank you will never seem like enough. Without you, so many of these achievements would never be possible. You are the difference.

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MESSAGE FROM THE PRESIDENT & CEO

As we mark almost another year navigating the challenges of COVID-19, the frustration of society is palpable. People want so badly to be able to put these last two years behind them. But despite what I can only imagine is a global weariness, our combined resilience gives a lot to celebrate and be thankful for.

For myself, leading London Health Sciences Foundation (LHSF) is such a privilege because I'm surrounded by a passion and endeavour to help, every single day. My colleagues and the LHSF community are an eclectic, admirable mix of individuals who want nothing more than to do good things. While that might sound simple, it is also incredibly powerful.

Consider everything we've managed to accomplish together regardless of the pandemic. Research to inform treatment is gaining momentum once again. New technologies are being studied and integrated into clinical settings. Sustained focus on the patient experience has taken shape with the introduction of specialized care staff in a variety of settings. In short, the aspirational giving of our donors has led to inspirational change at our hospitals.

In the summer publication of YOUR IMPACT, I likened our donors to a torch. People whose vision and drive are illuminating enough to escape any darkness. People with an explorer's curiosity, eager to discover.

Thinking again of a glowing fire, and with winter just around the corner, I'm also reminded of the warmth our donors provide. The warmth of support and encouragement. The warmth of compassion. A radiating generosity of spirit to restore and energize us for whatever comes next.

The path ahead is beginning to clear, though maybe not looking the way it once did. But perhaps looking back isn't the answer. What's new, what's better, what's healthier, I believe, is right in front of us. The way through is forward, and as always, the Foundation moves forward with you.

So, then, what am I thankful for, as we prepare to say goodbye to 2021? I'm thankful for the stories I get to hear. For brilliant collaborations on how to impact the world of medicine. For changing the course of people's lives.

As such, this issue of YOUR IMPACT magazine celebrates the journey we find ourselves on together. Our destination? Tomorrow. And the day after that. A future of wellness.

Yours,

John H. MacFarlane, BBA, LL.B, MPA
President & CEO
London Health Sciences Foundation



BANKING ON DISCOVERY

The crowd waits with the players below, all in formation, crouched into statues of potential energy. The centre looks left, then right. Finally, the snap. An explosion of movement ripples across the field. Dale Creighton, Western Mustangs' all-star fullback, takes off in his headlong fashion. He lowers his head and charges through his opponents. When the play ends, he does not get up.

Dale E. Creighton was a gifted athlete, but his aggressive running style also led to 13 concussions on the gridiron. And in the 1950s, our understanding of concussions wasn't what it is today. No one considered the long-term aftershocks. Years later, during retirement, Dale started forgetting things. His behaviour changed.

Thankfully, his family noticed these signs. Together, they embarked on a journey larger than any of them anticipated. Early intervention was an important step in diagnosing Dale's frontotemporal dementia because it gave the Creightons time to prepare.

"We made a commitment to Dad's ongoing care," says Dale's son, Matthew Creighton. "If there was a study Dad qualified for, we made sure he was involved."

No treatment exists to slow or stop neurodegenerative disorders such as Alzheimer's and dementia. Furthermore, persistent injuries, such as the ones Dale sustained, can increase the risk of long-term neurodegeneration.

Dr. Elizabeth Finger, neuroscientist at London Health Sciences Centre (LHSC) and lead investigator for the Dale E. Creighton Brain & BioBank (DECBB), says those in her field are still in the discovery phase.

"There are many genetic and molecular pathologies that can give rise to neurodegenerative dementias," Dr. Finger explains. "We're trying to understand these changes."

This notion gave way to the DECBB. A collaborative effort spanning years of conversation and strategic deliberation, the DECBB is designed for people wishing to contribute to science by donating a most precious resource: their brain. Detailed clinical histories, cognitive testing and imaging results can complement and better leverage data to inform future breakthroughs.

"London's wealth of clinical programs related to neurodegenerative dementias helped the Creightons and I realize our part in facilitating the research and discovery of treatments for these devastating afflictions," Dr. Finger says.

