

Sunnybrook

SAVING LIVES, ONE INNOVATION AT A TIME

CODE ORANGE

Sunnybrook staff share first-hand accounts of their response to the Yonge Street van attack

plus

CANADA'S FIRST
RESIDENTIAL PROGRAM
FOR SEVERE OCD

FOCUSED ULTRASOUND
A NEW APPROACH TO
TREATING DEPRESSION

RESEARCHING
MEMORY LOSS
IN THE ELDERLY



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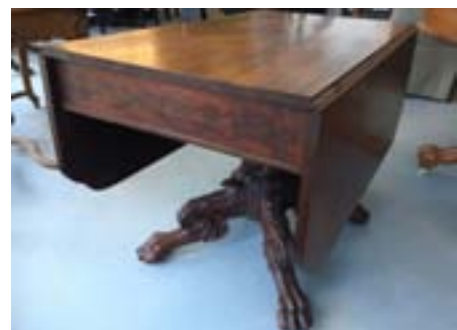
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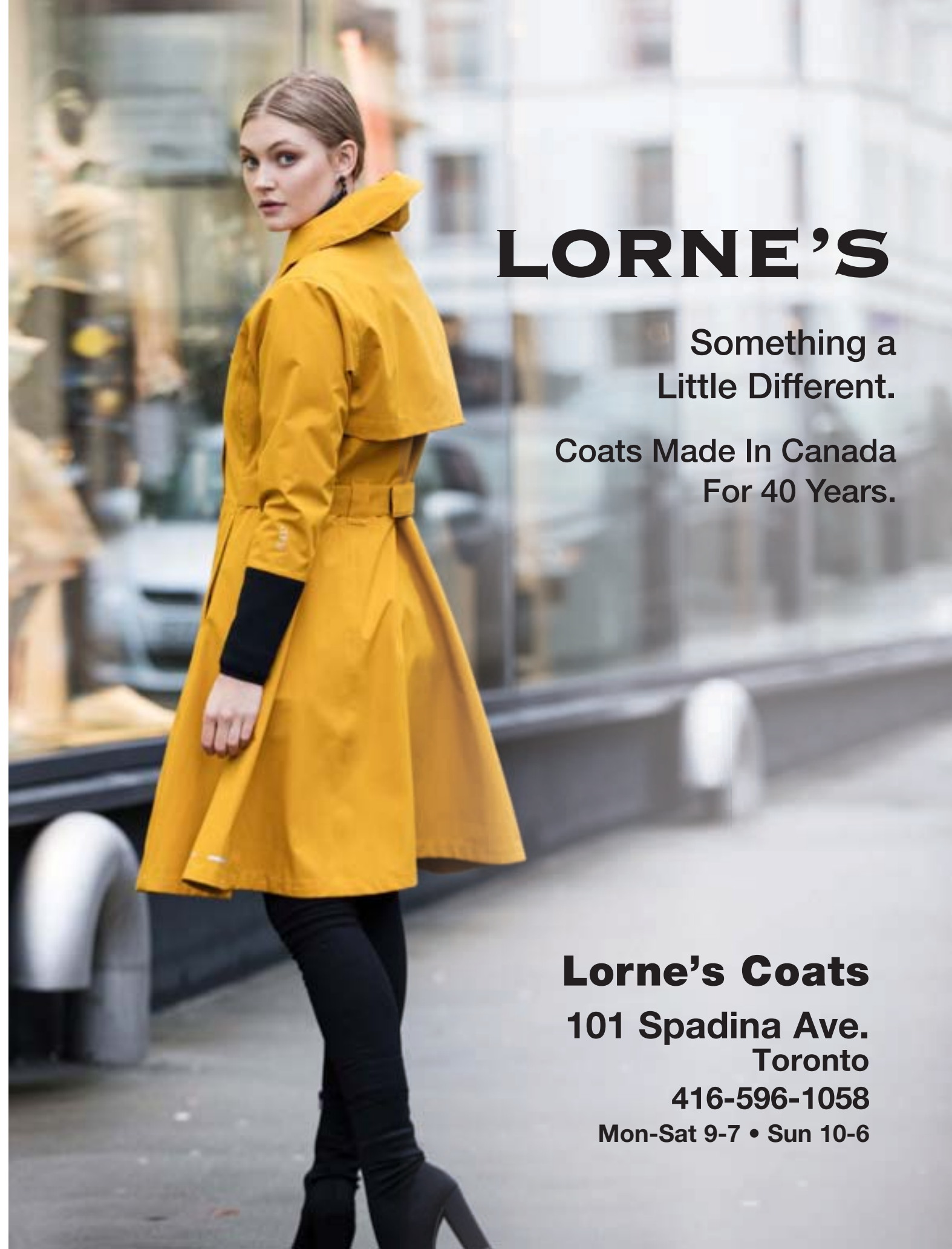
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We are
SUNNYBROOK



the
REGISTERED
DIETITIAN



the
REGISTERED
PRACTICAL NURSE

Giving back

A love of volunteering, a keen interest in food and a strong commitment to helping others – Wendy Lopez, a registered dietitian, has combined these passions to support patients at St. John's Rehab.

"Volunteering has always been a part of my life," says Wendy. As a community-minded teen, she volunteered at a hospital in Scarborough and continued the tradition throughout her years in university.

For Wendy, volunteering is about giving back. She was two years old when she and her family fled civil war-torn El Salvador and lived in Amarillo, Texas, for a time, eventually settling in Canada. "I will always be thankful for the opportunities Canada has given my family and me," says Wendy.

In Toronto, her parents were able to start their own home-based cake-decorating business. "My mom bakes. My dad decorates," she says. "I help with the finishing touches."

In her role as a clinical dietitian at St. John's Rehab, Wendy works with volunteers, leading research to help patients improve their nutrition during rehabilitation. "Patients recovering from stroke are at greater risk for low nutritional intake. They may experience swallowing difficulties [and may] have physical challenges, language impairment, vision issues and even changes in what they can taste and smell," she explains.

Her initiative – Matters of the Plate: Meal Assistance Program (MAP), funded through the Health Professions Innovation Fellowship of the Toronto Academic Health Sciences Network (TAHSN) – trains volunteers to assist patients with mealtime tasks, supports them through socialization during mealtimes and encourages them to eat well.

What began as a pilot project has now expanded – in collaboration with the rehab team – to more than 150 patients and 36 volunteers across two patient-care units at St. John's Rehab.

– Natalie Chung-Sayers

Going the extra mile to mend

Lynn Gilkes goes the extra mile to help mend broken bones and fragile spirits. Her career spans almost a half-century as a registered practical nurse at Sunnybrook with just under four decades spent with Sunnybrook's Fracture Clinic, caring for patients shortly after a traumatic experience.

Lynn will tell you that the highlight of her career has been helping patients on their journey to recovery. "Often, it is difficult for patients to get to recovery," she says. "It takes a lot of emotion, even more courage, and sometimes it may take years to rally back. Unfortunately, many people we see have major and complex injuries – hip and femur fractures, lower extremity injuries. They come back often to the clinic for different treatments. You really get to know them."

In the busy Fracture Clinic, which admits up to 100

patients a day, Lynn is there alongside the team, listening with care to every patient. She offers a comforting hand and warm words of empathy, and patients remember her for her reassuring smile and compassion. She has received a Schulich Award for Nursing and Clinical Excellence from her colleagues and a Sunnybrook Moment Award from a very grateful patient.

Her years of experience contribute to the success of the Fracture Clinic. For example, her skills in wound care reduce the risk of infection and, in consultation with the orthopaedic surgeons, she helps fast-track patients who may urgently need follow-up surgery.

"I treat patients like they are members of my family," says Lynn. "It's about being friendly and caring. It's about helping their bones heal and giving them mental support and, in time, it is rewarding to see their journey to recovery."

– Natalie Chung-Sayers



the NURSE PRACTITIONER

Helping Indigenous mothers feel at home

Amanda Squires holds in the palm of her hand a white and red cloth containing sage, folded into a tie. Despite its tiny size, the tie has a powerful meaning. Sage is a sacred medicine for many of Canada's Indigenous peoples, particularly during the birth of a child.

The tie also represents the strong relationship between Sunnybrook and Seventh Generation Midwives Toronto (SGMT), which offers maternity care to women in the city, particularly those in the downtown area and from Indigenous communities. SGMT midwives deliver babies at Sunnybrook, where Amanda's interest in Indigenous cultures began after she met a family who were about to have their baby at the hospital.

"The family, who are Cree and from Northern Ontario, were a long way from home and I really wanted to make them feel comfortable," explains Amanda, a nurse practitioner in Sunnybrook's Neonatal

Intensive Care Unit (NICU).

Amanda has been helping to educate front-line staff about the unique history and current realities of Indigenous populations.

She has adapted an existing program policy on smudging – the Indigenous custom of a cleansing smoke bath – for the NICU, taking into consideration the fragile respiratory status of its patients.

"From presenting a sage tie to making families aware that we can facilitate smudging and other Indigenous traditions – these are all realities now at Sunnybrook," notes Amanda. "The hospital's relationship with Seventh Generation has allowed us to improve the quality of the patient experience of Indigenous families in our Women & Babies Program."

As Indigenous families may be away from their community for up to 20 weeks if their baby is born prematurely, she simply wants them to feel at home in the NICU.

Amanda then recalls the first time she presented an Indigenous mother with a sage tie. "The mom simply said, 'You've recognized me. Thank you.'"

– Marie Sanderson

A vet with a 'can-do' spirit

Mel Storrier is a survivor in every sense of the word. Now 97 years old, Mel was 66, semi-retired and living in Etobicoke when he suffered a severe stroke that would change his life.

The stroke affected the left side of his body, leaving him paralyzed with no range of motion and without the use of one hand. His vision and hearing were also affected. Then, to complicate matters, Mel fell and broke his hip during physiotherapy.

"Staying at home was not possible," recalls his middle son, David, who visits his dad often at the Veterans Centre. "My mother was showing early signs of dementia and was not able to care for Dad. Sunnybrook was the perfect place and it has been his home for the last 29 years."

Mel was born in Rosemont-La Petite-Patrie, in the centre-east part of Montreal. In 1939, at the age of 18 and still in high school, he decided to join the army rather than be conscripted. He served with the Royal Canadian Corps of Signals as a motorcycle dispatch rider delivering messages to the front line and signalman sending Morse code

messages. In the summer of 1943, Mel and his unit participated in the Allied invasion of Sicily. Like many veterans, he never spoke openly about the war to his family.

When he returned from the war in 1945, Mel studied at McGill University in Montreal and graduated with a degree in engineering in 1951. It was at McGill that he met his wife, Teresa 'Lee' Eileen. During his career as a mining engineer, he ran several companies, working mostly in Manitoba, Quebec, Ontario and Alberta.

Mel has always approached life with a great deal of determination. A lifelong learner, he is a keen reader and frequent visitor to the library at Sunnybrook. Keeping his mind and body as active as possible has been important to him.

Art therapy has provided enjoyment too, and with his "can-do" spirit, he always comes up with new ideas. "I've always had a little bit of art in me and I've just let it grow," he says. "It comes naturally to me."

Mel, who works on his photography as well as with fused glass in the art studio at Sunnybrook's Veterans Centre, has shown that there is indeed a great deal to life after a stroke.

– Sally Fur



the RESIDENT VETERAN

Partners in care

Tom Copeland and his family know more about trauma and critical care at Sunnybrook than they would wish on any other family. Their journey began late in the evening of October 30, 2015, when they learned that their 27-year-old daughter, Brittany, had been involved in a car accident.

Thrown 30 metres from the vehicle, she had sustained a traumatic brain injury. She was rushed to the closest emergency department and then sent by air ambulance to Sunnybrook for specialized care for her complex injuries.

The Copeland family, including Brittany's partner and 19-month-old daughter, spent the next nine weeks by her side as she fought for her life. At times, the prognosis looked extremely bleak, but she slowly stabilized and began the long road toward recovery.

"Our family was incredibly touched by the exceptional compassion we were shown by the Sunnybrook team," says Tom. "Brittany was cared for by some of the very best medical minds in the world and we are extremely grateful they were there at the darkest time of our lives."

Now, as a member of the Patient and Family Partner Program at Sunnybrook, Tom brings his first-hand experience and perspective to the Quality Improvement Committee of Sunnybrook's Emergency Department. In this role, Tom helps the committee identify gaps and challenges in the patient experience and advises on improvements.

"My involvement as a Family Partner is a way to express both thanks and appreciation for the incredible effort and care we received at Sunnybrook," says Tom. "I'm honoured to be able to give something back to the team responsible for saving Brittany's life."

– Laurie Legere



the FAMILY PARTNER

COPELAND PHOTO BY DOUG NICHOLSON; ALL OTHERS BY KEVIN VAN PASSEN



the MUSIC THERAPIST

Using harmony to heal

Trish MacAulay was a new-to-the-city 22-year-old when she started working at Sunnybrook's Veterans Centre as a freshly minted music therapist.

"I was so excited to get this job," says Trish. "But then I would think, How can I, at age 22, be the therapist to a 92-year-old with so much life experience and who went through a war?"

The answer was music. "We used the music to connect," she says. "The music became the bridge [for] our age gap."

Eleven years later, Trish still provides one-on-one and group music therapy sessions at the Veterans Centre. Sessions are individualized to meet residents' needs and can include, but aren't limited to, listening to music, singing

or songwriting.

"Many of our veterans don't want to talk about their time in war," says Trish. "Music can help process loss, anger, sadness and grief. It helps take those feelings and shift them to a better place."

Trish turned to her guitar to process her own feelings in 2011 when, after working with a therapist as part of a psychotherapy training program, she realized she's gay. Music supported her as she came out to her then-husband, family and friends and ended her marriage.

"I wrote songs and recorded an album to help me work through my identity crisis," says Trish. "We all face life hurdles, we all face grief, and it has helped me as a therapist in my work with patients. Music is a catalyst to express those feelings that are too hard to put into words."

