

Sunnybrook

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IN SICKNESS AND IN HEALTH

How Katie Jodrell went from a fractured spine to the altar in only 10 days

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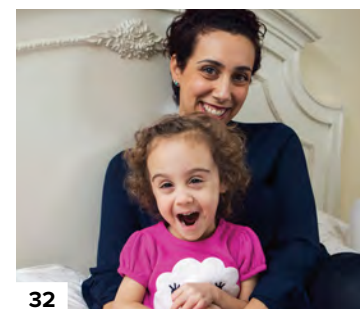
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ON THE COVER Katie Jodrell fractured her spine just 10 days before her wedding. She is shown with the prototype surgical navigation system that helped physicians repair her in good time to make it to the altar. **PHOTOGRAPH BY TIM FRASER**

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WE ARE SUNNYBROOK

faces of our staff and our community



THE RESEARCHER

A BEDOUIN TRAILBLAZER

As a young girl in Israel, Dr. Rania Okby looked forward to appointments with her pediatrician. "She always made me feel special. I knew that when I was older, I wanted to become a doctor and make people feel special, too." In 2004, Dr. Okby did just that, achieving her lifelong dream of becoming a physician.

In the decade since, she has become a role model to other young women in her community – as the first female Bedouin physician, ever. "I didn't even know I was the first one until I started medical school, and the school told me," says Dr. Okby with a laugh.

The Bedouin are a traditional, Arab-speaking tribe who live in several countries across the Middle East. Of the estimated 21 million Bedouins, more than 200,000 live in Israel. "The first male Bedouin physician graduated back in 1971, so it was more than 30 years in the making. Since I graduated 10 years ago, five more Bedouin women have become physicians," says Dr. Okby.

Dr. Okby arrived at Sunnybrook last summer to complete a one-year fellowship in maternal-fetal medicine, with a specific focus on twins. "When I was studying for my final residency exams, I got to the material on twins and just felt a click. I knew that's what I wanted to do," she says.

Since arriving at Sunnybrook, Dr. Okby has enjoyed the interprofessional learning environment and the opportunity to improve her research skills. "I feel like I am part of a family here. I'm surrounded by people who care about me and who want to help me learn," she says.

Her time in Canada has also given her the opportunity to reflect on her goals for when she returns to Israel this summer. "As a female Bedouin doctor, I'm able to connect with my Bedouin patients in a way that others cannot. They can put their trust in me."

Sybil Millar



THE ADMINISTRATIVE ASSOCIATE

EMPOWERED BY EDISON

Dennis Varhanicek takes the concept of quality improvement and thinking outside the box to another level. In an effort to change practice on his unit in the Veterans Centre, Dennis led staff, with input from residents and family members, in the development of two innovative new programs.

Driven by his personal motto borrowed from Thomas Edison – “I have not failed; I have just found 10,000 things that do not work” – Dennis saw the potential for cost savings by streamlining the process for the monitoring and delivery of linen and medical supplies.

As a patient administrative associate (PAA), in Canada’s largest veterans’ care facility, Dennis finds it rewarding to collaborate with members of the interprofessional team to provide the best care and quality of life for the war veterans who call Sunnybrook their home.

“I feel valued and have come to understand each team member’s individual role and the importance of working together to reach resident and family goals,” says Dennis.

With the new linen program, residents receive an individually tailored daily linen allotment in their own bin, resulting in better tracking of usage, organization and a better quality of linen. For the delivery of medical supplies, Dennis developed a system of red/green on the bins to alert medical stores to scan only when green, rather than a “scan-all” system. This provides the unit with only the supplies they require for current residents.

Before receiving his bachelor of science in business degree at Pennsylvania State University, Dennis was an intern at Ruijin Hospital in Shanghai, a teaching hospital associated with the Shanghai Jiao Tong University School of Medicine. Working with the public relations and marketing department, he had the opportunity to learn about how different hospital-care models and global health-care alliances can shape and affect future change.

Dennis’s next goal is to obtain his MBA. As per his motto, he believes that you must never give up and that you always learn from conceived failure. “In reality, nothing we attempt to do is truly a failure; it is simply the process of finding success.”

Sally Fur

THE BEHAVIOUR THERAPIST

A MONITOR OF YOUNG MINDS

“Behaviour issues, like sleep problems, are fairly common in kids,” says Lesley Barreira, a behaviour therapist at Sunnybrook. What isn’t common is the children she works with or the setting in which she works. As a team member with the Neonatal Intensive Care Unit’s (NICU) Follow-Up Clinic, Lesley works with kids who were born weeks or even months early. Her role is also groundbreaking: last year, she became the first certified behaviour analyst in Canada to work in an NICU follow-up clinic.

Lesley knew early on that she wanted to work with children. “During university, I worked with young children with developmental disabilities, and this is when I became really interested in resolving behaviour issues,” she says.

One summer, while still a student, she took on the role of temporary foster parent for a little boy with Down syndrome. “It gave me a little insight into the day-to-day challenges of caring for a child and being a single parent. I was able to see how any improvements, even small ones, can have such an impact on the daily lives of the child and the family,” she says.

These experiences have helped Lesley at Sunnybrook’s Follow-Up Clinic, where she receives referrals for issues such as self-regulation, feeding, sleep, hyperactivity and learning disabilities, which are common among children born prematurely.

Lesley describes the rest of the team at the clinic as progressive, positive and eager to make a difference in the lives of their patients. “The families we work with have come through life or death situations, and even though they’ve made it to the other side, they still need our help. There is a real emphasis on trying to provide the best care possible. It’s all about improving lives.”

Sybil Millar





THE DIETITIAN

FOOD, GLORIOUS FOOD

Daphna Steinberg sees herself as hitting the jackpot of jobs. “I get to talk about food, all day,” she laughs. “The impact of nutrition is so pervasive on health.”

The registered dietitian, who joined Sunnybrook in 2004, isn’t the only one who feels exceptionally lucky. Her patients, who over the years have come from the Schulich Heart Centre, HIV clinic, Intensive Care Unit and now the High-Risk Obstetrical Unit, are very thankful that they’ve met Daphna. She has a stack of appreciative letters from patients recognizing the difference her guidance and care has made in their health.

She recalls a pregnant patient with gestational diabetes who was exhausted from an inability to control her blood sugars. After the standard full assessment, including the patient’s medical history and a review of vitamins, minerals, her diet history and blood work, Daphna made a simple recommendation that she eat a bedtime snack. “I received a call from her; she was ecstatic that her blood sugars were perfect,” says Daphna. “It’s those moments that are so amazing, when a rapport has been built, and you can see the improvement in a patient’s health.”

What is ironic, given the obvious perfect fit of career, is that it wasn’t until Daphna herself was referred to a dietitian that she knew it was the path for her. “This is it. This is what I want to do,” I said to myself.”

Since that realization, she has been sought after for a number of speaking engagements. She also regularly contributes to the Sunnybrook Speaker Series and Sunnybrook Foundation events.

Having recently received the designation of Certified Diabetes Educator, Daphna has achieved the gold standard of excellence in her field. “Working with patients with diabetes has allowed me to help them make positive changes to their lives. I can be a confidante and a cheerleader in their health journey,” she says.

Marie Sanderson

PHOTOGRAPHS BY DOUG NICHOLSON

THE CHAPLAIN

SOUL DOCTOR

Wes Roberts thought his life was a one-way street of devotion and service. Brought up in a faith-based home and community, Wes served as part of a pastoral team at a church for more than 10 years. But midway through his career, his path unexpectedly turned.

One day, his supervisor told him that the organization needed to make a change, and he would eventually be let go.

“It led to a lot of doubt and uncertainty about my future. It raised questions about my faith, about my self-worth and who I am as a person,” recalls Wes.

At the suggestion of his supervisor and with the support of his family, friends and peers, Wes explored hospital chaplaincy. He returned to school to fulfill the professional and clinical requirements of the role and completed his residency at Sunnybrook. He never left.

Eleven years later, Wes provides spiritual care and support to veterans and their families, particularly those living with neurodegenerative diseases like dementia or Alzheimer’s.

“Life can change in a heartbeat, in health especially,” says Wes. “When you’re blindsided by change, you may not just suffer physical distress, but also distress that’s emotional and spiritual.”

Despite popular belief, Wes says one does not need to be religious or of any particular faith for a chaplain to be involved in one’s care. In fact, religious care is only one component of his role. Wes is to the soul as doctors are to the body.

“I can’t fix the illness, but I can help [the patients] access their inner strengths to help them cope and navigate the changes they’ve experienced.” Wes supports patients and their families through compassion and companionship. He works to understand what is important to them – their beliefs and their values – and how that may relate to their care.