From international studies on improving our understanding of frontotemporal dementias, to local ones using innovative technology to profile abnormalities in afflicted brain tissue, DECBB is becoming instrumental in the fight against neurodegenerative disorders. And for those who are willing and who qualify, the process of donating a brain can begin simply by visiting the DECBB online. When asked if he would donate his own brain, Matthew gives a resounding, "Yes!"

"Having two generations to study and compare would be pretty valuable in terms of continuing the clinical history," he exclaims.

Sadly, Dale passed away in 2017. However, contributing the inaugural grey matter deposited for study is testament to who he was in life. Someone committed to his family and community; who considered himself fortunate regardless of the hurdles placed before him. Fitting then, that his lasting memory is dedicated to hopefully, one day, allowing others to keep their own.

*Visit the Dale E. Creighton
Brain & BioBank to learn more!
londonbrainandbiobank.ca*

TECH SUPPORT

YOU MADE ESSENTIAL EQUIPMENT UPGRADES POSSIBLE

GENETIC SEQUENCERS & CENTRIFUGE

Thanks to the incredible generosity of the Doug and Dianne Kennedy estate toward equipment needs at London Health Sciences Centre (LHSC), genetic sequencing at the Verspeeten Clinical Genome Centre (VCGC) received a significant boost. This thoughtful gift enabled two next-gen sequencers and one centrifuge unit to be acquired for VCGC.

With VCGC beginning to accommodate large gene panels, these sequencers have had a wide-ranging impact at LHSC. In fact, the Kennedys' legacy has also started to help fulfill the vision of the Baker Centre for Pancreatic Cancer by providing the technology allowing every eligible person diagnosed with pancreatic cancer to be sequenced. Highly lethal with no known cure, genetic mapping will increase our understanding and improve our ability to offer more personalized treatment options for those suffering from this devastating illness.

ENDOSCOPIC ULTRASOUND

Our donors know believing is seeing. Take, for example, the Baker Centre for Pancreatic Cancer's latest imaging acquisition: an endoscopic ultrasound (EUS).

An EUS emits high-frequency sound waves capable of creating incredibly precise renderings of the pancreas. This technology has proved to have higher success at detecting early pancreatic tumours. With pancreatic cancer being one of the deadliest, early detection is vital. Thanks to donors, this equipment is already helping build a genetic database to inform care solutions now and in the future.

LINEAR ACCELERATOR

Thanks to donor support, the London Regional Cancer Program at LHSC purchased a linear accelerator (LINAC). As a machine designed for radiation treatment, the LINAC is perfectly geared toward personalized care.

This next-gen technology can customize its beams of high-energy x-rays to the shape of a patient's tumour. Precision targeting allows cancer cells to be destroyed while preserving the surrounding healthy tissue. Donor funding has been essential in providing LHSC the ability to tailor treatment to the individual, as opposed to the one-size-fits-all approach, which is inconsistent with our current understanding of cancer.

UNLOCKING ACHIEVEMENTS:

LHSF DELVES INTO DIY FUNDRAISING



Kris Bannerman

Become a Hero of Health today! Learn more about LHSF's DIY Fundraising! lhsf.ca/diyfundraising



Movember. Batkid. The Ice Bucket Challenge.

Give people a compelling story and a reason to act—it's about turning hope into something tangible. And because both communication and philanthropy rely heavily on connections, we've seen an explosion of Do-It-Yourself (DIY) fundraising efforts pop up in the digital space. Some fizzle into obscurity, whereas others go viral, suddenly swept up by social consciousness and inspiring the world.

"Today's fundraisers want to do things the way that works best for them," says Erin Pierce, development officer for community events at London Health Sciences Foundation (LHSF). "The DIY model offers a flexible and customized approach to raising money."

Before COVID-19, LHSF had already been exploring the DIY platform, and despite the pandemic, people still dedicated themselves to making a difference, they just had to get a little bit creative. Take local musician, Martin Vish, for example, who live-streamed his talents through LHSF's online platform.

"It's a great format to reach a lot of people," Martin says.