– Alexis Dobranowski



ACTIVATING T-CELLS TO BOOST IMMUNITY

Sunnybrook has found a crucial ingredient in the development of T-cells.

T-cells are the soldiers of our immune system that seek out and attack the tiny invaders that threaten our health. Without this microscopic army, the battle against bacteria, viruses and other pathogens could quickly turn deadly. But not every army is equal in strength and efficiency. In the pursuit of engineering T-cells for people with weakened immune systems, Sunnybrook scientists

used gene-editing technology to single out which gene helps our bodies produce these life-saving cells.

The key to production is a protein known as HEB, which can stimulate various genes throughout cell development. HEB's ultimate power, though, is activating T-cell genes and deactivating others that could impact their growth.

"T-cells can already be engineered from stem cells, but they cannot yet be produced at the quantity and

purity needed to make them beneficial for clinical use," says Michele Anderson, co-author of the study published in *Stem Cell Reports*, a senior scientist at Sunnybrook Research Institute and an associate professor in the Department of Immunology at the University of Toronto. "By being able to engineer a system to produce large numbers of pure T-cells, we'd be able to put them into people who need them – people with AIDS, those who are undergoing radiation therapy

or bone marrow transplants, or anyone, really, with an immunodeficiency."

Anderson and her colleagues are now looking at how they can harness the power of HEB to create enough T-cells to benefit humans. She notes that future steps also include analyzing other diseases that could be affected by HEB, potentially leading to new treatments for common illnesses, such as heart disease.

– Katherine Nazimek

Senior scientist Michele Anderson and her colleagues discovered a key element in developing immune-boosting T-cells.

\$5-MILLION GRANT FOR MS RESEARCH AWARDED

For many people living with progressive multiple sclerosis (MS), treatment options can be limited or non-existent. Dr. Anthony Feinstein, director of Sunnybrook's neuropsychiatry program, has been awarded a \$5-million research grant to help change that.

The grant, awarded by the MS Society of Canada, will

allow Dr. Feinstein to bring together a dozen leading experts from six countries – including Canada, the U.S., the U.K., Italy, Denmark and Belgium – to study treatment options for patients with progressive MS who are experiencing cognitive decline, a common symptom of the disease.

Up to 70 per cent of people living with progressive MS report some degree of cognitive dysfunction, making it a challenge to hold a steady job, maintain relationships or go about daily activities. A chronic disease that affects the central nervous system, including the brain, spinal cord and optic nerves, MS can cause problems with vision, balance, muscle control and other basic body functions.

"By looking at the impact [that] cognitive rehabilitation and exercise has on patients, we hope to show that a combination of these two therapies results in better outcomes than either one on its own," says Dr. Feinstein,

who is spearheading the research.

The study will enroll 360 people with progressive MS from 11 medical centres, and a select number of patients will also receive an MRI before and after treatment to see whether cognitive improvement is linked to positive brain changes.

Noting that the research is the first of its kind to include such a large number of patients and centres, Dr. Feinstein says, "This study has the potential to define the most effective treatment for cognitive dysfunction in people with MS, positively impacting many lives."

– Sybil Millar



'This study has the potential to define the most effective treatment for cognitive disability in people with MS.'

Dr. Anthony Feinstein,
director of Sunnybrook's neuropsychiatry program

PHOTOGRAPH BY KEVIN VAN PAASSEN



Gathering input from critical care staff and family members was an important step in the ICU website's development.

NAVIGATING THE ICU

When a patient is in the intensive care unit (ICU), family members and loved ones are important members of the care team. To help keep them informed, the critical care department has launched a new website, sunnybrook.ca/NavigatingTheICU.

"We want family members to

feel as included as possible, so providing them with easily accessible information was a natural step. Having that information online means it can be accessed anywhere, anytime," says Dr. Andre Amaral, staff physician in critical care at Sunnybrook.

What sets the Navigating the

ICU website apart is that it was developed with extensive input from staff and family members of former critical care patients, an important step toward ensuring the information on the website is relevant to the people who actually use it.

The website has a variety of useful content, including a

welcome video, a link to the family satisfaction survey and contact information for each ICU, making it easier to get in touch with the care team.

Families are often overwhelmed by the amount of information they're given when a loved one is in the ICU, given the unexpected nature of many ICU stays. To help reduce their anxiety and confusion, the website also includes an extensive list of answers to frequently asked questions. Information ranges from who's who in the ICU and what the visiting hours are, to how to learn more about a loved one's condition and what happens after being in the ICU.

"The website has really helped the loved ones of patients better understand what's going on in the critical and intensive care units here," says Dr. Amaral, "and that's helped improve people's experiences."

— Sybil Millar

A WORLD-FIRST MOVES ON TO A SECOND STUDY

Sunnybrook researchers once again made history by successfully opening the blood-brain barrier non-invasively, this time in patients with Alzheimer's disease.

The blood-brain barrier is like plastic wrap coating the small blood vessels of the brain, preventing large compounds from getting into the brain, including possibly

effective therapies. Getting through that barrier could help medications reach previously elusive areas of the brain without the need for invasive surgery.

Sunnybrook researchers have now opened the blood-brain barrier by combining focused ultrasound with injected microscopic bubbles in six study participants with Alzheimer's disease.

After the participant is fitted with a specialized helmet within an MRI, precisely targeted ultrasound waves cause the bubbles to vibrate within the brain's blood vessels, leading to very precise and temporary openings in the blood-brain barrier.

In the first study of its kind,

published in July 2018 in *Nature Communications*, this technique was found to be safe in a small group of patients with mild to moderate Alzheimer's disease. In all patients, the blood-brain barrier was safely, repeatedly and temporarily opened, without serious side effects.

This success paves the way for a larger, second-phase clinical trial of 30 patients with Alzheimer's. If the results continue to be promising, researchers say this technique could potentially change the treatment of patients with a variety of neurological conditions where overcoming the blood-brain barrier is a challenge.

— Monica Matys

CELEBRATING 70 YEARS OF VETERANS' CARE BY THE NUMBERS

1948

official opening of Sunnybrook Hospital for war veterans

1975

Kilgour Wing opens as a long-term veteran care facility

1990

George Hees Wing opens to increase residential space

2001

The Dorothy Macham Home opens for veterans with challenging behaviours due to dementia



600

initial veteran patient population

27

average patient age when Sunnybrook opened

475

number of veterans in residence today

94

average age of veterans today

Contact Veterans Affairs Canada for residence eligibility
1-866-522-2122

PHOTOGRAPH BY DOUG NICHOLSON

PHOTOGRAPH BY KEVIN VAN PAASSEN



ENGINEERING A NEW TREATMENT OPTION FOR BURN PATIENTS

When Dr. Marc Jeschke sees patients with severe burns covering a large part of their bodies, there's usually only one treatment option.

"In burn care, we're generally limited to using skin grafts," says Dr. Jeschke, medical director of the Ross Tilley Burn Centre at Sunnybrook. "We take healthy skin from the patient and use it to cover their burned skin. It's quite painful for them because you're just creating more wounds. Sometimes, there isn't even enough healthy skin left for us to use."

However, a new study may completely revo-

lutionize the way burn patients receive treatment for such serious injuries. Together with researchers from the University of Toronto, Dr. Jeschke has worked to develop a handheld 3-D skin printer that deposits even layers of skin tissue to cover and heal deep wounds.

"This handheld device is a significant improvement from previous printers," he notes.

The device deposits a thin layer of gel containing the patient's skin cells directly on top of the wound, forming new tissue. It is believed to be the first device of its kind,

allowing skin cells to set in place within two minutes or less. The hope is that by putting the right cells in the right place, wounds will heal faster, helping patients to leave the hospital and return to their lives more quickly.

"We're also hoping patients will experience less pain and reduced scarring," adds Dr. Jeschke.

Now, the handheld 3-D skin printer will be tested to determine whether it can make its way into the clinical arena. While Dr. Jeschke estimates this step may take several years, it will be a game changer for burn and wound care.

"This project demonstrates what collaboration between engineering, biology and physicians can achieve," says Dr. Jeschke, "and that, together, we can have a profound clinical impact."

— Sybil Millar

Lighting the way

Sunnybrook researchers are investigating exciting new techniques to harness the power of ultrasound waves to treat depression

by Kira Vermond
photography by Kevin Van Paassen

For as long as she can remember, Linda Bohnen has suffered from debilitating anxiety and depression. Despite trying talk therapy, numerous medications and even electroconvulsive therapy, nothing worked for long. Her feelings of hopelessness, overwhelming sadness and numbness always returned.

“It was really limiting my life. It was hard on my husband, on my daughter and on me,” says Linda.

The anxiety also made it difficult to leave the house. The only exception was taking her Siberian husky mix, Stoli, out for a walk.

Then Dr. Anthony Levitt, chief of Sunnybrook’s Hurvitz Brain Sciences Program and Linda’s psychiatrist for the past 30 years, told her about an intriguing new medical trial he was leading.

For the first time, Sunnybrook researchers were analyzing the safety and effectiveness of using MRI-guided focused ultrasound to help patients with treatment-resistant major depression.

As someone with highly resistant mood disorders – something that 2 per cent of the Canadian population suffers from – Linda seemed like a good candidate.

She would be the first-ever patient in North America to receive this game-changing procedure for treatment-resistant major depression – incision-free brain surgery done in real time (the only other case took place in South Korea).

“I felt that I had nothing to lose,” says Linda. “I had tried everything else, so why not?”

SAME BUT DIFFERENT

The fundamentals of the procedure have actually been around for more than 50 years and have a long history of success.

“In the old days, it used to be done neurosurgically,” notes Dr. Levitt. Surgeons would create an incision in the scalp and skull, he explains, before drilling a hole in order to reach the area of the brain that would then be cauterized. Unfortunately, that meant destroying some healthy brain tissue along the way, too.

“And if you got it wrong, you’d have to go back and get it right,” he says. “There was no way of checking at the moment you were doing it.”

With MRI-guided focused ultrasound, however, a special helmet trains beams of ultrasound on one specific region of the brain called the anterior limb of the internal capsule – a pathway known to be active in depression. This “highway” connects the frontal lobes to the emotional centres of the brain, including the amygdala and hippocampus.

Fortunately, individual ultrasound waves pass through living tissue quite harmlessly. Where they converge, however, the beams create heat and form a lesion on a precisely targeted area of the brain.

“There’s no incision,” Dr. Levitt points out. “We don’t destroy healthy tissue on the way to the lesion because the beams of ultrasound don’t destroy anything except where they meet.”

Dr. Nir Lipsman – a neurosurgeon and principal investigator of the trial and director of the Harquail Centre for Neuromodulation at Sunnybrook –

Linda Bohnen is the first patient in North America to undergo an innovative procedure at Sunnybrook for treatment-resistant depression.



likens the technique to using a magnifying glass to concentrate light and create a pinprick point of heat “except we’re using this ultrasound system to concentrate sound energy,” he explains. “This is an old procedure done in a new way.”

SURGERY AT THE CLICK OF A BUTTON

There are other benefits of guided ultrasound. Because the procedure is done inside an MRI scanner, Dr. Lipsman can see exactly where he wants to create the lesion, using computer-generated algorithms to create 3-D images in real time. He can even extend and change the shape of the lesion if needed, right then and there – all with the click of a button.

Or, as Dr. Levitt calls it, “surgery by mouse.”

What’s more, the risk of bleeding is quite low. Because the surgeons actually control the heat, they can test a specific area of the brain first at a lower heat to be sure only that portion is affected without any movement or sensation issues.

“With ultrasound, we can do a test beforehand to make sure we have the right area,” says Dr. Levitt.

Once they have the all clear from the patient, the surgeons can go ahead and increase the temperature.

TWO DECADES OF DEVELOPMENT

This particular phase 1 trial was possible because of the work of Dr. Kullervo Hynynen, director of physical sciences at Sunnybrook Research Institute. For almost two decades, Dr. Hynynen worked with industry partner INSIGHTEC to develop the technology.

On the day of her procedure, Linda wore Dr. Hynynen’s special focused ultrasound technology helmet, which looks a bit like an old-fashioned hairdryer. It actually contains 1,000 transducers, which convert electrical energy into sound energy. It also has a membrane that fits tightly against Linda’s now-shaved head, with a space where water circulates between the transducers and her skull to reduce the sensation of heat.

This isn’t the first time the game-changing helmet has been used.



CAN FOCUSED ULTRASOUND OPEN A THERAPEUTIC WINDOW TO TREAT ALS?

THE DISEASE

Amyotrophic lateral sclerosis (ALS), also known as Lou Gehrig’s disease, is a devastating neurodegenerative ailment that progresses rapidly and is fatal. “It’s definitely up there as one of the worst diseases to afflict humans,” says neurologist Dr. Lorne Zinman, director of Sunnybrook’s ALS clinic – the largest of its kind in Canada – and an associate scientist in the Hurvitz Brain Sciences Research Program.

“Patients gradually lose their ability to move their arms and legs, to speak, swallow and breathe – all while their minds remain sharp,” says Dr. Zinman.

ALS is relentless in its attack on the approximately 3,000 Canadians with the disease. “Patients with ALS witness a progressive loss of motor function and, although we do not yet have any medications to stop the disease, hope is on the horizon,” says Dr. Zinman.

THE RESEARCH

In a world-first, Dr. Zinman and a team of Sunnybrook researchers are investigating the safety, tolerability and feasibility of opening the blood-brain barrier using low-intensity focused ultrasound in patients with ALS. This barrier naturally protects the brain by limiting the passage of molecules. This keeps the brain safe, but it also keeps out potentially beneficial therapeutic agents.

In this phase 1 trial, eight patients will have their blood-brain barriers temporarily opened over the motor cortex. This is the part of the brain that controls movement and where ALS may start. The patients will be injected with micro-bubbles – think minuscule balloons floating around in the bloodstream – and when focused ultrasound waves hit the bubbles, they expand and contract, temporarily opening the blood-brain barrier.

