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MESSAGE FROM THE PRESIDENT AND CEO

I'm sure all of us have done it at some time in our lives—searched for something, like our keys or our sunglasses, going from one room to another, when suddenly, we forget what we were looking for altogether. It's called the doorway effect: a subtle psychological shift when we cross from one space into another, causing us to forget what we were doing to begin with. But what if some doors don't make us forget but instead help us remember who we are or who we are fighting to become?

Hundreds of thousands of people pass through the doors of London Health Sciences Centre every year. That's hundreds of thousands of struggles; fights; hopes of overcoming whatever it was brought them seeking care. The thing is though, is no one ever wants to go to the hospital, not unless they have to, and sometimes not even then.

Hospitals make us vulnerable. Or rather, they reflect our vulnerability back at us like those funhouse mirrors that show us things we don't want to see. But face them we must. And it's in these moments of reflection, when confronting our mortality, our humanity, we find our true strength.

Beyond the doors of the hospital lies perspective. We are reminded of what matters most in life, how time is never guaranteed and the number of opportunities available to us every day, if only we take them. Which is where our donors come in.

Through compassion, through vision, through the simple yet always effective desire to help, donors create opportunities—new doorways for others to pass through in hopes of embracing life in all its challenges and triumphs. They are another kind of reflection, one which shows us we are not alone in this life. One that reveals our fight to be deeply personal on the one hand, yet on the other, not necessarily unique.

Because in this life, we all must fight. For every breath, every step, we fight. And it's worth remembering why it is we fight. Is it base animal instinct? Are we waiting out the clock? Or is there something more? What more do we want of life?

That's the door only you can open.

Yours,



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



IN PERSPECTIVE

A note from the editor

Stepping into the world of medical imaging feels a little like peering behind the curtain of the universe itself. We get to witness the astonishing detail of the microcosmos—the cells, atoms and sparks of life hidden deep within us—mirroring the galaxies and vascular nebulae branching light years away.

As part of the creative team for London Health Sciences Foundation, I count myself privileged to get a peek behind that curtain of care. To listen to those whose lives have been altered in profound ways and set back on course. To learn from innovators walking the razor's edge of discovery. And to celebrate every win, big or small, with every donor and volunteer who deems the health of our community worthy of their attention.

One of the clearest lessons I've learned here is simple: to treat, one must first observe. Doctors don't guess; they see. They find patterns. They connect what appears on a scan to everything that has come before, building knowledge from each captured moment. That's why this issue leans so heavily on imagery. Because when we see more, we know more. And the more we know, the closer we come to navigating the inner universe of the human body—shaping the very future of care.