A year after her cousin, Julie, lost her battle with cancer in 2019, Kris Bannerman wanted to commemorate her legacy. However, lockdown restrictions made it impossible for the family to get together in person. This prompted Kris to organize a virtual yoga fundraiser with LHSF in support of cancer care at London Health Sciences Centre (LHSC). By the time she came out of her resting savasana, Kris had raised \$4,800.

"Doing a DIY fundraiser with LHSF was easier than you could ever imagine," Kris says. "The whole team rallies around you. They helped me turn Julie's love of yoga into something meaningful."

Similarly, Jukka Schotter completed his own DIY campaign. In memory of his mother, Gabi, who passed away from pancreatic cancer, Jukka chose to hike the entire 900 kilometres of Ontario's Bruce Trail. Leaving Niagara at the end of May and finishing in late June,



Martin Vish

his trek raised over \$50,000 for LHSC's Baker Centre for Pancreatic Cancer.

"That shows you the power of fundraising in the digital age," says Lindsay Manz, director, events and community engagement at LHSF. "There are so many different audiences you can tap into now."

LHSF has even been exploring the realm of streaming. As part of its Heroes of Health initiative, the Foundation recently incorporated Twitch to try new and exciting fundraising opportunities. This extension will help unlock some of the most difficult achievements in modern day medicine.

"The possibilities are endless," Lindsay continues. "It lets people use their passion to support health care in London."

In fact, Twitch is more than World of Warcraft raids and battle royale tournaments. Podcasts, cooking shows, crafting, as well as sports and fitness are among the many other avenues one can turn to enjoy original, user-generated content. Lindsay and Erin say they've only skimmed the surface of streaming, but they also point out how LHSF's Heroes of Health Stream-a-Thon raised over \$70,000 toward COVID-19 relief in April, 2020.

LHSF knows with great fundraising comes great power. The power of discovery. The power of next-gen upgrades. The power to save a life. So, let's plug in, suit up and stream on.



**YOU MAKE A
DIFFERENCE**

TIMING IS EVERYTHING: NEW RESEARCH TO REVOLUTIONIZE DIALYSIS TREATMENT

People occasionally compare groundbreaking discoveries to science-fiction, but ideas have to start somewhere. This particular idea can trace its roots to the UK when Dr. Robert Lindsay first found himself fascinated with extracorporeal circulation—where blood is taken from an individual, processed and returned to them.

Despite being labelled a life-saving treatment, the mortality rate of people undergoing conventional dialysis is staggering. Approximately 60 per cent of patients who start dialysis pass away in five years. But according to Dr. Lindsay, Professor Emeritus at Western University and nephrologist at London Health Sciences Centre (LHSC), it's not dialysis in and of itself that's the problem, it's the intermittency of treatment.

Dr. Lindsay explains time and frequency are key elements toward improving longevity. Because of the amount of fluid and toxins that build up between treatments, a strain is placed on the heart. Trying to aggressively remove these during dialysis can cause heart and organ injury. Together, these processes lead to cardiovascular and organ disease, and eventually death.

This led Dr. Lindsay to run a study in the early 2000s, which suggested more frequent treatments with improved fluid balance would provide better outcomes and overall quality of life. These results helped daily and nocturnal dialysis become OHIP-funded treatments widely used by patients dialyzing at home today. However, less than 10 per cent of hemodialysis patients in Canada are dialyzing at home.

"How then," Dr. Lindsay wondered, "could we improve the lives of those still getting conventional dialysis?"

Thus, the idea for a wearable artificial kidney (WAK) was born. Designed to be used on non-dialysis days, this large vest houses a system to remove fluid and some toxins via slow continuous ultrafiltration

(SCUF). The SCUF-WAK could be used doing groceries or getting gas, all the while increasing toxin removal, preventing the build-up of fluid and eliminating the need for aggressive fluid removal during dialysis. In some patients it could even reduce the number of weekly treatments.

But Dr. Lindsay and his team needed funding. A combination of grant money and awards got them started until something unexpected happened.

"London Health Sciences Foundation sent me a letter to say there was a patient of mine who had made a generous donation," Dr. Lindsay says. "They wanted me to know how important they thought our work here was. It was unbelievable. I'm still so thankful."