THE TAKEAWAY

By safely opening the blood-brain barrier of the motor cortex, Sunnybrook researchers are creating a unique therapeutic window for medications and biotherapeutics, like antibodies, viruses and stem cells, to pass through. These novel interventions may help to protect the damaged motor neurons of patients with ALS and slow the progression of this terminal disease. The first patient underwent the procedure in April 2018. •



THIS PAGE
LEFT: This frame fits inside a specialized helmet to ensure targeted treatment.

BOTTOM: Study co-investigators Dr. Anthony Levitt (left) and Dr. Nir Lipsman oversee Linda’s procedure.

OPPOSITE PAGE:
Linda is fitted with the helmet specifically designed to aim ultrasound beams on a pathway of the brain known to be active in patients suffering from depression.

Focused ultrasound was successfully tested in a world-first trial at Sunnybrook and other medical centres for patients with essential tremor, a nervous system disorder causing involuntary shaking. This success led to Health Canada and FDA approvals in 2016.

Dr. Hynynen recalls seeing a dramatic decrease in patients’ tremors and shakes once the ultrasound hit the right location. Even so, his team of engineers and clinicians faced many obstacles on the way to success. “For about 50 years, people thought it was impossible to use ultrasound in the brain,” he says.

Tell that to Linda. Other than experiencing some heat in her head during the procedure, and minor headaches for several weeks following the procedure, she considers herself very lucky. Slowly, she noticed her mood was lifting.

“There have been more good days than bad,” explains Linda. Overall, she’s also noticed that she is more talkative and energetic. While Linda continues to take medication for her depression, some dosages have been reduced for the first time in decades.

“They had good experiences using ultrasound on patients with other [conditions],” she says. “I had a lot of hope.”

ONE PIECE OF THE PUZZLE

Dr. Levitt knows that addressing treatment-resistant depression – experienced by people who have been ill for at least five years and have had multiple treatments fail – is not as simple as flipping a switch on an ultrasound machine and hoping for the best.

Patients like Linda and the nine



others who will be part of the trial will likely continue to take their medication even after the procedure. Some will also continue to get counselling. In addition, trial participants will be assessed for the severity of depression and level of functioning at various checkpoints over the course of the year after treatment.

While the overall hope is for patients with depression to feel better, the goal is to make sure that the focused ultrasound procedure is safe and effective. Although researchers are in the early stages of the trial, they say focused ultrasound has the potential to be another treatment option for patients with major depression who aren't responding to existing standard treatments.

"It's an adjunct. It's an additional treatment," he says, explaining that focused ultrasound is unlikely to control all symptoms but will make a difference for some, including extreme anxiety that keeps people like Linda housebound.

Besides, talk therapy will be needed for another reason after successful procedures: "These people have often had years where the symptoms have dominated their lives," Dr. Levitt points out. "Now they've got to figure out what they're going to do with their lives."

Dr. Lipsman agrees. In addition to follow-up appointments at the one-, three-, six- and twelve-month marks, patients who are part of the trial will be monitored for years.

"This is a procedure where it's incredibly important to maintain close contact and continue treating patients for the long run," he says.

That kind of commitment and moral support has helped Linda cope during recovery. Wearing scarves and turbans while her hair grows back, she's now looking forward to hopping on a plane to see her daughter in Seattle, and hopefully feeling less anxious about travelling now than she has in the past.

As the first person in North America to undergo an innovative trial procedure to treat depression, she knows anything is possible.

"I'm proud of myself for having done the procedure," Linda says. "This past week, my mood has been very good. I'm just hoping that I continue to improve." 🍀

BEATING BONE PAIN WITH ULTRASOUND

When Kendra Dunlop was first diagnosed with metastatic breast cancer, she could barely reach for a book on her bedside table without gasping in pain. Kendra, a mother of four who lives in Toronto, had developed a lesion on her eighth right rib, and movement hurt – a lot.

Her oncologist referred her to Dr. Edward Chow at Sunnybrook, a radiation oncologist who leads the Bone Metastases Site Group. There, Kendra was asked whether she would like to take part in a new clinical trial that would use high-intensity focused ultrasound to treat her pain.

She agreed, knowing that by using ultrasound early, she could put off using radiation therapy until it was needed later. Eventually there would be a limit on how many rounds of radiation she would be permitted, and she wanted to make them count.

Kendra underwent the procedure in early 2018 and is happy with her decision.

"I have zero pain now," says Kendra. "I could whack my rib and it doesn't hurt."

It's the kind of response to treatment Dr. Chow likes to see. When cancer spreads to the bone, it's very painful. Although using focused ultrasound does not cure cancer,

when the sound waves converge at the bone metastases and damage the nerves, it stops the pain. The trial is being performed for palliative treatment only – and is intended for patients who have already reached their radiation limit – but it offers more pain-free days. The trial is also open to patients like Kendra with bone metastases who have yet to be treated with radiation treatment.

As principal investigator, Dr. Chow helps refer people like Kendra to the study, which will eventually enroll 20 patients. He hopes that the research will eventually lead to the creation of mobile ultrasound units that can be moved into areas with poor access to major radiation centres.

"The portable ultrasound machine is small and easy to move. You can imagine a mobile unit going everywhere and treating patients in the rural areas," he says.

It's a vision also shared by Dr. Elizabeth David, the interventional radiologist at Sunnybrook who actually performs the procedure. Although ultrasound ablation of bone has been around for years, the Sunnybrook Research Institute's engineers have made modifications to the

way the energy is applied. In a more typical setting, the patients are on an MRI table and need to contort their bodies to adjust to the device that sits fixed under the table. The new device has an articulated arm, which allows Dr. David to focus the ultrasound beam on smaller areas of the body, such as Kendra's right rib.

The patient can sit comfortably while the machine is moved to treat the painful site. And the treatment is guided by real-time ultrasound images, which allows Dr. David to see that the target precisely.

"It can be repeated at the same spot over and over again," says Dr. David. "As long as the bone isn't weight-bearing, there's no real limitation to it."

Kendra reports experiencing a "tumour flare" initially – a brief period of increased discomfort – but it went away within weeks. She says she would undergo the procedure again, if she could.

"I'm thrilled to have been able to participate in this trial and [I] feel very fortunate that I was at a hospital that allowed me to do it. I just hope it does prove successful in more patients." •

David brought us Stage 4
Spreading from his kidney
to his brain.

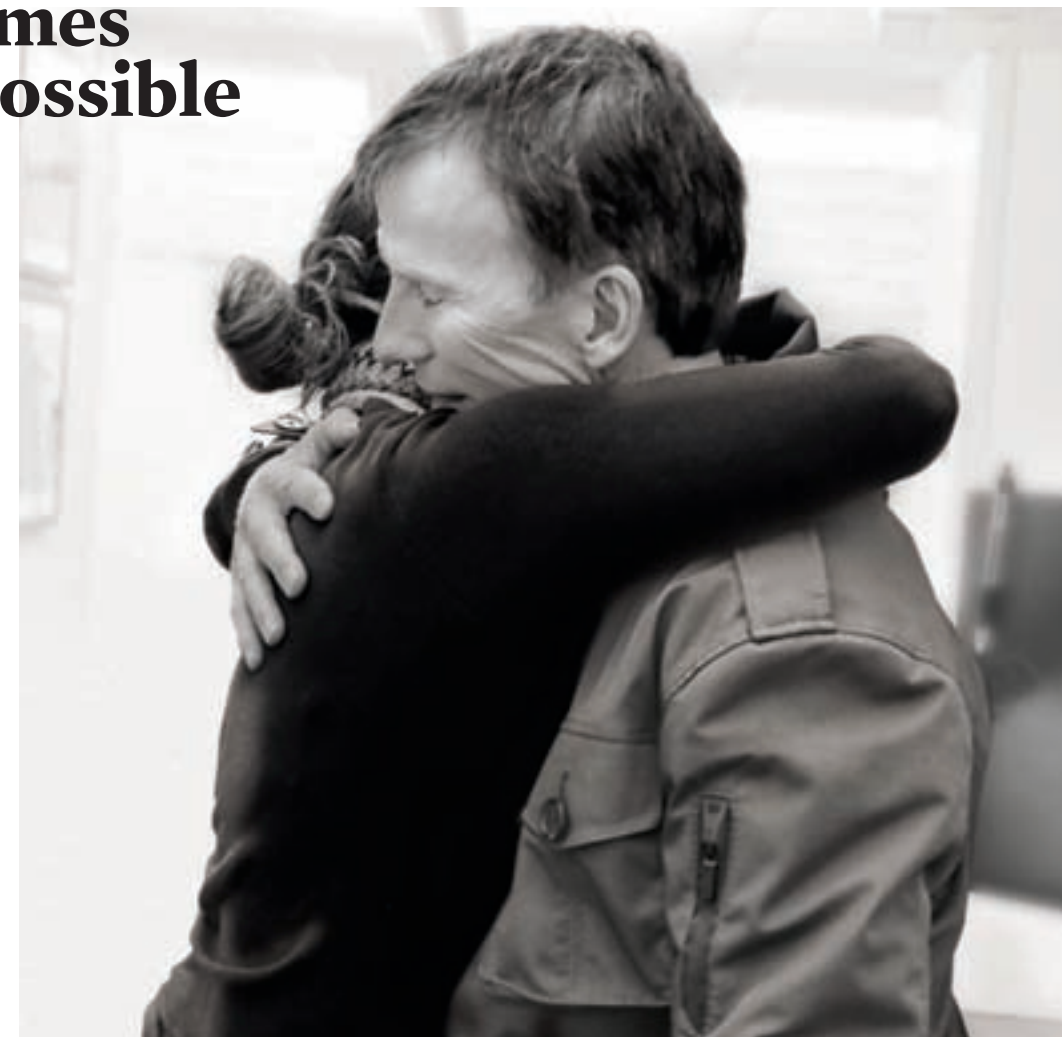
David brought us his worst
And we gave him our best.

15 brain tumours treated

In 1 day of precision radiation

Without pain, or a single incision.

Where Impossible Becomes I'm Possible



 **Sunnybrook**

Visit bringustheimpossible.ca to read more of David's story.

Sunnybrook staff talks about how they responded on the day of the Toronto van attack.

EMERGENCY CONTACT

As told to reporter Patricia Hluchy

PHOTOGRAPH BY KEVIN VAN PAASSEN

When a Code Orange was called on Monday, April 23, the day of the Yonge St. van attack, Sunnybrook staff were prepared.

At 1:27 pm, a man drove a white rental van onto the sidewalk near the intersection of Yonge and Finch streets, deliberately hitting pedestrians. Ten people died and 15 were injured. At 1:48 p.m., Sunnybrook issued a Code Orange, warning staff that victims of a mass casualty were on the way. Ten of the injured were taken to Sunnybrook's campus on Bayview Avenue – less than 10 kilometres from the scene of the tragedy. The victims started arriving seven minutes after the Code Orange was called, at 2:06 p.m.

Here is how several Sunnybrook employees recall what happened on that day.

PHOTOGRAPH BY DOUG NICHOLSON

Miranda Lamb

HAS BEEN A **NURSE** AT SUNNYBROOK SINCE 2005. SHE WAS THE NURSE IN CHARGE OF THE EMERGENCY DEPARTMENT THE DAY OF THE VAN ATTACK.

I had agreed to trade a shift with a colleague that day, so I was in the Emergency Department (ED), in charge.

When the patients arrived they were all triaged, assessed by the trauma team and emergency staff and cared for in the ED or sent to the operating room or the intensive care unit.

You very quickly realize in a Code Orange that you cannot do everything yourself; you have to work as a team across all disciplines and departments. In the ED, we are the first ones who see patients coming into the hospital, but we had staff come from all over the hospital offering their help. Everybody had to stretch beyond their usual capacity. It was just remarkable in that way. We had one goal: to receive, stabilize and provide care for each patient – no matter what they needed.

I've always said that working in the ED is unique, and we sometimes see the people we work with more than our own families. So you need to be able to rely on each other to get through tough situations.

You also need to rely on your team after an event like this, to make sure that everybody is okay and feels supported. It was only after we cared for all of the patients that we could begin to appreciate the full extent of what had happened on Yonge Street, and what the impact would be for the families and patients.

We too were experiencing this event as mothers, fathers, sisters, brothers, Torontonians and caregivers. We all went in to do a job that day, but we're all human. •



Val Soper

HAS BEEN A **SOCIAL WORKER** AT SUNNYBROOK'S EMERGENCY DEPARTMENT SINCE 2003.

I was in the Emergency Department (ED) when the Code Orange was called.

My social work colleagues from across the hospital were in contact with me immediately by phone, text and in-person to see how they could help. Along with emergency preparedness leaders, a decision was made to set up our Family Information and Support Centre quickly in the hospital's auditorium. We knew family members and loved ones would be on their way soon.

The support centre was staffed by Social Work, Spiritual Care and Volunteer Resources. On that particular day, we also had other disciplines offering to help. Psychiatry was there, a music therapist, an occupational therapist, a geriatric nurse and others.

I spent most of my time in the ED and in communication with support centre staff once the centre was set up. The first thing I did was station two staff members at the ED entrance, as well as the hospital's main door, to direct arriving family and friends to the support centre to start the process of locating their loved ones.

In the early evening, I moved from the ED to the support centre. At that time, many of the families had been registered, "matched" and reconnected with their loved ones, who were being treated in hospital, in intensive care or in surgery. At the end of the night, my job was to support those families who were still waiting for news. The last family was there until 2 a.m.

The Sunnybrook response was incredibly united. We all pulled together and worked as a team. Our emergency preparedness – all those Family Information and Support Centre meetings and mock exercises – helped on this very difficult day. •

Dr. Fred Brenneman

IS A **TRAUMA SURGEON** AT SUNNYBROOK, WHERE HE HAS WORKED FOR THE PAST 23 YEARS. HE PREVIOUSLY SERVED AS MEDICAL DIRECTOR OF THE TRAUMA PROGRAM.