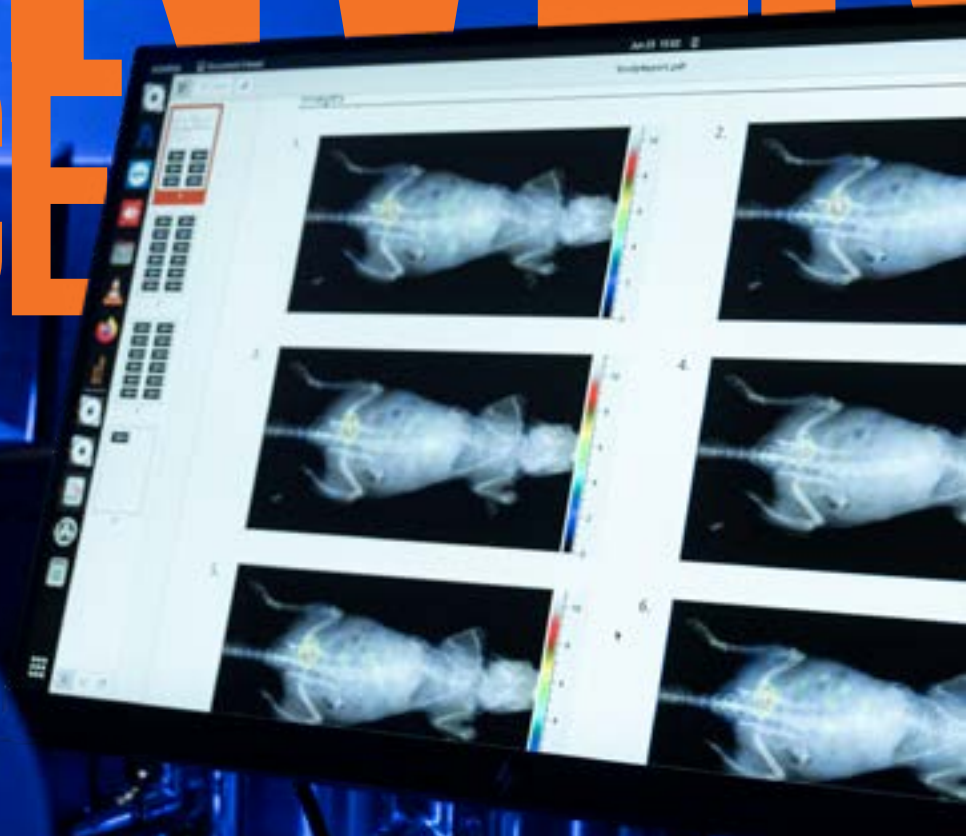
Nicholas McCallum

Senior Marketing Officer

London Health Sciences Foundation

Editor, Your Impact Magazine

CONVERGENCE



ON TARGET

At the Gerald C. Baines Centre for Translational Cancer Research, science meets precision. Using column chromatography, chemists purify compounds that can both highlight tumours and deliver targeted radiopharmaceutical therapy, turning a single discovery into a powerful tool to see and treat cancer. Breakthroughs like this are only possible thanks to donor support, which fuels the research and innovation shaping the future of cancer care.

FINDING THE INVISIBLE

DAVE RIGLEY'S CANCER WAS GROWING—BUT NO ONE COULD FIND IT.

He had already been through prostate cancer once. After receiving brachytherapy—a treatment where tiny radioactive seeds are placed inside the prostate—he went into remission.

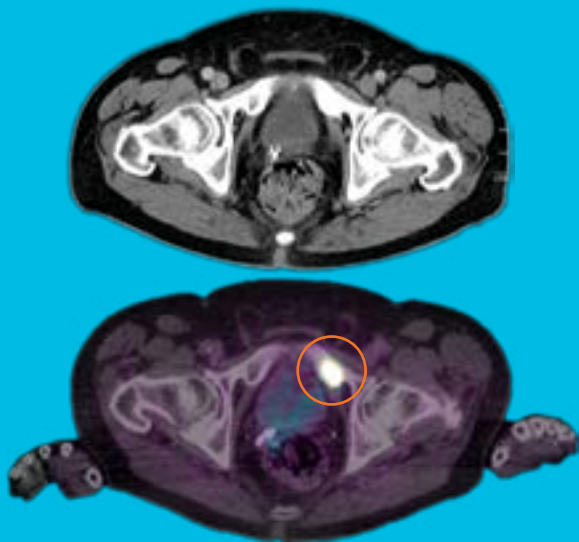
Then his prostate-specific antigen (PSMA) levels started rising again, suggesting the cancer might be back.

Bone scans, CT imaging and MRIs couldn't detect anything. But Dave could feel something wasn't right.

"How can they treat something they can't even see?" he asked.

This question brought him to Dr. Glenn Bauman, a radiation oncologist at London Health Sciences Centre (LHSC). There, Dave underwent a Positron Emission Tomography (PET) scan, which uses a specially designed substance called a tracer to bind to PSMA, a protein found almost exclusively on prostate cancer cells. Once injected, the tracer makes cancer cells light up on the scan.

In Dave's case, the PET scan revealed a small cluster of cancer tucked under his pelvic bone, which had rendered it invisible to other methods of imaging.



Top: CT scan shows no visible signs of cancer. **Bottom:** The PSMA PET scan reveals a bright white spot, showing exactly where the tumour was hiding.



"It lit up like a beacon," says Dr. Bauman. "Because it was the only visible spot in the body, we were able to target it with focused radiation. This approach spared Dave from starting drug therapies, which can come with a lot of side effects."