Dr. Lindsay's device has also caught the eye of Dr. Chris McIntyre, director of the Kidney Clinical Research Unit (KCRU) at LHSC, and Lawson's 2020 Scientist of the Year. His mission to improve hemodialysis includes the WAK for several upcoming studies. A clinical trial for the SCUF-WAK vest is set to begin soon.

The fires of thought are driving Dr. Lindsay and the entire KCRU team forward. Innovative research and collaboration have been essential to maintaining their reputation as leaders in the field. For now, we stand on the cusp of a revolution in care for people requiring dialysis, where new ideas are already cresting the horizon.



Dr. Robert Lindsay

CENTRE FOR TOMORROW

There are six billion letters in the human genome, each one coded for a particular message within our DNA.

Beginning as a global endeavour mere decades ago, it took 20 labs, seven countries and an estimated one billion dollars to sequence the first human genome. Now, with today's technological advancements along with our increasing ability to understand connections between changes in the genome and human disease, the Verspeeten Clinical Genome Centre (VCGC) at London Health Sciences Centre (LHSC) is breaking barriers to allow for a more seamless integration between research and the clinical application of genetic sequencing.

The first centre of its kind in Canada, VCGC was born from the serendipitous coming together of concept and capacity. Quiet philanthropist, Archie Verspeeten, founder of Ingersoll-based Verspeeten Cartage, was looking for more ways to help wipe out cancer. Thought leaders at LHSC were exploring ways of establishing a genome research centre. Each represented the means to the other's end.

"There was a common need to not only provide better access to care for local patients affected by cancer, but to synchronize the efforts of oncology, pathology, diagnostics and genetics to achieve this," says Dr. Bekim Sadikovic, VCGC's scientific clinical director.

Through the establishment of the VCGC, the scope of genomics in London, Ontario grew, and with it, the branching possibilities that come with progress. Boasting a translational research model, VCGC embodies a vision of streamlined, coordinated and integrated innovation between clinical and research groups.

"Translational research accelerates the application of new discoveries and new areas of testing into routine clinical standards of care," explains chief laboratory officer at LHSC, Dr. Mike Kadour. "It's the difference between waiting three to five years for translating research versus same-year translation in this more collaborative approach."

A key innovation enabled by the VCGC is the implementation of precision medicine—treatment or therapy tailored to the individual down to the molecular level—which helps inform in-the-moment care decisions. It's practical.

"Patients really value information coming back that can help them," says Dr. Stephen Welch, medical oncologist and chair of the division of medical oncology at LHSC. "While receiving treatment, they are actively contributing to the research responsible for informing their care."

And while it may not quite be real-time, it's pretty close. Dr. Glenn Bauman says information gleaned here allows physicians to get ahead of the curve and start exploring molecular markers pertinent to the needs of individual patients. However, with the future being so dependent on the present, sights aren't only set on the here and now.

"Discoveries may reveal new information for us to use down the road," Dr. Bauman says. "This centre allows us to be nimble and forward-looking."

Indeed, VCGC represents a unique learning opportunity. Jenn Masters, LHSC's director of molecular diagnostics, says as a budding researcher she would have jumped at the chance to be involved in such cutting-edge investigations.

"VCGC is a space for us to grow and develop the next level of thinkers," she says. "It changes the scope of everything: how you think, how you approach problems and how you solve them."

Already, the team is starting to look beyond the genome to the epigenome. Regarded as the new frontier in molecular diagnostics, epigenetics refers to chemical signatures and modifications of the genome itself

that play crucial roles in the function of the genome both in health and disease.

"VCGC was the first centre in the world to develop epigenomic profiles for common hereditary disorders," Dr. Sadikovic says proudly. "By establishing an international network of collaborators as well as advanced methods of interpreting the data, we've become a leader in epigenomic testing."

With learning and innovation being key drivers behind VCGC, scientists here are now in the process of developing epigenomic technologies to diagnose different types of cancer. These tools will come to constitute more world-firsts for the centre. But to maintain this momentum, the team says investing in personnel is high priority. In fact, as the reputation for its world class research grows, VCGC has quickly become a magnet for the change-makers of tomorrow.