People were extremely keen to offer help and provide whatever they could regardless of what they were doing at the time, whether or not they were on call.

It happened at a time when the hospital was full with high bed occupancies. To the credit of those who manage beds and to the surrounding GTA hospitals that pitched in and offered to take some of our stable inpatients, we cleared enough Intensive Care Unit (ICU) beds and operating rooms to manage the surge.

We normally have one trauma team working per day, but with the Code Orange call, we very quickly had three teams assembled in the trauma bay looking after the patients.

I supervised the management of one patient until they were off to get a CT scan. Then, I took another patient up to the operating room because I was the surgeon on call that day. By the time that operation was finished, our patients had their destinations allocated. Some of them were already in the operating room, some of them were in the angiography suite for imaging and treatment, and some were already in the ICU – so the process to treat everyone's injuries happened pretty quickly. If you do what you need to do and trust your expertise and your training, then there's no panic. I am very proud of the Sunnybrook team's response. •



WHAT DO THESE SUNNYBROOK COLOUR CODES MEAN?

| | |
|----------------------|--|
| ● CODE RED | Fire |
| ● CODE BLUE | Emergent medical intervention required |
| ● CODE ORANGE | Mass casualty incident |
| ● CODE GREEN | Evacuation |
| ● CODE YELLOW | Missing patient |
| ● CODE BLACK | Bomb threat/Suspicious object |
| ● CODE WHITE | Violent person |
| ● CODE BROWN | Hazardous materials spill |

Johnny Amatuzio

IS THE **SUPERVISOR OF SECURITY SERVICES** AT SUNNYBROOK, WHERE HE HAS WORKED FOR A DECADE.

Because it was publicly broadcast that most of the injured were coming to Sunnybrook, we decided – for safety – to go on lockdown. What that does is restrict access to the Emergency Department (ED).

Our Security staff set up for crowd control. We made sure that the roadway to the ED was clear for multiple ambulances. When patients started arriving, we escorted the stretchers to the trauma bay.

My manager and I called everyone in our department. Several people came in early for their shifts and others came in on their day off.

Everyone in the hospital came together to make sure everything could be done to the best of our ability for all the patients and their families. My heart goes out to all those whose lives were changed by this tragedy. •



PHOTOGRAPHY BY DOUG NICHOLSON

Vanessa Flores

IS A **RESPIRATORY THERAPIST** AT SUNNYBROOK IN THE INTENSIVE CARE UNIT.

The hospital team leaders started to gather the doctors in the Emergency Department (ED) to brief them about the Code Orange situation.

They said a van had hit multiple pedestrians and there were many patients who needed critical care. I immediately called our department and spoke with a senior staff member and said we needed all of the transport ventilators brought downstairs to the ED.

I headed upstairs to help grab equipment and by the time I made it back downstairs, there were already patients coming into the trauma bay. I moved to a bedside – making sure anaesthesia was there, preparing my monitors and coming up with a game plan with the team.

We called in extra staff and thankfully three extra respiratory therapists came in.

A critically injured patient arrived requiring stabilization and admission to the intensive care unit. I was with that patient for two-and-a-half hours.

Everybody stepped into their role and focused on what they would normally do, but as if in fast-forward. I was thinking, How can I get this patient stable, move them to a scanner and get them a bed?

Eventually, once all of the initial activity was over, we had an opportunity to sit and kind of calm down because when you're working with your patient, you're so focused that you can lose track of time.

We had multiple debriefs afterwards. At the debrief for the respiratory therapists, hospital leadership said, "We're here to listen to you. What would you like to talk to us about?"

It was a very open and safe discussion. We felt we could just be very truthful about how we were feeling without judgment, which was fantastic. •

Dr. Oskar Singer

HAS BEEN AN ANESTHETIST AT SUNNYBROOK FOR FIVE YEARS.

On a normal day, we have one anesthesiologist who's the main operating room co-ordinator. Anesthesiologists carry phones and relay with the nursing team and the surgical team, making plans for the day. They determine which emergency case should go into the operating room next.

My colleague, Dr. Paul McHardy, was in that role when the Code Orange was called, so I was able to help coordinate trauma patients downstairs in the trauma bay.

I grabbed a phone and ran downstairs. As each patient was triaged, assessed and a plan was made, I'd immediately call Dr. McHardy and give him a perspective on what the patient needed. From the moment that patients started coming in, the atmosphere was intense but controlled.

Patients who were coming in after the trauma bay was full were triaged to available Emergency Department (ED) beds. Porters moved patients in the ED who were doing well enough to make space for new, more seriously injured patients.

We sent patients with life-threatening injuries immediately to the operating room. Others were stabilized and sent with teams to CT scanners to determine what kind of internal injuries had occurred.

This was definitely the most significant, large-scale incident that I've been part of. I think one of the interesting things that happens is you automatically fall back on your training.

Above all else, you're doing everything for the patient before you focus on how you actually feel. For me, that happened when I got home that night and had some time to reflect on the gravity of what we'd just gone through, the number of lives that were affected and the permanent changes that happened to so many families.

A few things stand out about that day, including how well everyone interacted and came together at such a dire time. One example is how quickly the Environmental Services staff were able to turn over the trauma bays in between patients to ensure the most efficient care. The other was how quiet the trauma bays were; obviously there was the noise of action and people communicating with each other, but it wasn't as chaotic as you'd think it would be. Everyone was ready to go. •



Adonis Lopez

HAS WORKED AS A PATIENT SERVICE PARTNER AT SUNNYBROOK, PROVIDING PERSONAL SUPPORT SERVICES TO PATIENTS AND THEIR HEALTH-CARE TEAMS FOR 14 YEARS.

The Code Orange was called one hour into my shift. One of my first tasks was to deliver stretchers and wheelchairs to the Emergency Department.

After that, I was asked to help set up the Family Information Support Centre in the auditorium, a place where family and loved ones could gather to receive news and emotional support. We couldn't really anticipate how many people were coming, so we set up as many private areas as we could with the equipment we had. We thought of other things we would need, like water, hand sanitizer, pens, tissue boxes, and then we'd go out and get them.

Then I was stationed at one of the hospital's entrances, so when families arrived we could walk them to the Support Centre.

The Emergency Department was in lockdown, so families entered through the other hospital entrances. I approached those who looked lost or concerned and asked if they needed help.

I've worked in the Critical Care Unit and in Same Day Surgery, and I understand that Sunnybrook is a trauma centre, but I didn't actually realize how serious the incident was until afterwards, when we had our debrief meetings. That's when it hit me. I hope that the little things I did helped and that a lot of the little things other people did helped, too. •



Dr. Dan Cass

IS THE EXECUTIVE VICE-PRESIDENT AND CHIEF MEDICAL EXECUTIVE OF SUNNYBROOK.

I don't think there was anyone at Sunnybrook who wasn't in some way part of the Code Orange response.

The obvious ones were the staff in the Emergency Department – the trauma team leaders, nurses and respiratory therapists – as well as those in the Critical Care units, the operating rooms and Medical Imaging. But as soon as this happened, all of the teams from the medicine units began going down to the Emergency Department and bringing admitted patients up to the wards. Even if teams weren't part of the direct response to the Code Orange, they were part of making room for someone else.

It's also important to recognize the group that set up and staffed the Family Information Support Centre (FISC) to support families, gather information and help connect victims from the incident with family members and loved ones.

I think all of us in Toronto were affected. This was an event that happened in our home, and it's an emotionally jarring thing for anyone to have to come to terms with, let alone being personally involved. •

PHOTOGRAPHY BY DOUG NICHOLSON



Aileen Ho

IS A PHYSIOTHERAPIST IN THE BURNS AND TRAUMA UNIT AT ST. JOHN'S REHAB, WHICH HAS BEEN PART OF SUNNYBROOK SINCE 2012.

I've often said that I live in a small bubble of only a one-kilometre radius. I live about a block from Yonge and Finch. I went to school in this area. I can walk to work, bike to work – I'm that close.

My three-year-old daughter's daycare is pretty close to Yonge and Finch. That day, I was really concerned about her because the kids go out for walks in the neighbourhood a lot. Was she safe, did they go into lockdown? I worried she might have seen something, but luckily, she didn't.

I had just come back from maternity leave [Ho also has a one-year-old daughter] on the day of the incident. News was spreading about a big, multiple fatality happening really close to us. (St. John's Rehab is located less than two kilometers from the scene.)

Many of us who work at St. John's Rehab were thinking that a lot of the victims would have gone to Sunnybrook due to the proximity of the incident and that, eventually, we would be seeing them in our unit. In preparation, we had team meetings to discuss how to best prepare for caring for these patients.

They started coming in to St. John's Rehab soon after and our team went to work. So often, it's when they're in physiotherapy that trauma patients really open up. We're constants in their lives when they're in rehab because we see them every day and a strong rapport is built. I think a lot of us love our jobs because of those relationships and the difference we make in our patients' lives.

I'm always excited when someone takes their first step because sometimes it can take months to get to that point after an injury. Even just little changes – like when they no longer have a cast or splint, or being able to put a little weight on their legs – it's a big celebration. Every little change is a big change.

Just sharing the joy with them is wonderful. That's what you come to work for every day. •

BREAKING THROUGH THE BARRIERS OF OCD

The only residential treatment program of its kind in Canada offers hope for patients

BY JENNIFER PALISOC

ILLUSTRATION BY
SHELAGH ARMSTRONG-HODGSON



IT STARTED WITH A FEELING – A WORRY THAT SOMETHING BAD MIGHT HAPPEN TO HER FAMILY.

At the time, Charlotte Simmons was only eight years old and didn't think much of it. As she got older, the worry turned to fear. Things worsened when she went away to university.

"I've always had anxieties about my parents going out or my sister going away," says Charlotte. "My irrational thinking made me believe that someone was going to die or someone would get into an accident."

To prevent bad things from happening to her family, Charlotte developed rituals, convinced that executing them with precision held the key to her family's safety. "I believed that if I didn't carry out certain routines and if I didn't tap specific items or repeat actions in a specific order and sequence, something bad would happen. There was really no rational thinking."

With numerous rituals, which sometimes needed to be repeated hundreds of times, it would often take hours for Charlotte to leave the house. "I never understood what people meant when they said, 'You're always going to have OCD. You're just going to learn to live with it.' I thought, How am I going to lead a fulfilling life while doing 13-plus hours a day of rituals and routines? I'm never going to live a normal life."

Her family tried to get her help, but without any luck, recalls Charlotte. "My mom had been trying so hard, contacting anyone who might be able to help. We paid for private therapists. I had help from local therapists. We travelled for more focused day programs. I tried many different kinds of medication, but nothing was working."

Feeling hopeless, Charlotte attempted suicide and ended up in hospital. A month later, she was one of the first patients enrolled in the new intensive residential treatment program for severe OCD at Sunnybrook's Frederick W. Thompson Anxiety Disorders Centre.

"I felt a huge sense of relief," says Charlotte. "I just knew in my heart it was going to work. I knew how desperate I was. I knew how many treatments I had tried that didn't work. So, I said to myself, intensive therapy and residential treatment are the only things I haven't tried, so this has to work."

OCD is a psychiatric illness that affects 2.5 per cent of the population, or one in 40 people, over the course of their lifetime. A person with OCD experiences obsessions, which are intrusive and disturbing thoughts, images or impulses that continue despite efforts to stop them. Obsessions are often accompanied by compulsions or rituals that include repetitive actions or behaviours. The World Health Organization has recognized OCD as the 10th most debilitating medical condition worldwide.

"Approximately 25 per cent of OCD patients are people with refractory OCD, where it doesn't respond to multiple treatments," notes Dr. Peggy Richter, head of the Thompson Centre and director of the Clinic for OCD and Related Disorders. "People



After multiple unsuccessful treatments for obsessive-compulsive disorder, Charlotte Simmons enrolled in Sunnybrook's new residential program. 'I felt a huge sense of relief,' she says.

PHOTOGRAPH BY KEVIN VAN PAASEN

with severe OCD have often been languishing at home with no access to specialized services."

Officially launched in 2017, the Thompson Centre's residential treatment program currently offers intensive and individualized care annually for up to 20 patients with refractory OCD.

On a typical day, the programming for residents runs from 9 a.m. to 4 p.m. Charlotte would have two classes a day focused on cognitive-behavioural therapy (CBT) and other types of therapy. Four hours of each day are spent with therapists and coaches working on the client's specific needs. After 4 p.m., clients had their own homework to do, which would often involve practising to fulfill the exposure and

response prevention (ERP) therapy goals established during the day. In ERP, the person is exposed to a situation that triggers anxiety but is urged to not follow through with the usual compulsive rituals.

For Charlotte, that meant saying phrases that brought out her worst fears. "I would have to say something like 'My sister is going to get in an accident.'" Though difficult, going through these "exposures" eventually helped her confidence grow and she became less anxious about similar scenarios over the course of the program.

OCD AFFECTS ONE IN 40 PEOPLE OVER THE COURSE OF THEIR LIFETIME

"It was really distressing, but if you're not feeling that distress, then you're not getting the full benefit of the therapy," explains Charlotte. "The point is to feel that distress and, over time, I would get used to it."

Even just being away from home was an incredibly challenging exposure for her, Charlotte admits, but

being in the residential program and having structure to her day helped her face her fears.

"You have to work hard. It can be frustrating, but you just have to keep fighting it," she says. "There was a lot of support and it was a comfort knowing someone was always there. Everyone was so well trained. Everyone was so kind, so understanding. I never felt judged."

"Canadians have not had this kind of treatment available to them," says Dr. Richter. "Until the launching of the Thompson Centre, Canadians had no access to programs like this unless they went to the United States."