“Even though change can be unwelcome, there can be unforeseen gifts that come from that change,” says Wes. “My gift was Sunnybrook.”

Katherine Nazimek



THE CRITICAL CARE DOCTOR

LIGHTS, CAMERA, EXPERTISE

Dr. Shelly Dev, a critical care physician and clinician-educator at Sunnybrook, wears two hats. "I'm a physician, but I also describe myself as an expert collaborator," says Dr. Dev, education director for the Department of Critical Care Medicine. "I work with people to help them find innovative and interesting ways to teach others."

In 2006, Dr. Dev began a fellowship at the *The New England Journal of Medicine* (NEJM) to learn to produce videos that teach bedside procedures, like chest-tube insertion. The videos have been well-received, thanks to Dr. Dev's unique style and viewer-centred approach. Her collaborative role has led to international and national projects, including work with Canadian Blood Services. Dr. Dev has produced four videos for the NEJM, with more planned.

"My colleagues encouraged me to take my unique skill set and passion for education and turn it into something scholarly," says Dr. Dev. "I love being creative, and this work has really given me the best of both worlds."

"Video as a teaching tool is really exciting because it harnesses many different styles of learning through audio, on-screen text, images, animation and repetition. However, the key to using multimedia is knowing when it's effective as a resource and when in-person teaching is more beneficial. An excellent teacher can't be replaced."

Spending time with her family rejuvenates her creativity. "I really feel that my two boys, Jack, five, and Nathan, six, have enhanced my imagination. They get me thinking differently. And my amazing husband, Michael, inspires and encourages me every day and loves the tech stuff. He's my most trusted critic."

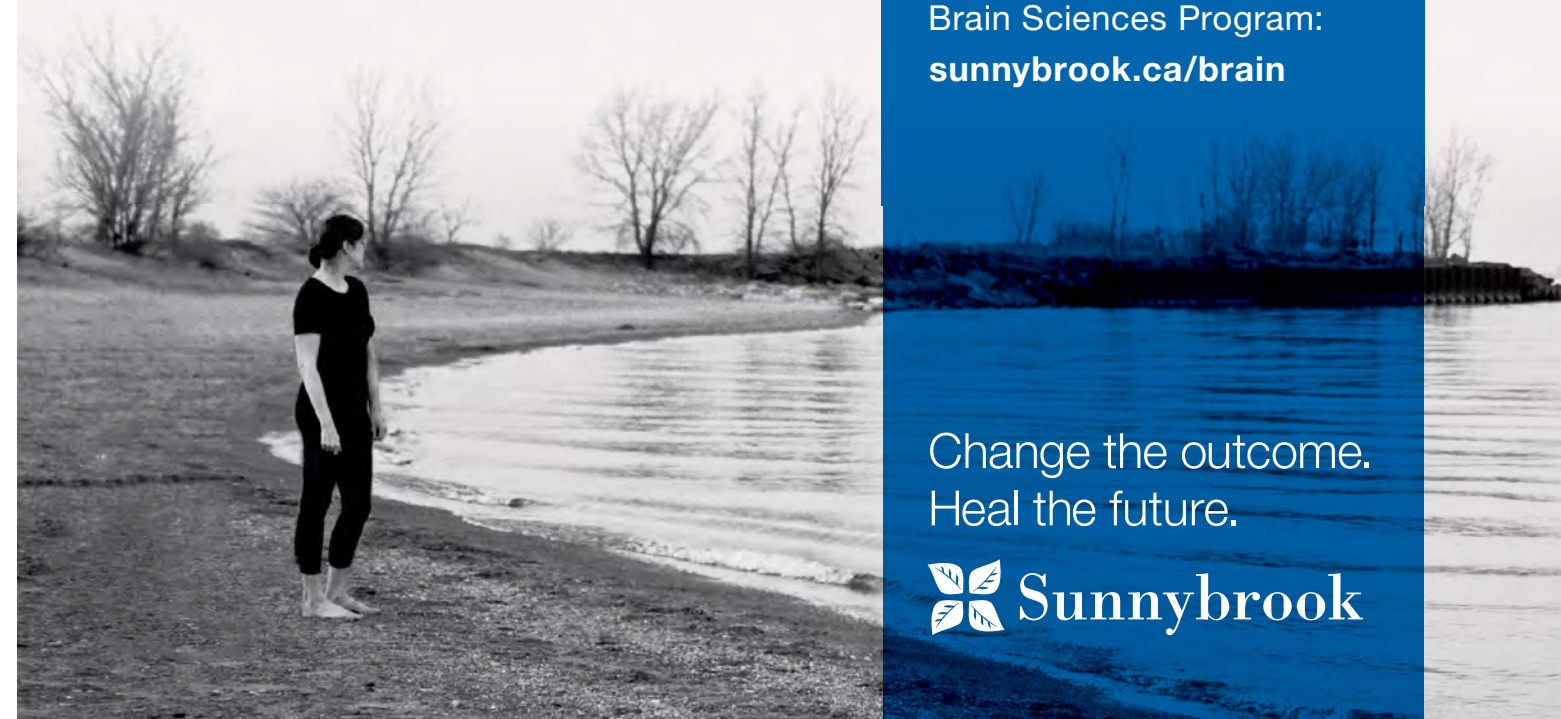
Laura Bristow



The outcome of Tiffany's devastating encounter with stroke was unimaginable.

She survived.

Tiffany was 31 and pregnant when she had a life-threatening stroke. While she was in a coma, Sunnybrook's obstetrical team delivered her baby by emergency C-section. Baby Clementine survived only 10 days. Sunnybrook's team of brain sciences experts not only saved Tiffany's life, but helped her keep living. She gradually re-learned to walk and talk. A year later, she is working again and contemplating having a child. Learn more about Sunnybrook's Hurvitz Brain Sciences Program: sunnybrook.ca/brain



PHOTOGRAPH BY DOUG NICHOLSON

Change the outcome.
Heal the future.





It's like an operation in HD – a system of sensors, targeted light and software that allows for spinal and brain surgery with **pinpoint accuracy**. And it helped one patient go from the operating table to the altar in only 10 days

SURGERY ON THE CUTTING EDGE

Katie Jodrell, whose spine was repaired using surgical navigation technology, is shown at Sunnybrook with husband, Ryan.

PHOTOGRAPH TIM FRASER

by Marjo Johne

S Seconds after Katie Jodrell fell almost three-and-a-half metres at a building site, her legs went numb and a great shaft of pain cut through her body. It was the last week of July, just 10 days before she was supposed to walk down the aisle to marry her fiancé, Ryan.

“Right away I knew there was something very wrong and I thought the worst, that I was paralyzed,” recalls Katie, a construction framer who lives in Port Hope, Ont. “Within half an hour the feeling started to come back to my legs and I was trying to think positive. But in the back of my mind I was thinking, ‘How can this be happening just before my wedding?’”

Katie was rushed to Northumberland Hills Hospital in Cobourg, Ont., where she learned she had two broken vertebrae and a fractured spine. From Northumberland she was airlifted to Sunnybrook for spinal surgery that would involve installing two metal rods and 10 screws onto her spine.

Just before the operation, Sunnybrook neurosurgeon Dr. Victor Yang asked Katie if she would allow the surgical team to use a relatively new, light-based technology that can map her spine in 3-D to give doctors a view of hard-to-see areas.

“He explained everything very clearly, and I understood that this technology was going to be better and that it would be safe,” says Katie. “Obviously I wanted the best and safest route possible.”

Katie agreed to Dr. Yang’s request. Ten days later, with her surgical dressing peeking up from the back of her strapless white gown, Katie walked – rather gingerly – across the floorboards of a light-filled barn to say “I do” to her groom.



WHAT DR. YANG OFFERED to Katie before her surgery was a chance to take part in clinical trials for an innovative surgical navigation prototype system, a technology he started developing in 2009 with an engineering team at Ryerson University. Dr. Yang, who is also an electrical and computer engineer, was completing his neurosurgery residency when he saw the limitations of modern imaging technology in spinal surgery where hardware has to be attached to bone and where pinpoint accuracy is critical.

“Modern surgical treatment is tailored to get you back on your feet as soon as



■ The light-based system that helps map the patient’s spine or brain to a high degree of accuracy.

possible – the longer you stay in bed the higher the chance of complications – and we do that by putting in hardware such as screws and bolts inside the body,” he says. “But when a patient goes through this type of surgery, there’s a risk that they can come out worse if any of the hardware gets into the spinal cord.”