As for the patients themselves, who are living in the face of such stark odds characteristic of their illness, new research means new possibilities. And if even just one of those possibilities can extend or improve their quality of life, it will have been worth it. It's the opportunity to get better, to overturn another stone along the path to wellness. It's seeing light despite the darkness. Because after all, that's what VCGC is: it's hope.



Dr. Mike Kadour



Jennefer Masters

Visit LHSF's YouTube channel [youtube.com/LHSFCanada](https://www.youtube.com/LHSFCanada) today to get a virtual tour of VCGC and other amazing programs at LHSC 



Dr. Bekim Sadikovic



Dr. Stephen Welch



SAYING GOODBYE IN THE AGE OF CORONAVIRUS

Samrah Rashid loved her uncle. Most people who met him did. To him, community was more than a word, it was a creed in which one took an active role improving the world around them. And as an energetic, healthy 65-year-old, no one, certainly, would have thought they'd be saying goodbye so soon. But for the millions of people affected by COVID-19, the unthinkable was their most sudden reality.

In April, 2021, Saeed-Ul Hassan tested positive for COVID-19. Midway through Canada's third wave of the pandemic, the virus was relentless. Samrah remembers the shock of learning about her uncle's diagnosis.

"It was two days after his birthday," Samrah says. "I have no idea how he contracted COVID. He never left his home."

Initially, Saeed was taken to Credit Valley Hospital, in Mississauga. But as his condition worsened, he was put on a ventilator and transferred to London Health Sciences Centre (LHSC). Since public health restrictions limited visitors, only a single member of his family was able to see him in hospital, one time.

However, Saeed's family never felt out of touch. Thanks to LHSC's COVID-19 Relief Fund, supported entirely by donors of London Health Sciences Foundation (LHSF), some 50 iPads were purchased to keep patients connected with their loved ones during the pandemic. Samrah commends the nurses' attention to detail.

"Before going on FaceTime, they would always make sure his hair was brushed and his face was shaved. He always liked to be clean-shaven."

As the end drew nearer, Saeed's nurse let the family know whoever was around to say goodbye, now was the time. Samrah arranged everything, and from 5:00 a.m. until 11:21 p.m. on May 21st,

more than 70 people from around the world were able to pay their respects to a man who'd been such an influential figure in their lives.

"People were coming out of the woodwork," Samrah says, still in awe. "Some told stories about first meeting him in the '80s or how he'd helped them get their SIN card when they first came to Canada."

As night fell, it was time for immediate family members to come together. First, Saeed's son spoke, then his daughter. Finally, his wife, who'd selected a prayer from their Holy Book. It was a prayer of oneness; of the departure from one world and the return to another. And at the prayer's very last word, Saeed passed away peacefully, with all who loved him seeing him off.

"I can't even begin to explain how tremendous it was having these iPads," Samrah says. "I'm eternally grateful my family was able to have those last moments with him."

For the donors of LHSF, who know the importance of connection and support, the COVID-19 Relief Fund was a natural response to one of the greatest challenges of the 21st century. For Samrah and her family, it was a chance for togetherness despite the distance; to celebrate the life of a man who dedicated himself to goodness and compassion, one last time.

KEEPING A FINGER ON THE PULSE WITH

CARDIAC CARE

Dr. Habib Khan walks into the Cardiac Care conference room, having just come from clinic. He pulls a wheeled container behind him the size of a steam trunk. Off his left shoulder hangs an overstuffed laptop case. After some initial greetings and introductions, Dr. Khan, assistant professor of cardiology at Western University, starts setting up at the far end of the conference table.

He pops the latches on the protective case and pulls out a monitor slightly larger than a laptop. Next, he plunks down a jumble of wires, plugging some ends into the monitor and attaching others to our volunteer test subject. No sooner does Dr. Khan input the "patient's" stats, when a series of blips bounce to life and scroll across the screen.