Before this innovative program, only a handful of patients were able to receive OHIP funding to attend similar types of treatment programs based in the United States. Since then, the



Dr. Peggy Richter heads up the Frederick W. Thompson Anxiety Disorders Centre, Canada's most specialized centre in OCD and related disorders.

funds have been diverted to the creation of the intensive residential treatment program for OCD at the Thompson Centre. The program provides intensive CBT, which is part of a holistic and team-based approach that also helps families to support recovery. As well, patients may be able to attend the day program and participate in therapy five days of the week.

"Teamwork is essential," says Dr. Marlene Taube-Schiff, team lead for the new OCD treatment program at the Thompson Centre. "Our staff expertise involves a diversity of disciplines, including psychiatrists, a psychologist, occupational therapist, social worker and a mental health clinician."

Residential treatment has been shown to provide a safe and therapeutic environment to help ensure that the most effective care is being delivered to individuals with treatment-resistant OCD. "CBT is delivered intensively for about three to five hours daily, either individually or in a group," explains Dr. Richter. "This is supplemented by mindfulness, along with elements of acceptance and commitment therapy, which helps a person see that behaviours can be shaped or changed with therapy. Dialectic behaviour therapy, a form of CBT which focuses on accepting a person's thoughts, is also incorporated. There is also occupational therapy and regular social work groups focusing on relationships and communication."

Individuals with severe OCD who complete residential programs often see a 50-per-cent reduction in symptoms or better. Experts attribute this to the intensity of the treatment and the individualized approach to CBT, along with the therapeutic nature of the setting and being surrounded with support from staff and other patients.

"The majority of our clients have referred to the importance of being in an 'OCD community.' They feel less alone and [feel] validated in the symptoms they have been experiencing for so long, but perhaps have never shared to this extent," notes Dr. Taube-Schiff.

While there isn't specific data linking the community impact to patient outcomes, it's something Charlotte agrees with. "There was never any feeling of judgment," says Charlotte. "It was the most comfortable I've ever felt and also the first time in as long as I can remember that I finally felt like I was living."

In just a short time, the program is making a big difference. As word of the Thompson Centre continues to spread across

Canada, so too does the wait list. With financial support from donors, the hope is to expand the facility and build a more extensive program for day patients, as well as more residential programming. "As we see the benefits that this kind of treatment approach can offer, we are hopeful we will enlarge the program in years to come and find a way to sustainably fund it," says Dr. Richter.

For Charlotte, a huge turning point was making the decision to join the group for a walk to a local coffee shop. When first asked to go, she froze and said, "No, I can't. I can't." After giving it a bit of thought, she reconsidered.

"I realized that the longer I put it off, the worse it was going to get. I thought, Why else am I here? Let's go, let's go before I change my mind!" Charlotte recalls, laughing.

"She'd been with our program two weeks and she had yet to walk more than 15 to 20 feet without extensive rituals," remembers Dr. Richter. "The look of joy on her face when we actually got off the property was a beautiful thing to see."

Charlotte is just one of the Thompson Centre's success stories and, these days, she can be found making dinner for her family, trying new recipes, using the computer or going outside to walk her dog. All of these are things that, before the program, she either didn't do or would have taken hours of rituals in order to do.

"Just being able to go out spur of the moment, being really spontaneous, waking up and being able to say, 'I'm going to the dog park today,' has been a really big change for me," she says with a smile.

The effort doesn't end when a person leaves residential treatment, she adds. In fact, she continues to work hard every single day and now understands that with the right supports, one can, in fact, learn how to live with OCD.

"It's important to know that you can live a good life," says Charlotte. "You can live a very normal life with OCD. It's always going to be a challenge, but you have to keep fighting." 🍀



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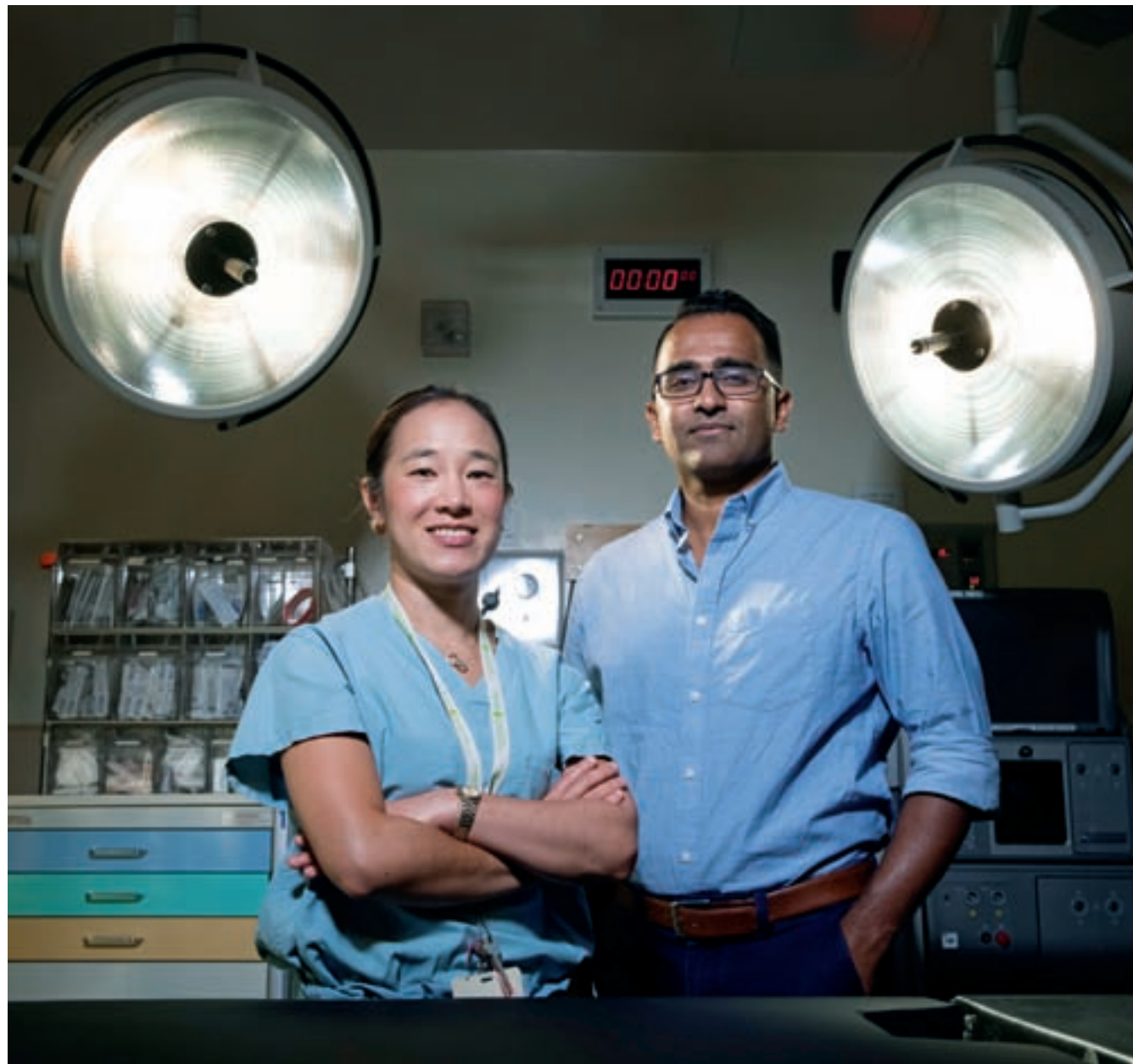
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PHOTOGRAPH BY DOUG NICHOLSON



A medical instrument inspired by a hardware tool

A new made-in-Sunnybrook device may help surgeons remove breast tumours with unprecedented precision

BY ALEXIS DOBRANOWSKI

A routine mammogram detected a suspicious mass in Sieu-Mui Luc Ong's right breast. An ultrasound and biopsy confirmed it: the 74-year-old had breast cancer.

"The tumour was found early and a lumpectomy was recommended," says Sieu-Mui, who lives in Thornhill, Ont. "I felt comfortable with that and I was not too afraid."

The clinical trials team approached Sieu-Mui about MOLLI (magnetic occult lesion localization and imaging), a new tool that could help the surgeons locate

and remove the tumour in her breast with ease.

Think of MOLLI – a device designed and made in Sunnybrook – like a stud finder, the handheld metal detector used to locate studs behind drywall. A tiny magnet is inserted into the breast tumour and, during surgery, the surgeon uses a small wand to locate the magnet. The system, to which the wand is connected, then identifies the location and exact depth of the magnet, showing the surgeon where and how deep to cut.

Sieu-Mui became the first patient in a pilot trial testing the effectiveness of the device. "I don't mind being first," Sieu-Mui says. "The researchers and doctors have to test it out, and then it can help people in the future."

During a lumpectomy, surgeons try to remove the tumour with clear margins, so no cancer cells are left behind.

"As surgeons, we don't have X-ray vision, so we need something to guide us to the tumour and help us remove it as precisely as possible," says Dr. Nicole Look Hong, a breast cancer surgeon at Sunnybrook and lead physician on the MOLLI project. "If, after lumpectomy, it's found [that] the margins aren't clear of cancer cells, the patient has to come back for more surgery."

Guide wires or, more recently, radioactive seeds implanted into the tumour help surgeons locate where to make the incision.

But the guide wires are painful for patients, and the radioactive locator seeds (not to be confused with radioactive seeds used to deliver radiation therapy for other types of cancer) have a host of administrative costs and processes that make them impossible for some cancer programs to adopt.

The radioactive seed system also doesn't tell a surgeon how deep to cut. That means there's an element of educated guessing, Dr. Look Hong points out.

The topic of lumpectomy navigation and radioactivity came up at a summer barbecue party about seven years ago at the



home of Dr. Calvin Law, chief of the Odette Cancer Centre.

Dr. Look Hong connected with medical physicist Ananth Ravi and they set out to find a better, cheaper way to locate tumours.

GOLD MARKERS

It has taken Ananth, Dr. Look Hong and a team of engineers lots of time, testing and trips to the hardware store, literally, to get MOLLI to this point.

"The first step we take when trying to solve a problem is identifying all the possible solutions, then choosing ones that could work for the health-care system," says Ananth. "One of our first attempts was to buy a stud finder

this page:

The MOLLI system gives surgeons a measurement of the distance between the probe and a small marker within the tumour.

The system's interface is simple and easy to see in the operating room.

opposite page:

Breast cancer surgeon Dr. Nicole Look Hong and medical physicist Ananth Ravi were part of the MOLLI project team.

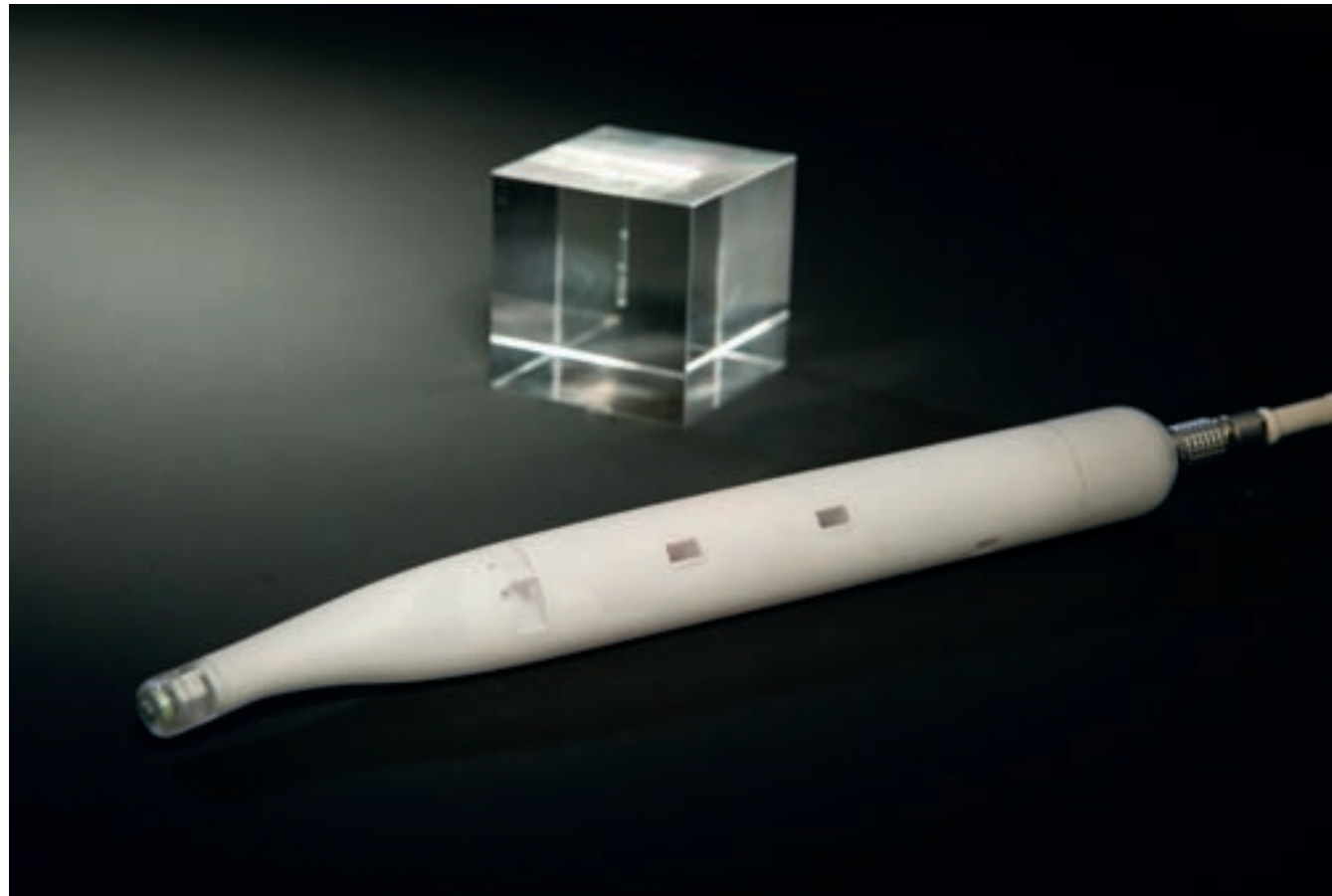
and use it to try to find implantable gold markers."