That risk is based largely on the fact that surgeons don’t have a direct line of sight into the pedicle bones on the back of the spinal column. These small stumps, which form the strongest part of the vertebrae, are used to anchor metal in spinal surgery. A surgeon looking down at a patient’s spine can’t see the pedicles.

This visual barrier is often addressed by taking a computed tomography image – also known as a CT or CAT scan – of the patient’s spine before surgery. The problem with this approach, says Dr. Yang, is that patients are usually lying face up during the scan. When they’re turned

face down on the operating table, the spine shifts – and so do the pedicles.

“So the surgeon needs to match points on the scan image to points on the patient’s spine, and may need to pick up to 100 points,” says Dr. Yang. “This takes time because it involves picking each point one at a time.”

Instead of taking this laborious point-matching approach – known in the medical field as co-registration – some doctors choose to bring a CT scanner into the operating room so they can take an image while the patient is on the table. The resulting images are very accurate, says Dr. Yang.

“But the difficulty lies in moving the equipment in,” he says. “It takes 15 minutes to half an hour to set up and get the patient ready. That’s 15 to 30 minutes that the patient is lying down with a breathing tube in her mouth, and that the medical staff is spending in the O.R.”

Even the accurate images from a CT scan can become imprecise once the pedicle screws are inserted into the spine because the pushing motion causes the



PHOTOGRAPH BY TIM FRASER

PHOTOGRAPH BY DOUG NICHOLSON

spine to move again. Taking another scan is an option, but this adds even more time to the procedure. Also, since CT machines generate images based on the absorption of radiation by different body parts, additional scans mean more radiation introduced into the patient’s body.

“At the end of the day, whichever approach you take, using existing technology adds time to the procedure and isn’t necessarily the best for the patient,” says Dr. Yang.

A skilled surgeon can confidently estimate the pedicle location based on their experience and knowledge of anatomy, but there’s still a risk of missing the target site, says Dr. Yang. Even the slightest deviation can lead to serious injury for the patient.

“We, as engineers, want to minimize that,” says Dr. Yang. “So we asked ourselves: Is it possible to have technology in real time in the O.R. that takes seconds to set up, adjusts its images as the spine moves, does not expose the patient to radiation and allows surgeons to reduce the probability of getting to the spinal cord and other structures that we don’t want to injure?”



WITH THE PROTOTYPE surgical navigation system, Dr. Yang and his research and development team answered all of these criteria. Unlike CT machines, which are large and are typically not a standard part of O.R. equipment, the prototype fits seamlessly into the operating room. In fact, unless it’s pointed out, a visitor to

the O.R. won’t even know there’s a system in the room. That’s because it’s designed to look and function as a conventional overhead light above the operating table.

“Some of the difficulty with other equipment is that they’re not actually part of the operating room, so it’s a bit of a disruption when they’re brought in,” says Dr. Yang. “With this technology, you just have a light that surgeons are used to having in the O.R., and it’s designed in a way that a surgeon can’t even recognize when the light is active; it’s working in the background all the time.”

Where CT machines take an image of a body part during a particular moment in time, the navigation system delivers real-time images to a computer screen beside the operating table. Special LED lights inside the device project binary, barcode-like patterns onto the exposed body part. These patterns, which are invisible to the human eye, are captured by optical cells in the navigation system and analyzed by software, which uses curves and deformations in the patterns to visually recreate the surface of the anatomy. The resulting 3-D image is then mapped against the preoperative scan on the computer screen.

This all happens within milliseconds. For surgeons, looking at the system-generated image on the computer screen is just like looking through a camera lens; what they’re seeing is live.

“The images on screen show an exact representation of the patient’s anatomy,” says Dr. Todd Mainprize, head of neurosurgery at Sunnybrook. “It’s extremely accurate. Unlike manual co-registration,

■ Dr. Victor Yang and his team operate on a patient’s spine using the prototype surgical navigation system.

this technology automatically matches thousands of points to make a more accurate representation, and it does it very quickly. This is a very big step forward in the field.”

To further guide surgeons during a procedure, Dr. Yang and his team designed markers that mount onto surgical tools and pinpoint their location on a patient’s anatomy. As the surgeon moves the tool over the anatomy’s surface, the computer image on the screen tracks the movements. “Now we have submillimetre accuracy in getting to where we

“THE IMAGES ON SCREEN SHOW AN EXACT REPRESENTATION OF THE PATIENT’S ANATOMY. IT’S EXTREMELY ACCURATE ... THIS IS A VERY BIG STEP FORWARD IN THE FIELD.”

Dr. Todd Mainprize, Head of neurosurgery, Sunnybrook

want to go during the procedure,” says Dr. Yang.

This accuracy has profound implications for surgeons and their patients, says Dr. Mainprize. “If we’re doing a

procedure on the spine and we're off by a millimetre, the patient can become paralyzed," he says. Without the need for CT scans during surgery, doctors can work faster, says Dr. Mainprize. While this can translate into greater efficiencies for hospitals and the health-care system, the real beneficiaries are the patients. The less time a patient spends in surgery, the lower the risk of complications, says Dr. Mainprize.

"In patients getting spinal instrumentation, infection can be a serious complication and the procedure might need to be repeated," he says.

Dr. Albert Yee, orthopaedic surgeon and associate scientist at Sunnybrook and one of the study investigators working with the Ryerson University research team, says not having to use radiation during surgery is a plus for patients. While technologies exist today that allow doctors to do minimally invasive scans during surgery, they tend to generate a lot of radiation, he says.

As spine instrumentation and other types of surgery become more common because of Canada's aging population, this innovative surgical navigation system could be a game changer for doctors and patients, says Dr. Mainprize. Recent studies link computer-aided and image-guided surgeries with lower risk of complications. One study, which looked at more than 2,400 endoscopic sinus surgeries, found that operations performed without guiding technologies were three times more likely to result in major complications than image-guided procedures.



LAST YEAR, from March to December, Dr. Yang and his team ran the first phase of clinical trials for the prototype surgical navigation technology. Doctors at Sunnybrook used the device on 40 patients, including Katie. About half the group underwent spinal surgery while the other half had procedures on different areas of the brain.


The second phase of clinical trials is now underway. In the meantime, 7D Surgical Inc, which represents a joint partnership between Sunnybrook and Ryerson University, is commercializing the navigation system.

After five years in development, Dr. Yang's innovation is getting closer to full realization. 7D Surgical plans to develop and market Dr. Yang's technology and make it available to other hospitals in

the country. Dr. Yang's long-term goal is to deploy these surgical navigation technologies in operating rooms around the world.

"I think we just happen to be at this convergence in technology, where LED technology and rapid prototyping technology have matured enough to make technological advancements such as 7D Surgical possible and cost-effective," he says. "This whole lighting unit was produced with 3-D printing. Five years ago we didn't have 3-D printing and it would have cost us millions of dollars to build this prototype."

The timing couldn't have been better for Katie. She continues to recover today and feels grateful for the leading-edge care she received at Sunnybrook.

"I've never had a hospital stay before and the treatment I got at Sunnybrook was just outstanding," she says. "Being offered this technology was a bonus." 

■ The happy moment: Katie Jodrell and new husband, Ryan, just days after her surgery.



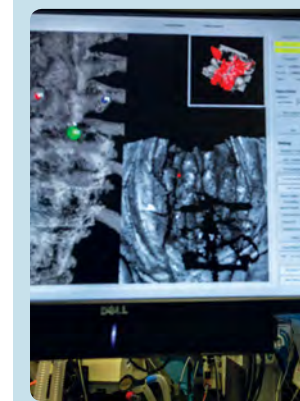
PHOTOGRAPH BY ERIN CAMPBELL PHOTOGRAPHY.COM

HOW THE SYSTEM WORKS

A STEP-BY-STEP LOOK AT THE PROTOTYPE SURGICAL NAVIGATION TECHNOLOGY THAT ENABLES SAFER AND MORE PRECISE BRAIN AND SPINE SURGERY



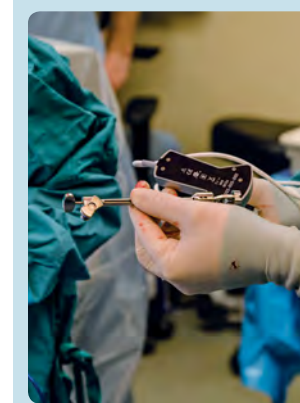
1 Before surgery, a CT scan is used to capture an image of the surgery site, such as the spine or brain.