Bringing PSMA PET to London began with a bold research vision in 2016. Through a cross-border collaboration with the tracer's inventor and key partners in Ontario, LHSC became the first centre in Canada to offer this advanced imaging.

Since then, the hospital has helped lead a province-wide registry study, expanding access to thousands of patients and helping establish PSMA PET as part of the standard care in Ontario. Today, the PSMA tracer is one of the most widely used in the United States.

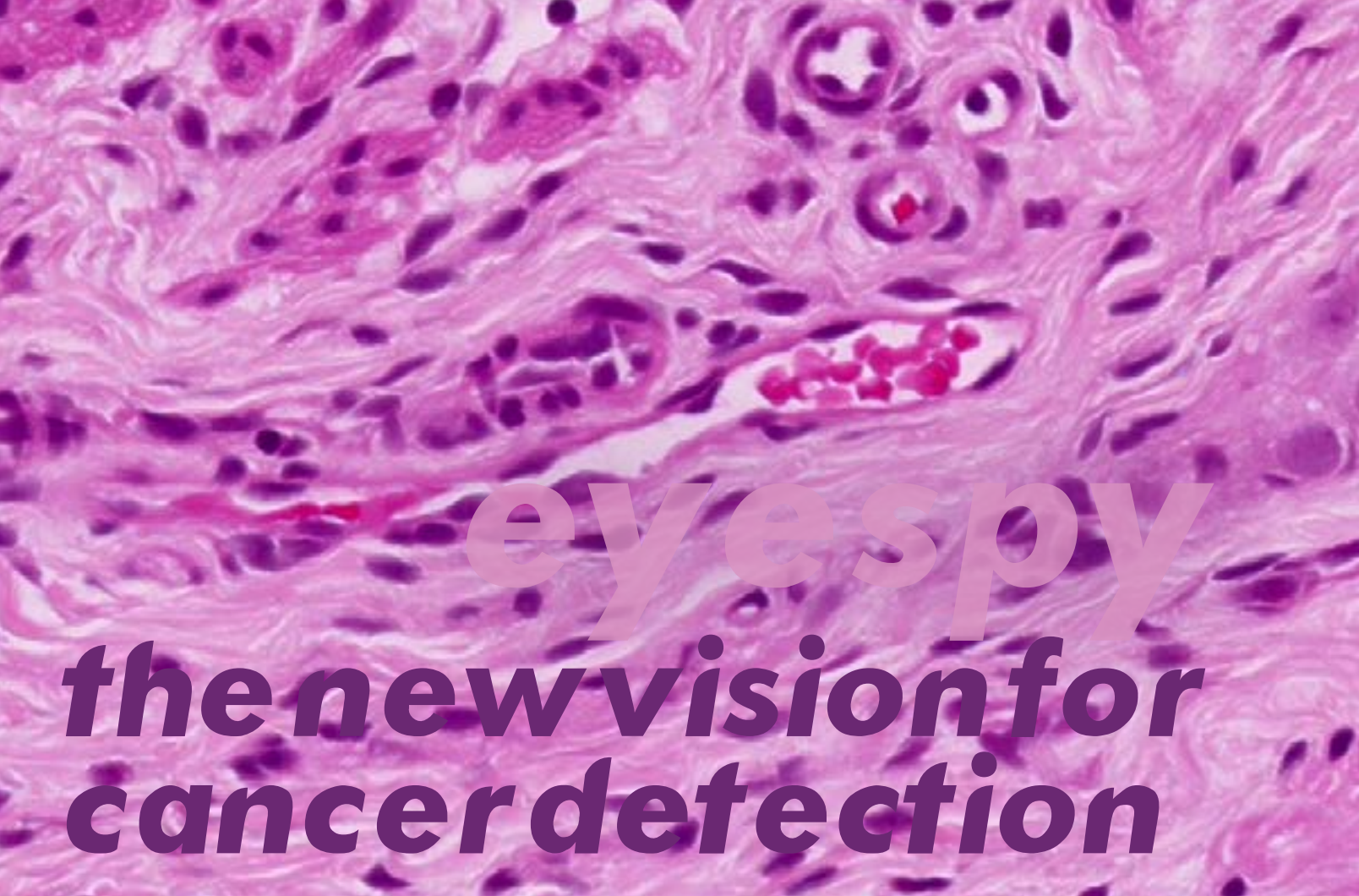
"This is the result of an impressive collaboration between two programs in London," says Dr. Bauman. "The molecular imaging team acquires and interprets the scans while the oncology team uses them to plan and deliver personalized treatment."