The stud finder with gold worked, but only if the gold wasn't too deep, he notes. They "souped up" the device to try detecting the gold deeper in tissue. "It became too powerful and it blew up," he says.

The team played with a few other ideas like copper tubing and infrared goggles (too hot) and microchips (too big) before returning to the stud-finder concept.

"In health care, the solution you come up with has to work all of the time," Ananth explains. "The simpler it is, the less chance there is of it breaking."

His team turned to very weak magnets and, using their



‘As surgeons, we don’t have X-ray vision, so we need something to guide us to the tumour.’

Dr. Nicole Look Hong, breast cancer surgeon, Odette Cancer Centre

above: MOLLl, an innovative device designed and made by a team at Sunnybrook, helps to find and identify the exact depth of a malignant tumour in the breast.

stud-finder tests as inspiration, set out with the surgeons to design and create a wand and computer interface. The wand is 3-D-printed in medical-grade materials, and the custom software was all designed and made in-house, too.

“It’s so detailed and precise but also so simple,” Dr. Look Hong says. “Instead of getting more complicated, the concept has gotten simpler – not to underestimate the years of work that have gone into it.”

Both Dr. Look Hong and Ananth are pleased with the result – and ecstatic the system is being tested in patients.

“This gives us clear measurements,” Dr. Look Hong says. “Because the magnetic seed doesn’t decay like the radioactive seeds, it has a constant signal, so we can get a measurement from the seed to the wand. If I know reliably that I’m two centimetres away from the tumour, then I know it is a safe place to cut to have good margins.”

WHAT’S NEXT?

According to Sieu-Mui, when the magnet was implanted in her tumour, she barely even noticed it. She had both the radioactive seed and the new MOLLl seed put in, so that the team could compare the two systems. She returned two days later to Sunnybrook for the lumpectomy under anaesthetic and went home the same day. There’s hardly even a mark on her breast, she says.

Dr. Look Hong hopes the MOLLl system will rise from its humble beginnings to become a global standard of care.

“MOLLl – a magnet, a small wand and a screen – would be easy for more centres to incorporate, even in low- and middle-income countries where they don’t screen for breast cancer because the only treatment they have available is full mastectomy,” says Dr. Look Hong. “The goal is that MOLLl can be disseminated widely at a low cost and help save lives.”

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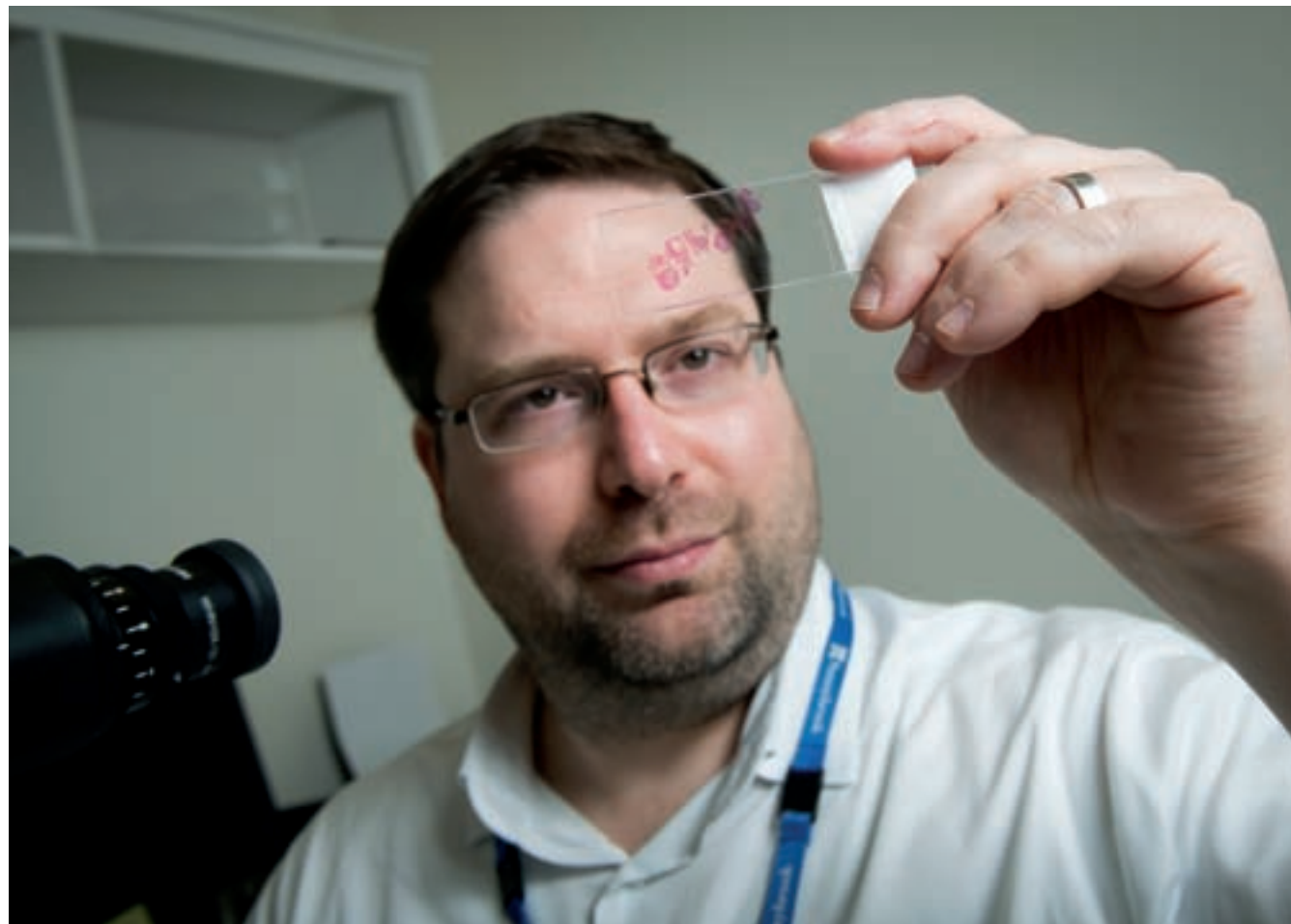
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**OPERATION
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The human connection

How empathy retains the humanism in patient-doctor rapport

BY DONNA YAWCHING

Dr. Matthew Cesari spends a lot of his time in a laboratory, peering at human tissue through a microscope. It's rare that he will meet with an actual patient. Still, the director of surgical pathology at Sunnybrook believes that empathy is an essential component of his job.

"I try to humanize the specimen," he explains. "We are dealing with tissues that have been removed from a person. I want to always remember there's a human being at the other end, and that the work we do will have a tremendous impact on that patient."

The job of a pathologist is to analyze tissue specimens –

above:
Sunnybrook pathologist Dr. Matthew Cesari says he tries to look beyond a lab specimen to the human being it came from.

"mostly cancer, but not always," he says – and then submit a diagnostic report that will, ultimately, influence the therapy a patient receives. Accuracy is crucial.

"When you're not necessarily dealing with the [actual] patient, it's much easier to fall into a routine mindset," Dr. Cesari notes. "By reminding yourself that patients are not just case numbers, it keeps you sharper. It's like having an interaction with the patient, even if the patient isn't there. For me, it makes the work more valuable. It's more than just issuing a report, it's consulting on a human problem."

At the other end of the patient spectrum is Dr. Debbie Selby,

a physician in Sunnybrook's Palliative Care Unit. Interacting daily with people who are nearing the end of their lives, Dr. Selby sees empathy as a given. "I don't walk around thinking about being empathic," she says. "To me, that's inherent in what you're doing, which is figuring out the best options for them."

This is the skill she attempts to teach her students – the ability to be sensitive to the patient's needs, beyond the obvious. "There's a difference between listening and hearing," she notes. "It's the ability to hear, and not just look at the numbers, that really matters. And that can be really hard, particularly for trainee doctors,

who are still working at learning a vast body of knowledge. They can become obsessed with the facts and figures."

When caring for patients at the palliative stage, Dr. Selby says it's important to focus on who the patient is. "Who is this person? What is important to this person? What does this person need from me to make their path easier?"

For Dr. Selby, it may be as simple as sitting on the edge of a patient's bed during daily rounds, arranging for another patient to be taken outside to enjoy the sunshine, or discussing medical details in depth with a third patient.

"It's about tailoring the treatment to the patient's needs," she points out. "Is that empathy or is that just sensible medicine?"

To that question, Dr. Ari Zaretsky, Sunnybrook's chief of psychiatry and vice-president of education, would answer, "Both!"

An ardent proponent of "narrative medicine" – the official term for the integration of empathy into medical practice – Dr. Zaretsky warns that as health care becomes ever more dependent on complex technology, something vital may be at risk.

"Medicine is becoming extremely technologically sophisticated and scientifically based, and that's a good thing on many levels," he says. "But there's a danger of losing the humanism, both in medicine and in the doctor-patient relationship. It's very important to retain the humanism."

The narrative medicine movement emerged about two decades ago as an effort to encourage medical practitioners to pay close attention to their patients' personal stories (their narratives) in order to maintain that human connection, even while remaining steeped in the necessary science.

"When you listen closely to a patient's experience of illness, it's not the same as just knowing the facts and figures of the illness," Dr. Zaretsky explains.

The benefits of narrative medicine go both ways. "Generally,

patients do better with empathic treatment," he says. It can also be a way to reduce burnout among health-care professionals, especially in high-pressure places, like the intensive care unit. It helps them to "retain their hope and their sense of meaning," he notes.

Dr. Zaretsky sees narrative medicine as the wave of the future. Already, major medical schools, like the University of Toronto (U of T), are integrating it into their programs. "It's a way to counterbalance the head with the heart," he says. "Otherwise, you're probably going to have patients feeling that their doctors are robots."

Ben Fung, a third-year medical student at U of T, understands the attraction to technology. "It's immediate," he says, "and it provides so much more information to work with than ever before." But he believes it must be properly integrated into the narrative process.

"History-taking is the most important aspect of our medical decision-making," he declares. "In the past, the patient in front of you was all you had – their narrative and the physical examination. In the end, 90 per cent of [the medical information] comes from the patient interview. Only 10 per cent of the time do you need the extra tests to confirm diagnosis."

According to Fung, the new generation of trainees is embracing narrative medicine, with its importance being heavily emphasized in the curriculum. "Perhaps there has been a cultural change," he speculates. "Medical students are being taught to hold onto those idealistic feelings that motivated them to come into medical school."

It's a misconception, Fung notes, that narrative medicine takes a long time, that it's arduous and low-yield. "It does not take a lot of effort. It could be one small question, a physical gesture, and one or two reassuring words. We must never forget that the patient is a person, not just a problem to be solved." 📌

OUT OF DARKNESS

Out of Darkness – a multimedia project initiated by Dr. Ari Zaretsky, Sunnybrook's chief of psychiatry and vice-president of education – chronicles the personal journeys of five patients with bipolar disorder as they reclaim their lives from the darkness of mental illness. It is narrative medicine made visual.

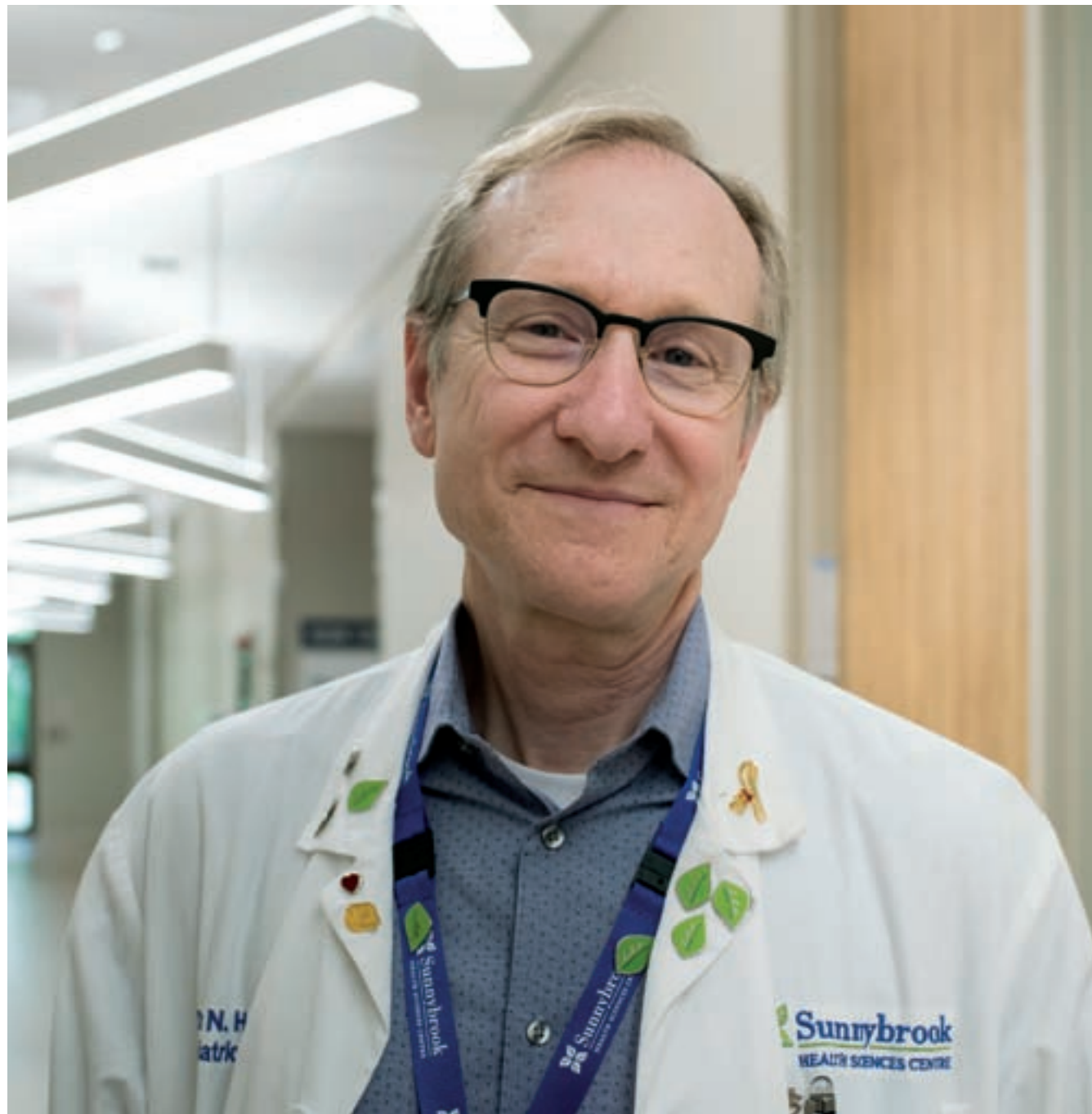
Intended primarily as a teaching tool for medical trainees, the short videos – artistically edited to evoke the emotions being described – also offer solace to the patients themselves and, to their families, a glimmer of enlightenment. "Telling your story is a way to make you feel less alone," says Dr. Zaretsky.