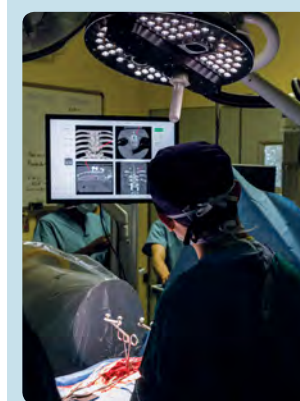
4 This 3-D image is mapped onto the CT scan image that was taken before surgery, giving the surgeon an accurate, real-time view of the anatomy through a computer screen positioned beside the operating table.



2 In the operating room, the navigation device serves as the overhead operating table light. After the doctor makes the incision, the device projects barcode-like light patterns – which are invisible to the eye – onto the exposed body part.



5 During the operation, the system tracks the surgeon's movements through markers mounted on the surgical tools.



3 Optical cells on the device, functioning like cameras, capture the barcode patterns and send them to software integrated into the system. The software analyzes curves and breaks in the patterns and uses this data to reconstruct a 3-D image of the anatomy.



6 This allows doctors to see with pinpoint precision where they are working on the patient's anatomy.

BUILDING THE ROADS TO RECOVERY

For women with breast cancer, having options for breast reconstruction is empowering

By Catalina Margulis

LORI ANNE HATCH WAS JUST 31 WHEN, WHILE DOING A SELF-EXAMINATION, SHE DISCOVERED A LUMP IN HER LEFT BREAST. "I DIDN'T HAVE A FAMILY DOCTOR, SO I WENT TO THE WALK-IN CLINIC, AND A MAMMOGRAM AND ULTRASOUND CAME BACK SHOWING COMPLICATIONS," SHE SAYS. THE LUMP TURNED OUT TO BE A RAPIDLY GROWING AND PARTICULARLY AGGRESSIVE CANCER.

The Pickering, Ont., single mother and paralegal was promptly directed to a hospital for treatment, but after researching her options, chose to have her breast cancer care at Sunnybrook's Louise Temerty Breast Cancer Centre – part of the Odette Cancer Centre – which offers a leading breast reconstruction program.

"Breast reconstruction is an essential component of our care at Sunnybrook; we're very fortunate to have [our doctors] provide this next step in recovery," says psychologist Dr. Karen Fergus, a member of the Patient and Family Support Pro-

gram at Odette and associate professor in the Department of Psychology at York University. "With reconstruction, it's no longer about treating the disease, but part of the process of recovering, helping [patients] move forward ... It often represents the last step in the recovery process and helps them re-establish themselves."

The Louise Temerty Breast Cancer Centre is a national leader in immediate breast reconstruction and offers this option to eligible patients undergoing a mastectomy or complex lumpectomy. Dr. Joan Lipa and Dr. Laura Snell developed the Breast Reconstruction and Oncologic Reconstructive Service and Research Group at Sunnybrook, which provides this option through a coordinated team effort with surgical oncologists Dr. Frances Wright, Dr. Claire Holloway and Dr. Nicole Look Hong at the Odette Cancer Centre program.

Lori Anne opted for immediate breast reconstruction. "I felt for my emotional well-being and the way I wanted to recover; I wanted to do [breast reconstruction] immediately," says Lori Anne of the procedure that sees patients undergo breast reconstruction at the same time as they undergo surgery to remove the cancer. Using the latest reconstruction techniques (see sidebar), the centre's expert

plastic surgeons work closely with breast cancer surgeons leading up to and on the day of surgery.

For many women, the benefits of immediate reconstruction outweigh the possibility of additional surgeries and risks. "With immediate reconstruction, you don't have that loss in psychosexual well-being," says Dr. Lipa.

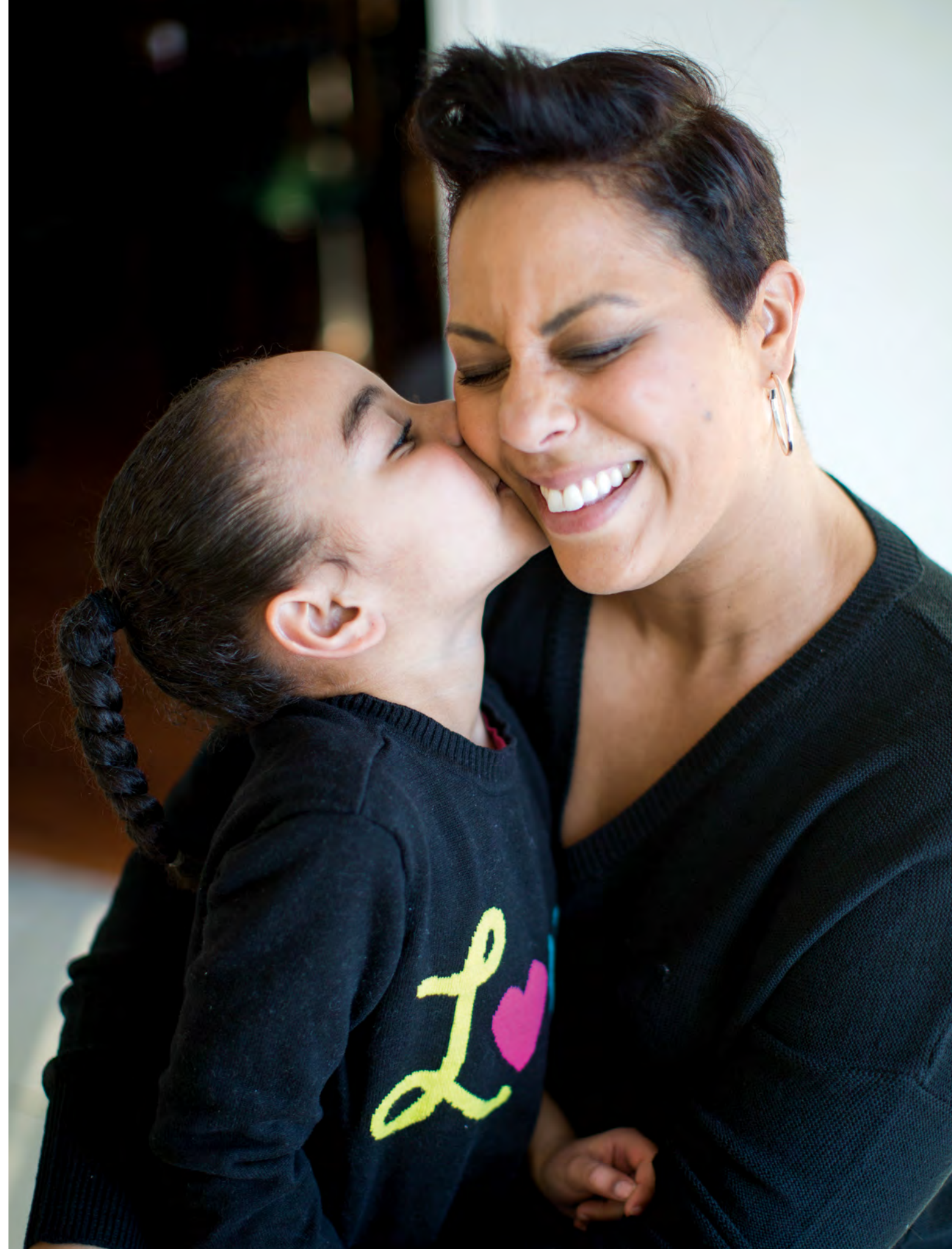
Lori Anne underwent chemotherapy before surgery, to reduce the size of the tumour. The cancer was aggressive and another tumour developed – in the same breast. For surgery, she opted for a double mastectomy and reconstruction using her own tissue rather than implants.