This kind of innovation doesn't happen without donor support. Philanthropy helped fund the project manager who coordinated the early research and navigated complex regulatory approvals. Donor dollars also made possible the advanced radiation equipment now used to precisely target cancer after it's been detected through PET imaging.

Thanks to this technology—and to the generosity behind it—Dave didn't have to wait in fear or begin treatments he didn't need.

"Without that scan," Dave says, "I'd still be waiting. Watching the clock. Wondering."

Instead, he had answers and a path forward, whereas before, there was only doubt.



eyespy

the new vision for cancer detection

We walk into a conference room on the third floor of the Verspeeten Family Cancer Centre (VFCC). At the far end of the walnut-coloured meeting table sits an open laptop. A device resembling an elongated Chevrolet logo rests at the top of the keyboard. Gamers of a certain age might think it reminiscent of the motion sensors from consoles of the early 2010s. And they wouldn't be far off.

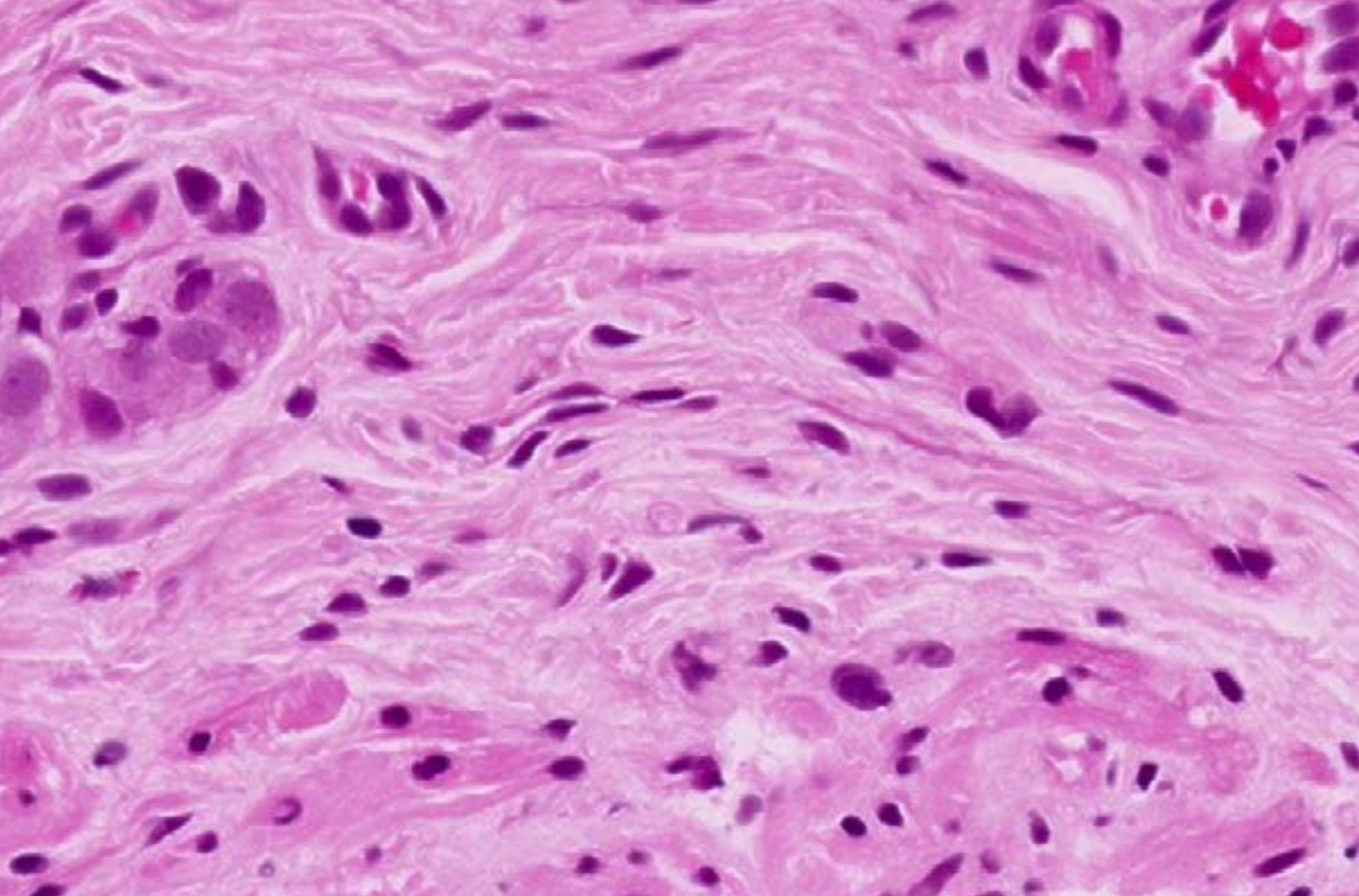
Biophysicist researcher, Dr. Aaron Ward welcomes my colleague and I in and introduces us to his student, Ryan Au, who developed this tech and has prepared a demonstration for us. Dr. Ward says they're trying to teach the next generation of physicians how to see.