Dr. Joanna Jarecki agrees. She was one of Dr. Zaretsky's patients and her narrative is featured in the series. "It is therapeutic to tell your story," she notes. "It helps you process what has happened to you, and the meaning that experience has had in your life."

A psychiatrist herself, Dr. Jarecki says that since participating in the project, she has shared, albeit selectively, her own history of mental illness with some of her patients. "I have found that it strengthens the therapeutic relationship," she says. "It strengthens my credibility. Patients have a sense that I know what they are talking about. It levels the playing field and makes them feel more comfortable to share their own story."

The *Out of Darkness* series will be useful to both patients and students, she says. "You see the patients' faces. You hear their stories. It humanizes the condition. Even though the five participants share the same diagnosis, each person has their own unique experience of illness and recovery."

Watch the *Out of Darkness* series at outofdarkness.ca.



The Memory Doctor

Geriatric psychiatrist Dr. Nathan Herrmann has dedicated his career to treating and researching Alzheimer's disease and dementia

BY JUDY GERSTEL

When Dr. Nathan Herrmann was a medical student, he intended to specialize in orthopaedic surgery.

Instead, he became the “Memory Doctor,” specializing in geriatric psychiatry and dementia.

While geriatric psychiatry is not a popular specialty for physicians, Dr. Herrmann explains this area of medicine fits his interests perfectly.

“I have an affinity for older people,” he says. “I grew up with my grandmother living in our home and had a very close relationship with her. I appreciate the wisdom of the elderly and I’m fascinated by the amazing stories they tell about their lives and experiences.”

About 25,000 Canadians are diagnosed with dementia every year and more than 600,000 Canadians are living with the disease.

“The risk for Alzheimer’s and other dementias increases significantly after age 65,” notes Dr. Herrmann, “and people are living longer.”

With what Dr. Herrmann refers to as “the silver tsunami” upon us, his expertise and insights are more valuable than ever.

Dr. Herrmann also consults on a regular basis at Sunnybrook’s Veterans Centre and the Dorothy Macham Home, a facility that supports veterans with challenging dementia-related behaviour. The average age of the 475 resident veterans is 95.

“I work with the staff at the Veterans Centre on diagnostic issues and the treatment and management of neuropsychiatric symptoms,” he explains, “and on a weekly basis with staff at the Dorothy Macham Home, where residents’ dementia is more advanced and the symptoms are more severe.”

“We have a complex team,” notes Dr. David Shergold, an attending physician at the Veterans Centre and at the Dorothy Macham Home. “And we wouldn’t be as effective without Dr. Herrmann’s leadership and his expertise in looking at some of the dementia behaviours as expressions of war-related stresses.”

According to Dr. Herrmann, visual and auditory reminders of the war, for example, can exacerbate symptoms of post-traumatic stress disorder. “Veterans may become anxious, agitated [or] depressed and [may] experience sleep disorders or withdraw,” he explains.

PHOTOGRAPH BY KEVIN VAN PAASSEN

Dr. Shergold adds, “We all benefit as staff members from Dr. Herrmann’s wisdom. The veterans benefit even more.”

They also benefit from Dr. Herrmann’s research, which focuses on drugs to control dementia symptoms. He has co-authored dozens of papers based on results of clinical trials at Sunnybrook.

This summer, at the Alzheimer’s Association International Conference in Chicago, he presented evidence that nabilone, a synthetic cannabinoid, “demonstrated a significant reduction in agitation and aggression...and a significantly greater reduction of overall behavioural problems.”

‘The risk for Alzheimer’s and other dementias increases significantly after age 65, and people are living longer.’

Dr. Nathan Herrmann, geriatric psychiatrist

Dr. Herrmann also consults with physicians in the community and is well known online as the Memory Doctor. His blog on the Sunnybrook website answers questions about dementia and offers advice about brain health.

“The issues I deal with are questions that come up with every single patient and family,” he says. “I saw a need to educate

opposite page:

Dr. Nathan Herrmann works with veterans to study the causes and treatment of Alzheimer’s, dementia and memory loss.

the community about issues related to dementia. There are things people can do to reduce the risk of cognitive decline.” His recommendations include exercise, a Mediterranean diet, stimulating activities and good medical care for things like high blood pressure.

The 60-year old psychiatrist practises what he preaches. He eats very little red meat and plenty of fruits and vegetables, and he goes to the gym three times a week. On other days, he cycles or walks through the paths and gardens surrounding Sunnybrook.

And while he may do his daily walk at a comfortable pace, his mind is often racing. “Sometimes, as I’m walking, I’m thinking about patients or writing papers in my mind,” he says.

“It’s very important to keep mentally active. For some people, that means working. Work gives structure, schedule, social interaction and mental stimulation. But there are lots of ways to keep mentally active. The research does not provide great clarity on the best way to do mental stimulation, but we recommend doing as many mentally stimulating activities as possible.”

Dr. Herrmann finds the enigma of dementia – the fuzziness surrounding the diagnosis, cause and treatment of the disease – both stimulating and challenging.

“There is so much work to do, so much research needed to understand the basic components and the causes and how to treat it. It’s a gratifying area to be in.”

But he concedes that finding a cure for dementia has been slow going. “When I started my career in the late 1980s, I’d tell audiences that I was confident there’d be a cure in 10 years. I stopped saying that 10 years ago.”

Nevertheless, Dr. Herrmann maintains a positive perspective. “There is a lot we can do to improve the lives of people with dementia by treating symptoms and treating aspects of the disease that need to be addressed to help families deal with it.”



Gentle pressure goes a long way

New technique improves quality of life for burn patients in rehab

BY NATALIE CHUNG-SAYERS

Thanks to a form of therapy typically used in orthopaedic rehabilitation, burn survivor Jerry Louvis, 46, now talks about regaining his strength. “I am much closer to where I was and what I was able to do.”

In spring 2016, Jerry was treated at the Ross Tilley Burn Centre at Sunnybrook for severe burns to most of his body from a chemical

fire, receiving care as an inpatient at Sunnybrook’s St. John’s Rehab. By the summer, he was back at home but continuing to go to St. John’s Rehab for therapy appointments.

The goals of burn therapy include improving patients’ range of motion and function, minimizing contracture and supporting their social reintegration. Jerry had

regained some muscle strength but felt that his movements were “wooden” and clumsy. An accomplished scientist with a very precise mind, he longed to be able to do things with more accuracy and finesse.

A year and a half later, he had surgery for heterotopic ossification – a condition that sometimes affects patients after severe burns or orthopaedic trauma – when bone grows in muscle or tendons, which can be painful and can significantly restrict movement.

During rehabilitation, Jerry received both standard manual therapy and a new approach called myofascial release technique. Standard manual procedures are helpful and effective and have been used for decades

in burn rehabilitation. They involve scar massage, joint exercises, stretching, the use of pressure garments and silicone-based gels to treat scars, as well as splints to help control how a burn heals.

“More people are fortunately surviving larger burns, and there is greater need to help them improve their ability to move and carry out activities every day, [which] helps enhance their quality of life,” says Lisa Giardino, a physiotherapist in outpatient rehabilitation services at St. John’s Rehab.

Myofascial release techniques are a type of manual therapy used with orthopaedic patients – those recovering from conditions of the bones and joints. Lisa is now researching these techniques for the first time in patients with burn injury.

Having worked with burn patients for 15 years, Lisa felt there was more that could be done to improve her patients’ outcomes. It made sense to her that the same techniques used in orthopaedic recovery could be used to overcome the scarring caused by burn injuries. She set out to prove her hypothesis.

Scars can affect many aspects of the body, including muscles

and fascial systems. Fascia, the layer of connective tissue under the skin that forms a network surrounding other kinds of tissues, including muscles, bones, blood vessels and organs, connects those tissues like woven fabric. Healthy fascia is relaxed and can glide easily over underlying tissues. Injuries to the body, such as burns, can restrict mobility of the fascia, causing tension and pain.

“Scars are like icebergs – what you see is only part of the story. The bigger part is how the scar has been laid down, underneath. You have to feel it to know,” says Lisa.

Myofascial release techniques involve loosening the fascia within the scar tissue, using massage. This technique frees up the scar from the underlying tissues, so those tissues can glide over each other more freely, making it more comfortable for the patient and restoring function.

“Considering the significant impact of burn injury on tissue integrity, using myofascial techniques to improve scar outcomes could be an innovative approach to burn care in patients with closed wounds,” Lisa points out. “Myofascial release techniques are a good enhancement to stan-

opposite page
Physiotherapist Lisa Giardino treats a burn patient in outpatient services at Sunnybrook’s St. John’s Rehab.

dard approaches. They’re another tool in a clinician’s toolbox.”

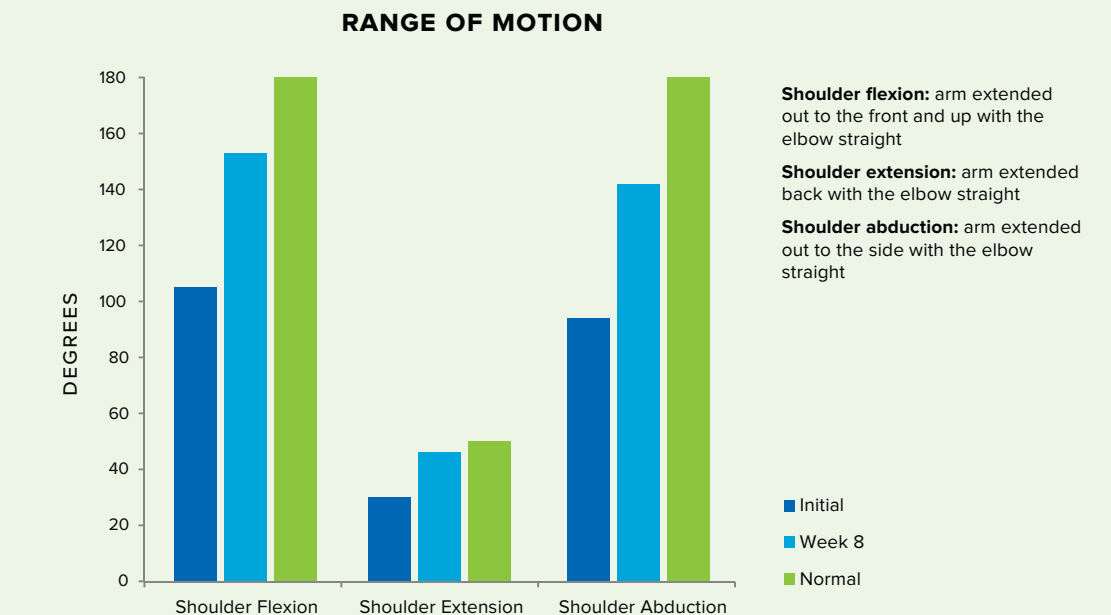
Patients often report that the techniques are gentle and comfortable. Some find it so restful they fall asleep. This new approach gave Jerry more range of motion that has since stayed with him. “I was a skeptic at first, but then I really noticed the difference. There I was, trying to move muscle that had been stuck for a year,” he recalls.