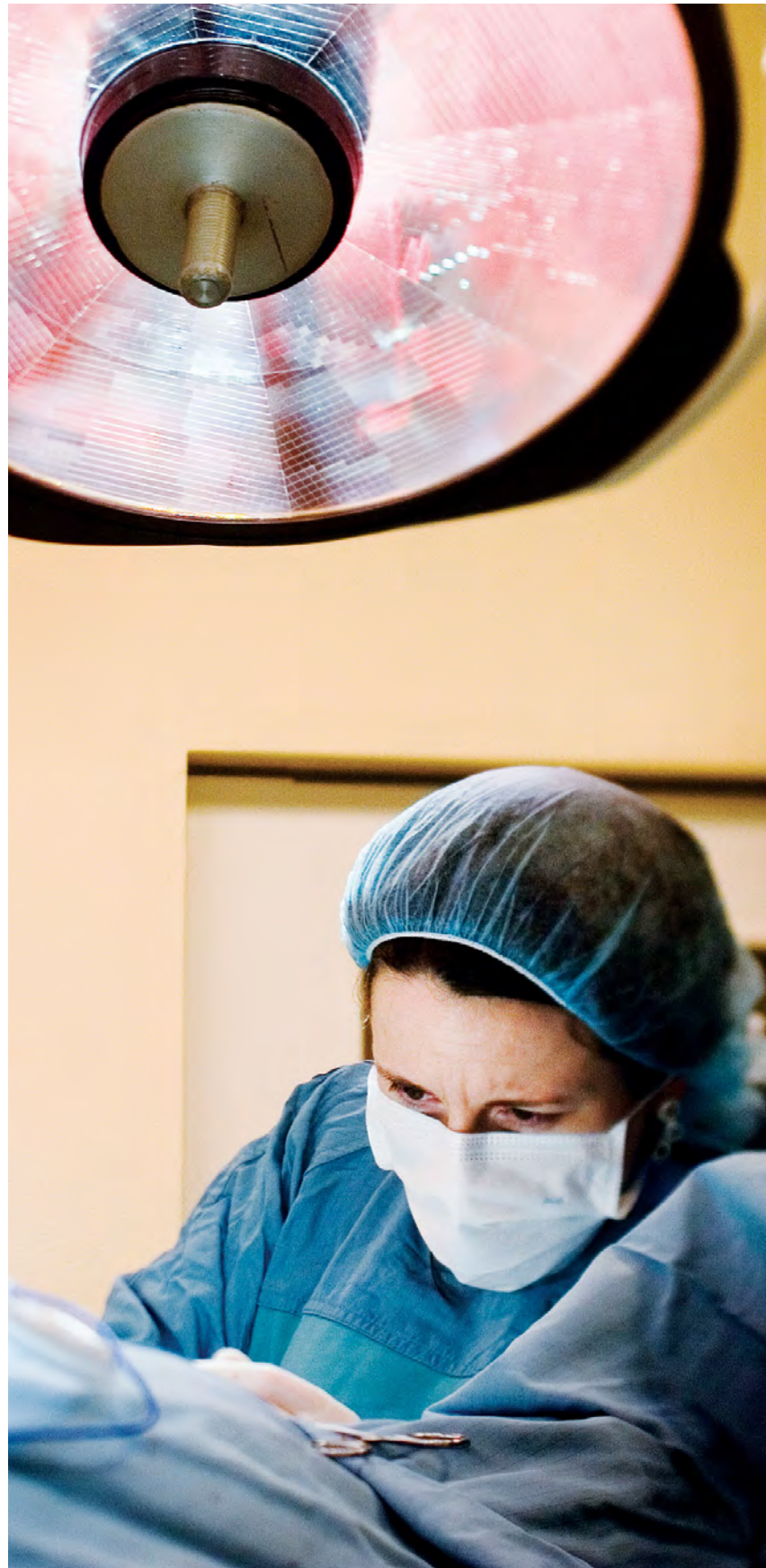
"I was excited to do that procedure because I had read that people can have issues with implants, especially because I had to do radiation after surgery [implants can develop scar tissue around them after radiation]," says Lori Anne, who notes that implants may also have to be maintained or replaced.

During the 12.5-hour surgery, Dr. Frances Wright, Lori Anne's surgical oncologist, removed the cancer in the left breast

Lori Anne Hatch, pictured with daughter Layla: "For my emotional well-being ... I wanted to do [breast reconstruction] immediately."

PHOTOGRAPH BY TIM FRASER





Surgical oncologist Dr. Frances Wright is part of the core team at the Louise Temerty Breast Cancer Centre.

and surrounding breast tissue and also removed the right breast, while Dr. Lipa used tissue from the abdomen to reconstruct the breast areas. Lori Anne had the surgery in January 2014 and is waiting for two follow-up surgeries to enhance the appearance of areas on the breasts and abdomen.

“It was a long, painful recovery,” admits Lori Anne, who notes it’s important to do research beforehand and be active in the decision-making process, as well as to manage your and everyone else’s expectations and create a close support system of family and friends.

“Allow and even request that family and friends support you; sometimes people don’t know you need help unless you ask for it,” says Lori Anne.

At the Odette Cancer Centre, psycho-social oncology professionals work with patients trying to cope with body image issues and provide a discreet and supportive forum for help. “For each woman herself, it’s a major loss; I try to acknowledge that,” says Dr. Fergus. “It takes a toll on her sense of self and sexual identity. I try to validate that [and] give them permission to grieve that loss.”

Dr. Fergus notes that young women, in particular, may be more likely to undergo breast reconstruction. “For some women, breast reconstruction feels like a last step; for others they can put this behind them without it. [They] just want to get rid of cancer – and breast reconstruction is not really a priority for them,” says Dr. Fergus.

“It’s really important to have that option [breast reconstruction], though not all elect to,” says Dr. Fergus, who emphasizes that “it’s a commitment,” with additional surgery and time for women who have already been through so much.



DIANE TULL, a Toronto-based engineer, is one patient who declined to have breast reconstruction when she had bilateral mastectomies. She was diagnosed with breast cancer in her right breast at age 36 and was at high risk of cancer developing in the other breast. “After eight rounds of chemotherapy, two surgeries and 27

rounds of radiation, I did not want to deal with breast cancer again,” says Diane. “I opted out of the breast reconstruction program because I did not want to put my body through any additional stress. My breast does not define me.”

For women who choose not to have reconstruction, Dr. Lipa says, “they’re fine, if that is their choice; they are happy to have had the cancer dealt with and they get on with their lives that way. It’s a completely individual decision.”

While Diane did not opt for reconstruction, just having the choice is important, says Dr. Fergus. “[Breast reconstruction is] a choice; the benefits of having a choice are empowering,” says Dr. Fergus.

As for Lori Anne, she’s happy with the choice she made to have her breasts reconstructed. “They’ve healed very well and look and feel natural,” says Lori Anne. “I think long term I’m going to be very happy with the decision I made and the reconstruction I got.”



PUTTING FOR PATIENTS

The annual Women’s Health Golf Classic tournament has raised \$1.75-million in support of women’s health at Sunnybrook, much of which has been directed toward the advancement of breast cancer care, including construction of the Louise Temerty Breast Cancer Centre.

In 2013 and 2014, the event directed support toward the Temerty Centre’s Immediate Breast Reconstruction Program, facilitating improvements such as enhanced patient education resources, streamlined care and seamless connections between the reconstruction program and other Sunnybrook breast cancer programs.

Fundraising efforts have also allowed the reconstruction program to purchase a state-of-the-art imaging system that improves outcomes for breast cancer patients who undergo breast reconstruction.

For more information go to sunnybrook.ca/golf

PHOTOGRAPH BY DOUG NICHOLSON

PHOTOGRAPH BY TIM FRASER



HOW RECONSTRUCTION IS DONE

According to Dr. Joan Lipa (above), there are two general types of breast reconstruction options: breast implant-based and tissue-based.

For the implant-based, Dr. Lipa explains that a temporary stretching device is put in under the muscle and remaining skin on the chest wall, to first gradually expand the skin and muscle. The patient then returns to the operating room to have the permanent implant placed under the muscle.

For tissue-based breast reconstruction, explains Dr. Lipa, extra tissue is removed from the tummy area and used to reconstruct the breast. She says it results in a longer, higher scar than a tummy tuck and can take two to three months of recovery compared to six to eight weeks for implant-based surgery.

Thanks to the latest DIEP (deep inferior epigastric perforator artery) Flap technique, the abdominal muscle can be spared. “It’s done more and more at hospitals, but generally at larger centres,” says Dr. Lipa.

At Sunnybrook, there’s now the option to do immediate breast reconstruction, where breast cancer surgery and reconstruction can take place at the same time. “From a surgical standpoint,” says Dr. Lipa, “with immediate reconstruction, you’re filling up the breast [skin that remains].”

“It can look like a natural result,” says Dr. Lipa, who adds that sometimes the mastectomy can be done to spare the nipple while with delayed reconstruction, the nipple generally can’t be spared and more of the skin is removed, so both have to be replaced during the later reconstruction.

In the case of immediate reconstruction using breast implants, or “direct-to-implant” reconstruction that selected patients can choose to have, doctors put in the implant right away, but add in a tissue scaffold called a cellular dermal matrix – for more support, explains Dr. Lipa. It can speed up recovery and doesn’t require a stretching device or

another surgery.

While other breast reconstruction options and combinations exist, treatment is assessed on an individual basis. The decision will depend on the woman’s choice, but also on factors such as whether she will require chemotherapy or radiation treatment or whether she has enough extra tissue in her tummy area. According to Dr. Lipa, tissue and radiation work better together than implants and radiation do, though tissue-based reconstruction might shrink a little bit or might turn a little bit firmer. “Most candidates for immediate reconstruction are those who we don’t think will need radiation treatment.”