"This is the Finapres," Dr. Khan says. He points at the digital readout and says things like "plethysmogram," "ECG tracing" and "biphasic arterial pressure."

"The clever thing about this machine is it constantly measures your blood pressure on a beat-to-beat variation," Dr. Khan says. "You can use it for automatically calculating cardiac output, and has many applications in the acute and chronic management of heart failure, arrhythmias or device implants."

Dr. Khan says the Finapres can accurately measure the autonomic nervous system's effect on the heart simply by measuring blood pressure. As a fast, precise and less invasive way of measuring cardiac output, there's no need to have a cardiologist or anyone specifically trained to use the machine. While it's not exactly plug and play, it's not far off.



Dr. Habib Khan

"This will replace more invasive measurements in places like the coronary care unit or in procedure rooms," Dr. Khan says. "You just stick the finger pressure cuff on and you're ready to go."

From monitoring blood pressure responses in patients with advanced pacemakers, to the development of a syncope clinic, where he'll study those who inexplicably lose consciousness, Dr. Khan eagerly points out its usefulness.

Then there's research, which the electrophysiologist says is a completely different ball game. Investigations are underway to examine autonomic dysfunction in patients with cardiac arrest in hopes of better informing treatment. In addition, he's out to find alternative methods of achieving the benefits of cardiac resynchronization therapy (CRT).

"I want to prove left bundle branch area pacing improves heart function similar, if not better, to CRT," he says.

Having only joined London Health Sciences Centre in the last year from the UK, Dr. Khan finds himself awestruck at the generosity of donors, some of whom helped fund the Finapres. But acquiring new technology and endorsing leading-edge research is all part of London Health Sciences Foundation's master plan.

"I've never experienced fundraising efforts like what comes out of the Foundation. It's absolutely incredible."

As he packs up his equipment, Dr. Khan shares a couple lighthearted chuckles. He's double- and triple-booked himself for meetings. The Finapres is needed elsewhere. He'll have to shuttle it across town.

He is proof there is no research without action.

BECAUSE
YOU
BELIEVE,
OTHERS
THRIVE

COVID-19 STATISTICS

On October 22, 2020, Dr. Douglas Fraser, pediatric critical care physician at London Health Sciences Centre (LHSC) and scientist at Lawson Health Research Institute, shared his incredible findings from an estate gift-funded COVID-19 study, and has since been “cited” the most of any COVID-19 researcher worldwide. Now, one year later, Dr. Fraser was able to share even more ground-breaking statistics from LHSC’s COVID-19 research department:



24 clinicians/
scientists



19,941 COVID-19
patient samples



5,000 COVID-19
patient transports



\$2 Million+ in funding



18 scientific research
publications



1 innovation
award

THE ART OF LIFE SUPPORT: DONORS HELP BRING MORE PERFUSIONISTS TO LHSC

Unless you've experienced it first-hand, it's likely many of us take heart surgery for granted. But consider for a moment, the role of our heart, continuously pumping blood through our bodies to provide our brain and organs the necessary oxygen and nutrients. Now, imagine stopping it long enough to be operated on or replaced altogether, and somehow still being kept alive. This is where perfusionists come in.

With an array of screens, pumps and tubes to monitor, perfusionists manage the device which essentially steps in as a person's heart and lungs during cardiac surgery. However, Canada finds itself facing a drought of perfusionists.

"There's always been a limited number of perfusionists across the country," says Chris McKay, clinical perfusionist at London Health Sciences Centre (LHSC). "But as people retire, or find positions closer to their hometowns, LHSC has seen an exodus of these specialists over the last five years."

Anticipating what lay over the horizon, LHSC's interim director of cardiac care, Rachel Rushton, along with Chris, sat down with their team to discuss strategies for combatting the shortage. Together, they chose to create an initiative to sponsor individuals who enrol in the cardiovascular perfusion program at the Michener Institute of Education.

"Michener only has about 15 seats with hundreds of applicants every year," Rachel says. "It's incredibly competitive."