How to see?

Ryan invites me to have a seat in front the laptop. He begins booting up the program. And suddenly I can't help but feel like I'm being watched.

As the machine calibrates to me, I can see my gaze get tracked across the screen. Tiny dots blip over an image, showing in real-time where my pupils are focused. The eye-tracker, Dr. Ward says, captures 150 frames per second.

This isn't just about slick graphics or flashy tools. It's about unlocking the subtle, often invisible skillsets experts use to read medical images.



“Teaching someone how to see,” Dr. Ward explains, “means training them to search for and find subtle abnormalities in X-rays, CT scans, MRIs, PET images or tissue slides. Signs of disease that might otherwise be overlooked.”

And what they’re learning is experts don’t just see differently; they search differently, too.

“So far, we’ve found expert pathologists tend to use more systematic, patterned approaches to image analysis, compared to laypeople or those without as much training,” he says. “They bring areas of concern into the sharpest part of their vision—called the foveated spot—while still being able to detect some abnormalities in their peripheral view.”

Now, by using this highly advanced AI, Dr. Ward’s team is building software that learns from this behaviour. In the future, machines could flag areas a human may have missed or highlight inconsistencies between readers.

“It’s about fusing human and machine intelligence,” he says, “so both can do what they do best.”

This fusion has real ripple effects, too. Faster, more accurate reads mean quicker diagnoses and better-informed treatment plans, especially critical in cancer care.

“The clinicians you meet in a hospital rely on what happens behind the scenes. If a pathologist’s assessment is delayed, so is treatment. If it’s wrong, treatment can be too.”

But this tech isn’t replacing experts—it’s amplifying them. And it could even help preserve their well-being. Dr. Ward says the team is studying ways for eyes to do more of the onscreen navigation, reserving the mouse for fine-tuned actions.

“If we can cut down on hand motion and reduce repetitive strain, we can help protect the people whose work protects all of us.”

A decade ago, this might have sounded like science fiction. But now, here at the VFCC, the future of cancer diagnosis might just be hiding in plain sight—right behind our eyes.



Learning by heart:

*how AI
innovation
is reshaping
cardiology
training*



It's nearing the end of the workday at University Hospital, and a conference room has been converted into a hands-on classroom with a group of medical trainees crowding around a mannequin. But this isn't any ordinary training session—and that's no ordinary mannequin.

Powered by artificial intelligence, the Echo Simulator (Echo SIM) is changing the game in cardiology education. Unlike traditional approaches to training, which rely on faculty guidance and idealized scans, this high-tech tool delivers real-time feedback, allowing learners to teach themselves how to obtain accurate cardiac images.

"In traditional simulation, an expert guides you to the perfect image. Everything is centred, crystal clear, no shadows," says Dr. Sarah Blissett, cardiologist and educator at London Health Sciences Centre (LHSC). "But real patients aren't that straightforward. The Echo SIM mimics the unpredictability and the complexity of real life."