Lifestyle factors may come into play, too. Women with young children may not be able to undergo the DIEP Flap surgery as they would have to avoid heavy lifting for the three months of recovery, notes Dr. Lipa. In this case, she says, the patient may choose an implant-based reconstruction.

Social worker Kim Barrow (left) and registered dietitian Edith Stokes (right) are part of a large integrated team that helped cancer patient Sharon Black (centre) through her journey.

At Sunnybrook, teams focus on treating a whole person and their family, not just a disease

By Alexis Dobranowski

A 360-DEGREE VISION OF HEALTH CARE



SHARON BLACK LED A LIFE ON THE GO.

She ran a home business, along with her husband. They travelled around the United States several times a year, teaching painting and selling painting patterns at conventions. It was a 24-7 kind of job.

All that came to a halt when Sharon got a stunning diagnosis in January 2013: She had endometrial cancer.

"When I heard that word, it's like I knew I'd be starting a different life. It was the fear of the unknown; the fear of having my life upset," says Sharon, 59. "It was devastating."

Experts examined a tissue sample after her hysterectomy at another hospital and recommended she go to Sunnybrook's Odette Cancer Centre for more treatment.

In December 2013, she began a grueling course of chemotherapy and radiation. The treatment wreaked havoc on her body. Her fingers and arms ached. The pain got to be too much. She put down her paintbrush – her livelihood and passion.

"Psychologically, I took it really hard," she said. "After the hysterectomy, I was fine. I bounced right back. But the psychological side, once the chemotherapy and radiation started, was way worse."

Sharon's worries started mounting: How would she pay the bills? What would she eat? How would she get back and forth to treatment in the city from her home near Barrie, Ont.?

Enter her "ray of sunshine": Kim Barrow. A social worker in the Odette Cancer Centre's Patient and Family Support Centre, Barrow is part of a multidisciplinary team that helps provide care before, during and after cancer treatment. Made up of social workers, dietitians, occupational therapists, spiritual care providers, psychologists, psychotherapists, psychiatrists and speech-language pathologists, the support team cares for the whole person – not just the cancer – and promotes resilience, reducing distress and preventing disability.

Often called supportive care, these services should instead be considered an essential part of a care plan, the Odette team says. It's a sentiment echoed around Sunnybrook, where patients are treated not only for what ails them, but also for

other troubles one may not see. It's 360 degrees of care, so to speak.

"At first, patients are focused on the diagnosis – cancer. Then their thoughts and focus turns to treatment – the chemotherapy or radiation. Then, things seem to explode," Barrow says. "They start to think about family, mortality, financial implications, side-effects, what can I eat, how will I cope, emotional distress, or they have an existing mental illness that becomes exacerbated once they receive the news that they have cancer. We want to be in tune with those issues and get a sense of what's most important to the patient or family."

When Sharon met with Barrow, they discussed Sharon's main worries and how Barrow and her team might be of help to ease those.

Sharon says while she was always on the go, she always tried to maintain a healthy lifestyle. When her treatment started, she began to worry about how to keep her body as nourished as possible. Barrow referred her to nutrition services so she could speak to a registered dietitian.

"We speak to patients at all the stages of the cancer journey," says Edith Stokes, registered dietitian. "Many patients speak to us when they are first diagnosed. They know good nutrition is important and an aspect of their health they can impact. Others have a surgery date coming up, and they want to know how best to nourish themselves before that surgery."

Stokes says it's also often a patient's family who requests help from nutrition services. Or, it is patients who have finished their treatment, are cancer-free and want to

know how to move forward.

"We want to support the patient and the family and get them through this as optimally as possible," she says. "We work together to keep our patient out of the hospital and with a quality of life that's the best it can be."

For Sharon, being wrapped in a circle of care made a world of difference.

"No one can truly answer your questions, because cancer and the treatment are different for everyone," Sharon says. "And it's that unknown that is so worrisome. But knowing I had Kim who I could call when I was down – and I had many down moments – that reduced my anxiety."

It's not just treating the disease, Barrow says. It's treating the whole person – and their family.

"We would be doing a great disservice to our patients if we didn't offer a service like this to treat all aspects of the person," Barrow says. "And the support is tailored to fit their needs."

Another member of the support team is Dr. Janet Ellis, lead psychiatrist in the

Patient and Family Support Program and director of Psychosocial Care in Trauma at Sunnybrook. While supportive care has historically been viewed as an "add-on" to treatment, Dr. Ellis says, it's a model of care that's both possible and necessary.

"Psychological distress is a major complication in illness," Dr. Ellis says. Existential distress, anger, uncertainty, difficulty with changes in roles such as parenting or work, fear of the unknown and spiritual crises are all common.

"Someone may come to Sunnybrook for treatment for their cancer or injury, but it's so important we pay attention to biological and psychosocial issues – addressing depression and anxiety, helping with fears and relationships – along the journey," she says. "Research shows if you have untreated distress, for example, you may delay your cancer treatment or discontinue treatment before you are supposed to – and what does that do? Apart from ongoing suffering, it increases visits to the emergency room and family doctors, results in hospitalization, increases lengths of stay and worsens cancer outcomes. Embedding emotional and rehabilitative support right into the treatment journey is the humane thing to do, and it also helps the health-care system."

Dr. Ellis is also working to establish distress screening within Sunnybrook's trauma program, in the hope that patients or families who are having difficulty coping will get internal or external supports in place as fast as possible.

"We are working together to prevent longer-term distress and disability, major depression, maladaptive coping, like drinking and the breakdown of family relationships. We also hope to prevent longer hospital stays and reduce emergency room visits because we are improving the resilience of these patients," she says.

IT WAS AN EARLY SATURDAY MORNING

in December 2006. Ralph Walker and some family members were at his Manitoulin Island hunt camp. The then-Canadian Forces corporal awoke to light the propane lantern. In an instant, it exploded.

Ralph was burned on more than 90 per cent of his body. Seventy-five percent of those burns were third-degree.

It took emergency personnel several hours to get to his remote location. Then, he was airlifted to Sunnybrook, where he was given a 5 per cent chance of living.

Ralph remained in an induced coma for

2.5 months at Sunnybrook's Ross Tilley Burn Centre, where he underwent eight surgeries and many ups and downs.

When he awoke, one of his first thoughts: a worry about his family.

"My immediate concern was for my family," he recalls. "How were they coping? What about the finances? How is my son?"

Ralph's wife, Diane, had been by his side during his stay. And by her side, Anne Hayward, social worker in the burn unit.

From assisting with the necessary paperwork – insurance, doctor's notes, financial claims – to acting as a gatekeeper for the countless visitors and phone calls so Diane wouldn't be overwhelmed, Hayward provided endless support.

"But the most important thing was she wanted to make sure that we – my son and I – were prepared for the changes and struggles that Ralph was going to go through," Diane says. "Without Anne, I don't think our stay would have been the same. She made sure we were looked after and made us feel special. Even when she was busy with the new arrivals or other families, she would always send a smile our way and made an effort to keep us updated."

It was a great comfort knowing Anne was available, she adds.

"If I had any concerns or questions I knew that Anne was and is there, and that is a great support and relief, even to this day," Diane says. "She is now a part of our family."

Nearly 10 years after his injury, Ralph still recalls how it took a team to get himself and his family through the ordeal.

"The team asks each patient, 'What is your expectation?'" Ralph recalls. "For me, I wanted to be 100 per cent of a man. And I wanted to retrain for the military."

He says the team listened to his needs – and his Type A personality – to tailor their approach.

"I wanted to push my body too hard," Ralph says. "They listened. And we worked together to get where I wanted to be. But they also reminded me that I had to wait for my body to catch up."

He says while the doctors and nurses provide amazing and life-saving medical care, the other team members shouldn't be overlooked.

"Everybody plays a part, no matter how small, and no one is less important. It's not one person. I mean, it is made up of individuals, and I could probably spend hours singing the praise of each one, but it's the collective that makes it work."

Ralph has retired from the military. He's a carpenter and contractor with lots on the go.

And, he continues to help other burn survivors and their families. Whenever he is in Toronto, Ralph also tries to pop into the burn unit to see the staff.

"I know that it can be a challenging place to work," he says. "There are many ups and downs. And I want to remind them of their success stories like me."

SHARON IS CANCER-FREE. After a year-long hiatus, she's picked up her paintbrush and joined a social painting group. She's also joined a women's fitness club, hoping to get her healthy body back and rebuild her social network.

And though cancer lurks in her shadow, she says, she has a secret weapon.