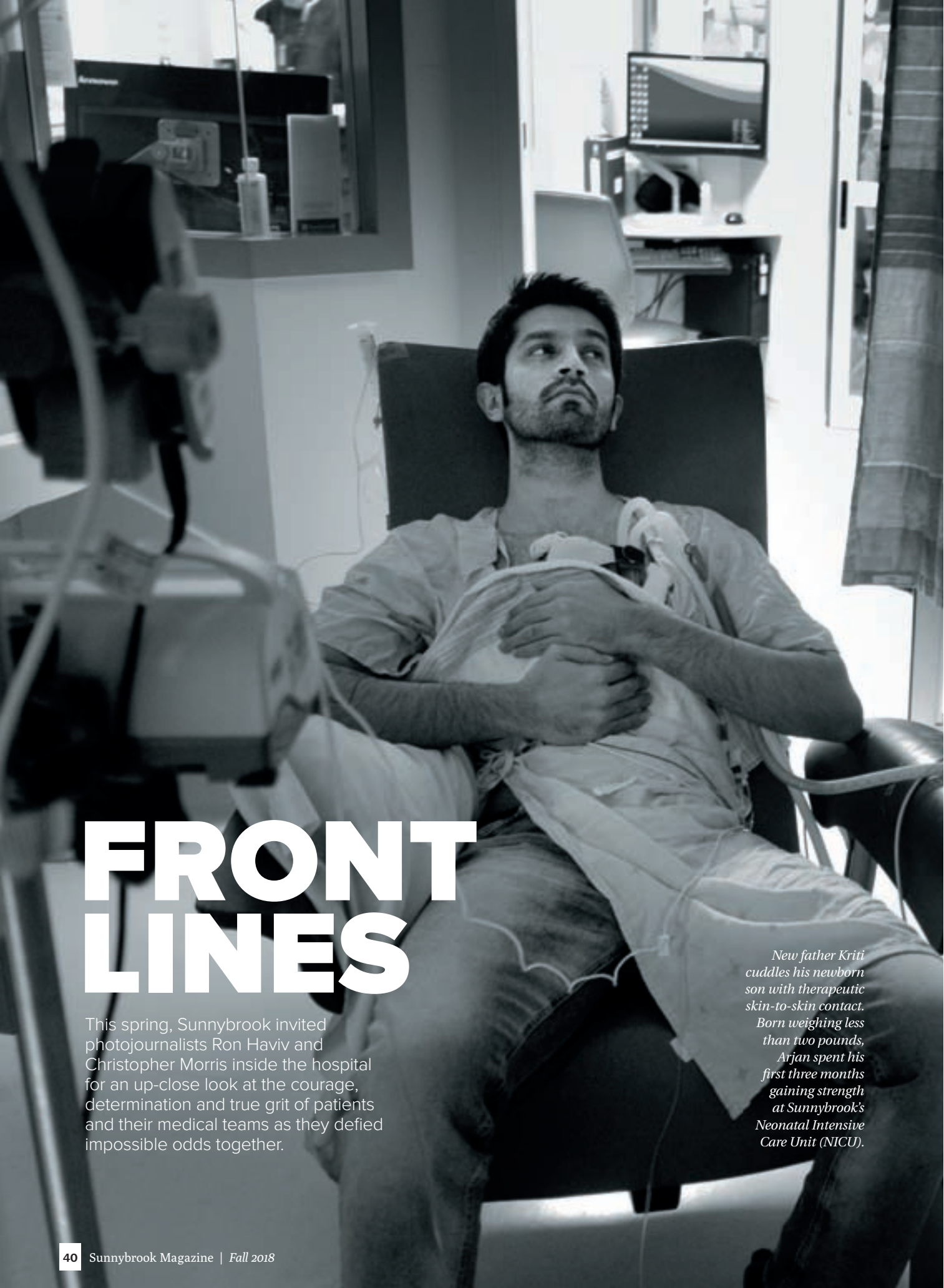
Over the next six to 12 months, Lisa will continue to measure changes in patients in terms of their range of motion, function, scar characteristics and quality of life to benchmark the use of myofascial release techniques in therapy. “Burn rehab is a team effort,” notes Lisa, who is collaborating with her colleagues and encouraging them to learn more about the technique.

“My ability to move has become a lot more refined since this type of therapy. I can now write, type and do repairs around the house,” says Jerry. “For me it’s about getting to the subtleties of range of motion – not just getting up in the morning, but instead, sitting up in bed with the confidence of knowing I can move with measure and precision.”

PHOTOGRAPH BY KEVIN VAN PAASSEN

Range-of-motion outcomes for a 39-year-old patient with 11% total body-surface-area burns who had myofascial release therapy for 30-minute sessions twice a week for 8 weeks:





FRONT LINES

This spring, Sunnybrook invited photojournalists Ron Haviv and Christopher Morris inside the hospital for an up-close look at the courage, determination and true grit of patients and their medical teams as they defied impossible odds together.

New father Kriti cuddles his newborn son with therapeutic skin-to-skin contact. Born weighing less than two pounds, Arjan spent his first three months gaining strength at Sunnybrook's Neonatal Intensive Care Unit (NICU).



Sunnybrook cares for some of the sickest patients in Ontario. Many of them come to Sunnybrook looking for care they can't find elsewhere.

Every patient has a story to tell, and so too do the medical teams who care for them. Every story is different, but each has something in common: courage. For patients, it's the grit to face their toughest days without turning back. For friends and family, it's the resilience to push ahead when they can't imagine taking

another step. For hospital staff and researchers, it's the determination and the tenacity to keep searching for a solution despite impossible odds.

A new campaign offers a glimpse into these stories through the lenses of photojournalists Ron Haviv and Christopher Morris. Renowned for their ability to capture the human cost of war on the frontlines, they brought the same sensitivity and skill to document the human moments that happen

every day on the front lines at Sunnybrook.

Featured on these pages are just some of the stories of courage that Haviv and Morris witnessed. What is not immediately apparent in the photos is the importance of private investment – philanthropy that makes life-saving medical advances possible. From treating brain disease with sound waves instead of a scalpel, to novel procedures that eliminate the need for open-heart

surgery, to game-changing radiation technologies that target tumours with pinpoint precision, generous donors assist Sunnybrook to bring first-in-the-world procedures to patients.

In showing the human side of such breakthroughs, this campaign hopes to inspire more people to give because donor generosity helps the staff at Sunnybrook be there for patients and their loved ones when it matters most.

– Alanna Evans

CLOCKWISE FROM TOP

Sunnybrook staff prepare for a minimally invasive aortic valve replacement, providing an option for those who are too high-risk for open-heart surgery; Karima, who is part of a clinical trial at Sunnybrook after being diagnosed with stage 4 metastatic breast cancer five years ago, shares an affectionate moment; Brenda is fitted for an eye prosthetic prior to a surgery that will enable her to magnetically attach it in a matter of seconds.





CLOCKWISE FROM TOP LEFT
Carolyn recovers after a successful minimally invasive procedure to repair her heart; David, who had 15 brain tumours treated with the Gamma Knife Icon, awaits results from his latest MRI scan; Agnes receives specialized care in the Critical Care Unit; Camiele with her newborn twins Reynaldo and Ronaldo (Rey and Ron), in the NICU; a flight lieutenant in the Second World War, Mac Joyner, 95, is a resident at Sunnybrook's Veterans Centre; Paolo regains his strength at Sunnybrook's St. John's Rehab after both his legs were amputated below the knee.



Sunnybrook is deeply grateful to the patients, family members and staff who so generously allowed us to capture these moments.

CLOCKWISE FROM TOP LEFT
Wendy begins treatment with the Gamma Knife Icon, which spares healthy brain tissue as it targets tumours with precise beams of low-dose radiation. Sunnybrook is the first hospital in Canada to treat patients with this technology; Dr. Giuseppe Papia performs an intricate vascular surgery to save the leg of a patient with narrowing of the arteries caused by diabetes; Karen, who underwent 25 sessions of radiation over a five-week period, says she came out of the experience stronger; in what she calls "her most grateful moment," Emilia exhales after receiving good news from her doctor at the breast cancer clinic.





Showing respect for our elders

A Toronto developer sets an example with a \$10-million gift to establish the Peter Cipriano Centre for Seniors Health

BY DAVID ISRAELSON

Property developer Peter Cipriano has thought a lot about care for the elderly and how to keep seniors healthy and at home longer.

Already a strong supporter of the geriatric medicine division at Sunnybrook Health Sciences Centre and a generous donor, he is now donating \$10 million to create the Peter Cipriano Centre for Seniors Health. This centre will pioneer a new model of coordinated care, so seniors can stay healthy for as long as possible.

"My parents lived into their 90s and, like many, they were patients at Sunnybrook. This is a way to show my support," says the founder and chief executive officer of the Vaughan, Ontario-based Goldpark Group.

One of the things Peter likes about supporting geriatric medicine is that he can see how his gifts have made a difference. His support over the years has helped Sunnybrook expand a unique fellowship program for hospitalists – the doctors who care for patients while they are in hospital.

All hospitalists accepted to Sunnybrook's fellowship program now train in geriatric medicine. They return to work in hospitals across Canada and around the globe with an understanding of the complex health problems and specific needs of the elderly population.

Other educational initiatives Peter's donations support include a residency position for physicians specializing in geriatric medicine to support tomorrow's experts, and a geriatric medicine fellowship for an oncology resident at Sunnybrook's Odette Cancer Centre to better understand the challenges older patients face

during cancer treatment.

Peter's generosity has also made it possible to renovate and refurbish two examination rooms in the Geriatric Medicine Clinic, which now offers quiet, comfortable environments for patients and their families.

Why does he care so much? In addition to being grateful for the care his parents received at Sunnybrook, "I've always felt the need to give back," he says.

"I believe we as a community need to support our hospitals. Fundraising is a great way to do this."

In September, Peter hosted the Circle of Friends Gala to encourage others to give.

"I wanted to extend an invitation to my peers and friends to join me in raising funds for Sunnybrook," he says, "I had a matching challenge for my friends as I wanted everyone to be even more generous with their donations."

Peter says that in thinking about where to focus his philanthropy, he chose Sunnybrook and seniors care. "Sunnybrook has always been special to me because they have helped and cared for many people in my family. They provided the best care possible.

"Geriatric care is important. Everyone ages, and as people age, daily tasks can become much more difficult to accomplish, and there can be many more health problems. Seniors need the right resources and sufficient support."

He says his family found this support at Sunnybrook.

"The care my parents received is a motivator. It made me think about how many seniors and their caregivers would benefit from this new centre," Peter says.

opposite page:

Donor Peter Cipriano says he believes in giving back, so that seniors and their caregivers can benefit from quality of care.

The proportion of seniors in Canada continues to rise. According to Statistics Canada, there are now more people in Canada over 65 than under 14. The agency projects that, by 2036, seniors could represent a quarter of Canada's total population.

In a report issued in late 2016 called "The State of Seniors Health Care in Canada," the Canadian Medical Association noted that nearly three in 10 Canadians are already caring for a senior member of their family, and the number of seniors expected to need help or care is expected to double in the next 30 years.

"My belief is that the wonderful staff specializing in geriatric care at Sunnybrook can create a new way to care for seniors," Peter says.

The Peter Cipriano Centre for Seniors Health will introduce an integrated, patient-first approach. Staff will create personalized plans for each patient, coordinating the roles of geriatricians and hospital experts with primary care physicians and community and family supports. By actively managing patient care, the hope is seniors will remain healthy and independent for longer, reducing demands on other areas of the health system.

The 13,000-square-foot space will be senior-friendly in design, including a heated and covered driveway for drop off and pick up. Care will revolve around the patient's schedule – specialists will visit the patient during a given block of time, rather than asking the patient to come to multiple appointments over many days.

Peter hopes the new centre will have a meaningful impact on the health-care system. "It will change the way seniors care is provided because I believe that Sunnybrook has the specialized knowledge and leading research like no other hospital," he says.

"Our parents and our elders have nurtured us and made sacrifices to raise us. The experiences they lived and shared will shape the decisions and changes we want to make. Let's treat them with respect and do our best to provide them with the support they need as they age." 🐾

IT'S IN OUR BLOOD

A walk through Ontario's first end-to-end automated biochemistry lab

When we have questions about our health, we often brave the prick of a needle and surrender samples of our blood in the hope of getting answers. Sunnybrook's Core Laboratory, complete with Ontario's first end-to-end automated biochemistry lab, is where many of those answers are found.

With the automated biochemistry equipment, blood samples can go from receipt to result uninterrupted and without ever being touched by an operator, making testing faster and safer than ever before. A highly

specialized team of technologists, technicians and biochemists work around the clock, utilizing the Roche state-of-the-art laboratory automation system for both testing and specimen archiving. Together, the experts and the machine process approximately 4.5 million tests per year for Sunnybrook patients, community hospitals, government and research agencies, and private laboratories throughout central Ontario.

Here's how it works.

— Katherine Nazimek



1 Blood samples are collected and barcoded immediately. Each barcode is unique and linked to patients and their wristbands, making patient and specimen misidentification almost impossible.



2 Samples get to the laboratory on foot or through the pneumatic tube system, a two-way highway that lives between the walls of Sunnybrook, connecting the lab to 25 patient care areas throughout the hospital.

4 A centrifuge spins designated specimens at up to 3,000 rpms, separating the red and white blood cells from the plasma for testing.



3 A technician logs each sample and its requested tests into the laboratory information system before placing it onto the automated equipment. As the sample travels through the system, its barcode is scanned and rescanned at various points to determine its path.

8 After being held in a buffer for 2.5 hours in case other tests are required, the blood sample travels to a 27,000-tube-capacity archiving refrigerator. At any time within the next seven days, the refrigerator can dispense the sample for extra testing before being automatically discarded.



6 For efficiency, the system uses two sets of four analyzer machines that can conduct 120 different tests, including electrolytes; liver, kidney and cardiac function; hormones and HBA1C. Results are generated within minutes.

7 Technologists review any abnormal tests, taking action where necessary, before the report is sent to the referring physician.



5 If a portion of the sample (known as an aliquot) needs to be sent to another facility or stored for batch testing, the machine automatically de-caps the test tube, removes a portion of the sample and puts it in a separate container that is immediately labelled with the patient's barcoded information.

PHOTOGRAPHY BY KEVIN VAN PAASSEN; LAYOUT BY KATHERINE NAZIMEK; ILLUSTRATION OF LABORATORY AUTOMATION SYSTEM, COURTESY OF ROCHE DIAGNOSTICS.



Thank you Sunnybrook

On April 23, 2018, Canada experienced one of its deadliest attacks on one of its busiest streets in Toronto.

As the closest trauma centre, Sunnybrook triggered a Code Orange to prepare for a mass casualty incident, and minutes later, ambulances started arriving with the wounded. The events of that day shook the city. Along with a profound sense of grief and shock, there was also an outpouring of love and concern from Toronto's citizens, from across Canada and from around the world.

After seeing Sunnybrook's response to the attack on the news, the 70th Toronto

Pathfinders were moved to thank the hospital. The troop, ranging in age from 12 to 14, sent Sunnybrook a decorated letter expressing gratitude for the care provided to the survivors, as well as dozens of boxes of cookies to the emergency department staff.

"When I received this letter, I was extremely humbled," says Dr. Dan Cass, executive vice president at Sunnybrook. "This tragic event was unthinkable. To see the way that people came together in its aftermath to support each other was incredible."

— Laura Bristow

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