Using 3D datasets of actual hearts, Echo SIM allows trainees to manipulate a probe in any direction—angle, depth or rotation—and instantly see the resulting image. It even compares their scan to an optimized version, pointing out if they're too far left, too high or if the probe needs to be rotated. And yes, it gives this feedback all while they're scanning.

The tool is already accelerating learning. Instead of using valuable patient time to teach basic scanning skills, trainees arrive at the bedside with hands-on experience.

"As our health-care system becomes more constrained, we don't always have room for trial and error on real patients," says Dr. Blissett. "This tool builds the foundation so they can focus on complex pathology when it counts."

Today's learners are uniquely suited to Echo SIM's tech-forward format. With spatial skills honed through gaming and comfort in digital environments, they adapt quickly and are genuinely engaged.

"It's very high-fidelity and lifelike," says one trainee. "We're used to simplified models that don't really translate. This one does."

Another describes the moment when things clicked: "When I moved the probe and saw how it changed the view of the heart in a 3D space, it all started to make sense. It's made interpreting 2D images way easier."

This isn't just good for learners; it also strengthens LHSC's cardiology program. By incorporating state-of-the-art tools like Echo SIM, the program raises the bar for training, draws top-tier medical talent and

helps ensure patients across Southwestern Ontario receive the highest level of care.

And like most significant medical innovations, donor generosity has been key here. Echo SIM was made possible thanks to philanthropic support, with additional help from the Division of Cardiology.

"There's no government funding for this kind of tool," Dr. Blissett says. "Donors make these kinds of advancements possible. They're helping us train the next generation of heart specialists, and the impact is already being felt."

For some supporters, motivation runs deep. One donor, a former patient, insisted on helping as many learners as possible, going so far as volunteering his own heart as a teaching tool until the final days of his life. His legacy lives on in every scan, every student and every breakthrough.

For Dr. Blissett and her students, this kind of support doesn't just advance training—it keeps the future of patient care beating stronger than ever before.

"Donors make these kinds of advancements possible."

The art of acc uracy:

A new lease on life, delivered through a catheter. This background image shows a transcatheter aortic valve being implanted during a TAVI procedure (Transcatheter Aortic Valve Implantation). Guided in real time by advanced imaging in LHSC's donor-funded Hybrid OR, doctors replace a diseased heart valve without the need for open-heart surgery, restoring blood flow and giving patients faster recovery and renewed strength.

Sharp er sig ht:

The ARTIS pheno robotic C-arm brings the heart into focus like never before. With real-time, high-resolution imaging, it allows specialists to navigate delicate blood vessels, guide catheters with accuracy and repair or replace heart valves without open surgery. It's precision technology that turns complex procedures into life-saving possibilities.





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COMPASSION *CHANGES* EVERYTHING.

When heart disease takes a life too soon, it takes countless moments along with it—laughter, milestones, second chances. Your support powers the breakthroughs that keep families together.



lhsf.ca/heart

Scan here to feel the impact.

@lhsfcanada





CONE BEAM

Thanks to the generosity of donors, London Health Sciences Centre's (LHSC) Audiology and Otology teams have access to a state-of-the-art Cone Beam CT scanner. This specialized imaging technology allows patients to receive fast, precise scans of the inner ear, making diagnosis and treatment planning quicker, safer and far more convenient. For those living with hearing loss, the equipment is helping restore connections to the world of sound, giving patients renewed confidence and a brighter future.



MAPPING WHAT MATTERS

MRI imaging captures both the brain and the blood vessels within it, offering critical insights for conditions like stroke, aneurysms, arteriovenous malformations and even tumours. By revealing the exact relationship between blood vessels and surrounding tissue, it helps care teams plan safe, effective treatments and act quickly when every moment counts.

DAYLIGHT

Thanks to pioneering, donor-funded research— a study dubbed DAYLIGHT— Dr. Luciano Sposato is helping LHSC lead the way in stroke diagnostics. By extending routine CT scans just 6 cm lower, LHSC clinicians can now detect hidden heart clots in stroke patients, increasing detection rates nearly sixfold without delaying treatment. This innovation means faster decisions, earlier intervention and a better chance of preventing a second stroke.