"I know I have Kim and her support team whenever I need them." 📌

SUNNYBROOK WANTS TO HEAR FROM YOU

A new patient engagement website has been built to make sure you can have your say about your experience and about how the hospital can improve to make those experiences better.

Feedback from patients, family members and the community helps the hospital plan and make changes in order to provide the best possible care.

About 65 per cent of Sunnybrook's patients live outside of Toronto. The website is an easy-to-use way to overcome some of the geographical and timing challenges patients or families may have when wanting to provide focused feedback.

Surveys, videos, slideshows and infographics provide patients and families with easy-to-understand information about topics that impact care and the hospital. Patients and their families can share their opinions and give input on their own time, wherever they might be.

Feedback topics will change throughout the year and include topics like the hospital's plans for the future, safe sleep guidelines, co-gendered rooms and the transition from hospital to home.

Have your say:
sunnybrook.ca/engagement



PHOTOGRAPHS BY DOUG NICHOLSON



above: Ebola treatment centre in Conakry set up by Dr. Fowler and colleagues.

left to right: Dr. Oleh Antonyshyn, Dr. Eugenia Pilotis and Dr. Robert Fowler.



PHOTOGRAPH BY DR. ROBERT FOWLER. (INSET) BY DOUG NICHOLSON



CRITICAL MISSIONS

Dr. Oleh Antonyshyn is helping to rebuild the bodies – and lives – of Ukrainians injured during the country’s revolution and its simmering war along the Russian border. Dr. Eugenia Pilotis is playing a key role in the much-needed expansion of specialty medicine education in Ethiopia. And Dr. Robert Fowler has spent months on the frontlines of the worst Ebola virus outbreak in history. Their efforts demonstrate the difference Sunnybrook staff is making around the globe, often in countries consumed by crisis

By Dan Birch

 **RECONSTRUCTING UKRAINE**

“The surgical procedures were complex, technically demanding and time-consuming, some lasting for as many as seven hours,” says Dr. Oleh Antonyshyn, describing the work of a volunteer, 25-member Canadian medical team that travelled to Ukraine’s capital, Kiev, last November.

Dr. Antonyshyn, a plastic surgeon who leads Sunnybrook’s Adult Craniofacial Program, served as head of the 10-day mission, which was organized by the Canada Ukraine Foundation and Operation Rainbow Canada.

Comprised of surgeons, anesthetists and nurses, the Canadian team worked alongside their Ukrainian counterparts to complete a total of 37 procedures on 30 patients. They reconstructed skulls, facial bones, eyelids, noses and more.

“We focused on post-traumatic defects and deformities, many of which were horrific. Most resulted from explosive blast wounds and high-velocity missile wounds. The patients presented major reconstructive challenges,” says Dr. Antonyshyn.

Earlier on in the planning of the mission, it was expected that the team would focus largely on demonstrators injured during the protests that had taken over Kiev’s central square, known as the Maidan. But as the mission neared and the armed conflict in eastern Ukraine continued to intensify, it became clear that war casualties would form a significant portion of the patients seen by the team.

The patients were extremely grateful to have access to surgical procedures that otherwise would have been unavailable to them, Dr. Antonyshyn says.

On the weekend of arrival, the team met with the local health-care providers and received a tour of Kiev’s main military hospital, where one wing of the hospital’s operating room suites was reserved for them. The team began consulting with patients and setting up the operating room with the multiple bags and boxes of surgical equipment and supplies they had brought with them.

Dr. Antonyshyn and his fellow surgeons began their procedures on the Monday morning, and from there it “was full-on, morning-to-night operating,” he says.

Deciding to head up the mission wasn’t difficult for Toronto-born Dr. Antonyshyn,



whose parents immigrated to Canada in their twenties. Though he had been to Ukraine just once prior to his mission-related visits, he had felt a connection to the country, one that grew stronger as the turmoil intensified. “I follow it very closely,” Dr. Antonyshyn says of the historic developments that continue in Ukraine. He appreciates the contributions that others at Sunnybrook made to the mission. Dr. Todd Mainprize, head of neurosurgery at Sunnybrook, Kathryn Monardo, a retired Sunnybrook operating room nurse, as well as two recent medical residents and a former fellow – all were part of the team.

Ukraine’s need for medical assistance will continue. Even if the conflict in the country’s eastern regions was to end today, Dr. Antonyshyn said in mid-January, “There would be post-traumatic defects

and deformities [to be tended to] for years to come.”

That’s why Dr. Antonyshyn and his partners set out for Kiev in late-January for another needs-assessment trip, which was expected to lay the groundwork for a second medical mission as early as June.

 **HEALTH CARE EDUCATION IN ETHIOPIA**

For Sunnybrook’s Dr. Eugenia Piliotis, Ethiopia has become something like a second home. She has travelled there nine times since 2008 to help build subspecialty medicine training programs in the country of 94 million people.

Well-known for its poverty and ten-



PHOTOGRAPH BY DR. ROBERT FOWLER

clockwise from top left: Dr. Piliotis leading trainees; Dr. Antonyshyn with other members of the mission, as well as grateful patients, at the close of their mission; Dr. Piliotis with her Ethiopian and U of T colleagues; Ebola treatment centre in Conakry; Ukrainian patient receiving care.

sions with neighbouring Eritrea, Ethiopia now has one of Africa’s fastest-growing economies. The country is also in the midst of an education explosion that has seen the number of medical school entrants triple in the last few years, says Dr. Piliotis, a Sunnybrook hematologist and an associate professor at the University of Toronto (U of T).

The Toronto Addis Ababa Academic Collaboration – a partnership between U of T and Addis Ababa University (AAU), Ethiopia’s largest – plays an important role in building AAU’s capacity for specialty medicine, both in delivery and educating future Ethiopian leaders. Through the collaboration, small teams from departments at U of T work closely with their sister departments at AAU to understand their educational needs and objectives. These well-organized volunteer teams travel to AAU to teach, co-teach, mentor and collaborate.

Dr. Piliotis has led a collaboration between the U of T Department of Medicine and AAU to create training programs in gastroenterology, endocrinology and hematology, serving as the direct lead for the latter. Sunnybrook’s Dr. Julia Lowe, an associate professor at U of T, is the direct lead for endocrinology.

“It’s been a long and intense undertaking,” says Dr. Piliotis, describing the work that has gone into helping AAU to establish training programs in the three medical subspecialties.

She worked with her AAU counterparts to develop a two-year hematology curriculum tailored for the Ethiopian medical environment, while maintaining international standards. All three subspecialties began training student doctors at AAU in the spring of 2012, with the first classes graduating in the spring of 2014. They included two newly minted hematologists, two endocrinologists and four gastroenterologists.

“When I started, there was one hematologist in the entire country of more than 90 million people. Now there are four,” Dr. Piliotis says with enthusiasm and a short laugh, recognizing the long road ahead.

But it’s a road that must be travelled in order to improve health care for Ethiopians struck by blood cancers and other blood diseases. Training hematologists and other medical specialists in Ethiopia is critical to stemming a brain drain that, for years, has seen Ethiopians receive training outside of their country and never returning, she says.

So why does Dr. Piliotis volunteer her time – often being away from her practice weeks at a time – to help advance health care in a far-off country?

There are several reasons, she says. Naturally, there's a satisfaction that comes with humanitarian work. Also, "it's rare to get the opportunity to build something this big here," she says, alluding to Canada's already well-developed medical education infrastructure.

Finally, Dr. Piliotis notes the inspiration she draws from her Ethiopian colleagues and residents. "We're working with a unique group of individuals who are both the cream of the crop of their profession and highly dedicated to their country."

BEATING EBOLA IN GUINEA

Sunnybrook critical care physician Dr. Robert Fowler was volunteering with the World Health Organization (WHO) in Switzerland when news broke of the Ebola virus outbreak in the West African country of Guinea.

It was March 2014. The outbreak that began quietly in a remote Guinean village three months earlier was beginning its spread to neighbouring Liberia and Sierra Leone. By mid-January 2015, it would claim more than 8,400 lives.

In March, Dr. Fowler was dispatched to Guinea's capital, Conakry, to "be part of the first team that was there and to describe the clinical situation – the challenges, the needs – and then we ended up, very quickly, providing primary care to patients because there weren't enough clinicians around to do that," says Dr. Fowler.

Ebola causes severe fever, vomiting and diarrhea, and can ultimately lead to the failure of multiple organs. West Africa had never experienced an Ebola outbreak, and, as the WHO notes, the health-care systems of Guinea, Liberia and Sierra Leone were ill-prepared to handle it. Dr. Fowler, his WHO colleagues and staff from Doctors Without Borders set up the first Ebola treatment centre in Conakry.