After receiving financial support toward tuition and auxiliary fees, graduates of the program commit to four years at LHSC. Funded entirely by donors of London Health Sciences Foundation (LHSF), the first intern is set to graduate in spring 2023. And recognition of this need is growing, as more donors have shown interest refilling the pool of perfusionists at LHSC.

"There's always a perfusionist and a backup perfusionist for every case involving heart surgery," Rachel explains. "We really need to build a robust, local workforce to help improve the work/life balance."

Apart from the heart-lung machine, perfusionists are responsible for initiating and maintaining any ventricular assist device (VAD): heart pumps implanted into a patient temporarily while they await surgery or therapy. And should someone experience excessive blood loss during surgery, a perfusionist is brought in to help salvage, wash and return it to the patient. In short, without them, the cardiac surgery program simply couldn't function.



Chris McKay

Chris says, after 21 years, she still feels the rush of adrenaline when she's assisting with surgery. It's about keeping patients alive while at the same time providing surgeons with an environment conducive to a successful procedure.

"There's no other feeling like saving another person's life," she says, her voice infused with the passion of someone who loves their job.

The unsung heroes of cardiac surgery, perfusionists are masters of manipulating blood flow. And as demand outpaces the number of individuals qualified to provide service, wait times will lengthen and the standard of care will suffer. What's needed now is to increase the flow of personnel coming into the department because when it comes to the art of life support, balance is everything.

I, CORI

THE COMING ROBOTICS REVOLUTION IN ORTHOPAEDIC SURGERY



Dr. Douglas Naudie

It's difficult to overstate the impact technology has had on health care. As our understanding of the natural world continues to advance, innovative minds help translate these new insights into practical applications. But as we move further into the 21st century, technologies are being adapted to fit various specialties and subspecialties of medicine.

In the realm of orthopaedics, for example, the development of highly cross-linked polyethylene was a game-changer for hip and joint replacements in the early 2000s. To illustrate the scope of orthopaedics at London Health Sciences Centre (LHSC), of the 17 operating rooms (OR) at University Hospital, three to four are dedicated to joint replacement surgery every day. As such, efficiency and accuracy are crucial ingredients to meeting the high demand for service.

"Without a doubt, the future of orthopaedics is robotics," says Dr. Douglas Naudie, orthopaedic surgeon at LHSC.

Enter CORI, the latest addition to the orthopaedic surgeon's toolkit at LHSC, and funded through a generous donation to London Health Sciences Foundation. Short for Core of Real Intelligence, CORI is a handheld, portable and intuitive system designed for robotic-assisted surgery.

"Early studies have shown robotic-assisted knee-replacement surgery leads to improved accuracy and clinical outcomes," Dr. Naudie explains.

For the past year, LHSC's orthopaedics team has been doing their due diligence, evaluating CORI in saw bone and cadaveric specimens to prepare them for clinical use. What makes this particular robot unique is its ability to provide real-time feedback. Other systems on the

market require a preoperative CT or MRI scan to landmark a patient's anatomy, making the road to surgery slightly more cumbersome.

"With CORI, we can actually digitize anatomic landmarks and create a model of the knee at the time of surgery," Dr. Naudie says. "We can then adjust sizes, angles, alignment and rotation to execute the plan with a very high level of accuracy."

Built-in fail-safes also work in conjunction with the digital mapping software. With the operating area entered into the computer, the handheld milling tool can only function where allowed. Dr. Naudie demonstrates by trying to cut outside the designated field on a sawbones model: nothing happens. It's like being given a paintbrush that can't paint outside the lines.

The combination of precision and real-time data is invaluable in CORI's capacity to improve patient outcomes. And when it comes to including cutting-edge advancements such as this to our hospital's ORs, Dr. Naudie recognizes the importance of donor support.

"We are always striving to be the best, but our ability to adopt emerging technologies is only possible with the generous donations we receive through the Foundation," he says.

The orthopaedics department at LHSC is approaching robotics with cautious optimism. By taking the time to study objectively and understand fully the extent these systems will play in their ORs, the team is focused solely on providing the best care possible. They want to optimize not only the tools but the process as well, ensuring they're well-prepared for the future when it gets here.



**YOUR
IMPACT**



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