REAL-TIME CERTAINTY

This angiogram shows the brain's blood vessels in real time during surgery. It allows surgeons to see exactly what's happening as they repair an aneurysm, fix a carotid artery or address another vascular issue, making sure the job is done right the first time. Only a handful of centres in Canada and around the world have this kind of capability, made possible here through donor support.

SCAN. SEE. SAVE.

Every second counts. These brain scans capture the earliest moments of a hyperacute stroke, revealing areas where blood flow is compromised and brain tissue is at risk. By mapping these changes in real time, doctors can make rapid, life-saving decisions—because in stroke care, minutes can mean the difference between recovery and lasting damage.

FOCUS POCUS

For Dr. Frank Myslik, an emergency physician at London Health Sciences Centre (LHSC), point-of-care ultrasound (POCUS) isn't a bonus tool—it's as essential as his stethoscope. That's because POCUS brings something rare to emergency medicine: immediate clarity.

"I read the word 'abdominal pain,' and I grab the machine and walk into the room," he says.

In a department where time and information are often scarce, POCUS delivers real-time answers when patients need them most. Whether it's determining if a patient in cardiac arrest is responding to CPR, checking for internal bleeding in trauma or ruling out fluid buildup in the lungs of someone in heart failure, POCUS is diagnostic speed in the palm of one's hand.

But its impact stretches far beyond the Emergency Department (ED) because physicians can now screen for key issues quickly. The result is their ability to escalate care faster and more effectively, priming specialists across the hospital with more informed referrals.

"When I talk to a trauma team and I see fluid in the belly, they understand what that means," Myslik says. "It creates a shared language—so other teams can review what we've seen, build on it with their own scans and move faster with clearer insight."

This shared language has changed how departments communicate. Once considered strictly the domain of radiology, ultrasound has evolved into an accessible, versatile modality used across specialties. While radiologists still provide the most comprehensive imaging, emergency physicians can now perform targeted, real-time assessments, accelerating everything from internal medicine consultations to surgical prep.





"We're not replacing radiology," Myslik stresses. "But we're helping reduce wait times and making sure the right patients get the right imaging faster."

POCUS also plays a critical role in resuscitation scenarios and off-hours care. If a patient arrives with life-threatening abdominal pain, physicians can identify an aortic aneurysm in minutes, bypassing formal imaging queues and sending the patient directly to surgery. That speed saves lives. The benefits are emotional as well as clinical.

"Seeing really is believing," Myslik says. Showing patients what's happening inside their own body—even if they don't fully understand the scan—often builds trust and eases anxiety. "If I can point to something and say, 'This is why you need to stay,' it changes the conversation."

With Western University recognized as a leader in ultrasound education, trainees at LHSC receive early and advanced exposure to POCUS. This additional skillset is creating a new generation of clinicians who treat ultrasound not as a specialty tool, but as a natural extension of the physical exam. What's more, many of the POCUS machines used in training and care at LHSC today have been purchased thanks to the generosity of donors, whose support is helping shape the future of hands-on, high-impact medicine.

As for the future? Myslik sees artificial intelligence playing a growing role, helping clinicians interpret scans, improve accuracy and stay current in an evolving field. But no matter how the tech progresses, he believes the power of POCUS will always come down to human skill and real-time care.

Amid the chaos of the emergency department, POCUS brings focus, allowing physicians like Dr. Myslik to turn uncertainty into action, and questions into care.

At London Health Sciences Centre's (LHSC) Neuromuscular and ALS Clinic, a donor-funded neuromuscular ultrasound (NMUS) machine has been a game changer for diagnosis. Designed for people with mobility challenges, this specialized POCUS allows scans to be done right at the bedside so clinicians can see detailed images of nerves, muscles and ligaments. By tracking disease progression and treatment response on the spot, care plans can be updated immediately, giving patients more timely, tailored support than ever before.

THE NERVE TO KNOW: Unlocking Neuromuscular Insight

SPOTTING Trouble Fast

POCUS gives clinicians a quick, accessible way to see potential signs of esophageal cancer right at the bedside. By highlighting masses and abnormalities near the esophagus, POCUS can shed light on what's happening in the moment, helping guide decisions and speeding the path to more advanced testing and care.

SMALL

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Cleft Lip

With an MFM ultrasound—a more specialized type of portable ultrasound—parents can see and understand conditions like cleft lip before birth. Early detection gives families more time to plan for surgeries, feeding strategies and support, helping them feel prepared and empowered as they welcome their baby.

Achondroplasia (Dwarfism) – 20 Weeks

Achondroplasia, or dwarfism, occurs in about 1 in 25,000 people around the world. MFM ultrasounds can detect conditions such as this before birth, giving parents a valuable window to learn about their child's needs. Knowing what to expect allows families to coordinate care, gather resources and approach the journey ahead with confidence and clarity.



INTRODUCING THE TREATMENT OF TOMORROW: ETHOS

The background of the slide features a large, modern medical machine, likely a proton therapy gantry. On the left, there is a control panel with a screen displaying a 3D anatomical model of a human torso. To the right of the screen is a vertical column of buttons. The main part of the machine is a large, light-colored circular structure with a glowing blue crosshair or target area in the center. The overall lighting is dim, with some ambient light from the machine's components.



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ETHOS

"The Ethos linear accelerator ushers in a new era of radiation therapy, allowing us to adapt to the patient instead of the patient adapting to the machine."

**DR. STEWART GAEDE,
CHIEF MEDICAL PHYSICIST**

In the future of health care, seeing may no longer be believing.

It may be predicting, preventing—even preempting. At London Health Sciences Centre (LHSC), experts are exploring how artificial intelligence is transforming the role of imaging across diagnosis, research and real-time care.

Imaging has always been one of medicine's most powerful tools. But the next frontier isn't about sharper resolution alone, it's about giving machines the ability to recognize patterns, anticipate problems and support decisions in ways that were once purely human. Instead of capturing what's already there, future imaging technologies may help us see what's coming.

For maternal-fetal ultrasound technologist Natasha Quin, this future is closer than most realize. Tasks once done manually—like fetal measurements—are now performed automatically by AI. The shift is subtle, but significant. Workflows become more efficient, scans more consistent and clinicians are freed to focus on complex interpretation.

The next leap, Quin says, is personalized scanning, where algorithms adjust in real time based on each patient's medical history, genetics and even environmental exposure. "We'll see imaging platforms that integrate everything and focus on the areas where a patient is most at risk," she says. "It's personalized vision."

Pathologist Dr. Matthew Cecchini sees a parallel transformation unfolding in diagnostic pathology. He imagines a near future where AI assists not just in analysis, but across the entire process, imaging the histology slides, identifying abnormalities and even drafting preliminary reports. In this model, the technology handles the mechanical workload, while specialists focus on nuance, context and care planning. The potential for impact, he notes, goes far beyond efficiency. The earlier we detect disease—especially at the molecular or cellular level—the better the chances are for successful treatment, or even prevention. Early detection could dramatically reshape how we think about illness, and how health care systems allocate resources. "If imaging could detect changes before a disease becomes clinically apparent, it would transform our understanding of illness," says Cecchini.

For researchers like Dr. Aaron Ward, the horizon is even wider. His work involves combining imaging with pathology and genomics to create a layered, spatially integrated view of disease—one that operates across scales and dimensions. He also sees AI as a clinical "copilot," offering decision support during both diagnosis and treatment. "AI will unburden human experts during routine screening and augment them in complex cases," Ward says. "That level of collaboration could redefine how we understand disease itself."

Some of the most futuristic ideas like a full-body, non-ionizing scan (e.g. MRI, Ultrasounds etc.) that offers real-time analysis of organ function, blood biomarkers and disease risk are still in development. But the logic is already in place. As imaging becomes smarter, more adaptive and deeply personalized, it may one day help clinicians see far more than anatomy. It may help them see opportunity.

"It's like giving the clinician a new sense," says Cecchini. "And when you change what we're able to see, you change everything."



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@lhsfcanada

747 Base Line Road East, London, ON N6C 2R6

519.685.8409 / foundation@lhsc.on.ca / www.lhsf.ca

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