Between March and December 2014, Dr. Fowler made five trips to the West African countries, often delivering intensive supportive care – rehydrating patients, replacing electrolytes, administering anti-nausea and anti-diarrheal medications – that has proven most



left: Dr. Antonyshyn in the operating room.

below: Dr. Fowler and Dr. Adrienne Chan (white shirt, middle) in Sierra Leone.



effective in helping patients to defeat the virus. More recently, Dr. Fowler has helped to train the growing ranks of international health-care professionals responding to the outbreak.

"A typical day [at a treatment centre] is usually a long day and, depending on the time of year, pretty hot," he says, noting the array of equipment he would wear, including a full-body suit, a face shield, a mask to cover his nose and mouth, boots and an apron.

The intense heat limited health-care workers to three daily shifts of between one and five hours. "You could spend 24 hours inside the treatment centre and still not do everything you would want to for patients," Dr. Fowler says.

Fortunately, the outbreak has been brought under better control, thanks to a range of factors. Crucially, people with symptoms are seeking medical attention, rather than trying to hide their illness due to the stigma associated with

it. They're also seeking that help much earlier in the course of their illness.

Disease prevention and control practices, including the safe burial of bodies, have been greatly improved. And treatment capacity has continued to increase with the arrival of more international health-care teams, including three Sunnybrook staff members: Dr. Andrew Simor and Dr. Adrienne Chan, both infectious disease specialists, and Dr. Neill Adhikari, a critical care physician, left for Sierra Leone between December and January.

Though Dr. Fowler has witnessed immense pain and loss, he has also seen the gratitude of survivors, such as Mohamed and Zena, two Guineans he cared for in Conakry early on during the outbreak. The three had an emotional reunion months later in Ghana at a WHO meeting.

"It's great when you see people get better," he says. 📌



EBOLA: a family's story

Mohamed says he will never forget Dr. Robert Fowler and others who helped to save his life, as well as the life of his cousin, Zena.

Mohamed, a 34-year-old civil servant, and Zena, a 24-year-old teacher, were infected with Ebola in March 2014. It all started when Mohamed's older brother came to Conakry to seek medical attention, having been diagnosed with malaria and typhoid fever. He stayed with Mohamed, and Zena was also there to help care for the brother, who was vomiting, fatigued and had a high fever.

The brother's condition worsened and he died in hospital days later. Those who cared for him while he was sick and after he died soon became ill, including Mohamed and Zena. In total, nine members of the family were infected with Ebola and just three survived.

Zena tells the World Health Organization how she vomited so much that she thought she would never overcome Ebola. Fortunately, the arrival of international medical staff, including Dr. Fowler, increased treatment capacity and enabled more people to survive.

Though Mohamed and Zena recovered, Ebola has had a lasting effect on them. Many of their loved ones have died, and the two must contend with a stigma that surrounds survivors. Both lost their jobs due to fears that they would somehow infect others. (The stigma is so great that they will not use their real names or show their faces in print.)

Nonetheless, Mohamed and Zena have made the most of their situation by working in their communities to raise awareness about Ebola prevention and treatment, and to serve as living proof that the virus can be beaten. •



left:
Daniela LaFace
with daughter,
Liliana, who
is now three.

However, we aim to shift the severe to mild and the mild to none." Liliana LaFace is now a lively, smart three-year-old girl. Her early birth did result in mild cerebral palsy, which – thanks to early identification by the Neonatal Follow-Up Clinic (see sidebar), followed by aggressive therapy – is almost imperceptible.

Daniela is very grateful for Sunnybrook's dedication to micro preemie brain health. The combination of providing private rooms, offering state-of-the-art technology, encouraging as calming and nurturing an environment as possible and a deep commitment to care throughout the preschool years has resulted in Liliana being the best she can possibly be.

"There aren't enough words to tell you how unbelievable I think the hospital is. I can't say thank you enough," says Daniela. 🍀

PREDICTING BRAIN HEALTH

Have you ever noticed how much a baby wiggles, twitches and fidgets?

These movements are normal and a sign of good brain function.

Experts at Sunnybrook's Neonatal Follow-Up Clinic are using videotapes of micro preemies' movements to identify early on which babies may not be developing in a typical way, so that they can receive help.

Liliana LaFace, who was born at only 25 weeks' gestation, has had her movements closely monitored in the clinic at regular intervals since she left the Neonatal Intensive Care Unit (NICU) in early 2012. Within the first few months of her life, analyses of her movements showed she was weaker on the left side, an asymmetry not even noticeable to her parents.

As soon as this was detected, she began receiving therapy to strengthen and tone the muscles in her left arm and leg. "Liliana has mild cerebral palsy," says her mom, Daniela. "She has had so much therapy that you wouldn't notice it."

The videos are part of a tool called the Assessment of the Quality of General Movements (AQGM) being tested in a study at Sunnybrook. It is a cost-effective, minimally disruptive and accessible tool, which has not existed before. "In this study we will examine video movements at two stages of infant development and determine if the patterns help with identification of future disability," says Dr. Jessie Van Dyk, a neonatologist and fellow at Sunnybrook and lead author of the study.

"How the baby moves spontaneously tells us a lot about the integrity of the brain," says Maureen Luther, a pediatric physiotherapist in the NICU and Neonatal Follow-Up Clinic. "We are looking for variety, complexity and fluency." Luther is one of only a handful of Canadian physiotherapists with certification in several infant assessment tools, including the AQGM. Babies who have no variety or complexity in their movements, she says, may be on a path toward developing cerebral palsy, autism spectrum disorders or hearing and vision problems.

The sooner these issues are identified and communicated, the more the family can benefit from special accommodations, aggressive physiotherapy, occupational therapy, family training and social services. "I wouldn't have wanted to wait until Liliana was five to find out her diagnosis when we could have been helping her all that time," says Daniela.

"The identification of a tool to assess early brain function is the Holy Grail of infant development" says Dr. Paige Church, director of the Neonatal Follow-Up Clinic.

The clinic is unique because it is one of the only centres in Canada that follows NICU "graduates" up until school age. Staff is passionate about helping children reach their best possible function, as well as helping parents deal with challenges and educating teachers on issues of prematurity. "We want brains to be as functional as they can be and to have as great an outcome as we can," says Dr. Church. "Our goal is to have kids enter Grade 1 and the early grade-school years healthy and happy." •

POSTNATAL CARE

Surviving and thriving

The long-term brain health of tiny, premature infants is a promising area of focus for Sunnybrook specialists

BY CELIA MILNE

Liliana LaFace was born almost four months early. Her delivery on December 10, 2011, was just a few precious days beyond the earliest margins of survival outside the womb.

Like all micro preemies (infants born before 26 weeks' gestation), she was very tiny – only 1.3 pounds – and faced almost unfathomable adversity. Among Liliana's medical challenges were several conditions that affected her heart and lungs, as well as bleeding in her brain.

Just to stay alive, micro preemies require myriad complicated technological interventions that modern-day neonatal intensive care units (NICUs) offer: state-of-the-art incubators, feeding tubes, breathing tubes, ventilators, multiple medications and round-the-clock monitoring. To thrive and have a healthy brain, micro preemies need the anti-

thesis of the typical NICU: a calm, quiet environment. This is where Sunnybrook stands out.

Each family is encouraged to do kangaroo care (holding the baby skin-against-skin), despite the life-saving tubes and wires that make it an intricate procedure. Sunnybrook is among pioneering hospitals dedicating significant resources to infant-parent bonding because it promotes brain growth. "Sunnybrook staff taught me that the more I held Liliana, the greater impact it would have on her future," says Daniela, Liliana's mom.

Finding the perfect balance between high-tech life-saving measures and low-tech brain-saving methods for tiny patients on the margins of survival – and sharing that knowledge across Canada and around the world – is a mission for

Sunnybrook.

The hospital is taking a lead in promoting brain health of micro preemies in several ways. First, its NICU provides all families with single rooms, where babies receive kangaroo care and aren't disturbed unnecessarily by noise and light. Second, Sunnybrook's NICU has formed a multidisciplinary brain care team as part of an international network dedicated to researching, finding and sharing best practices. And third, brain care continues far beyond the NICU – until children reach school age.

"Our heightened focus on micro preemie brain health is new and exciting," says Dr. Eugene Ng, chief of newborn and developmental pediatrics at Sunnybrook. "We aim to become recognized as an international leader in the care of micro preemies, where mothers at risk of delivering very early come to be cared for, where babies' outcomes are exceptional and where health-care professionals come to learn from us. The goal is to not only improve survival rates in micro preemies, but also to reduce rates of developmental disabilities."

The hospital's NICU is the only Canadian unit participating in the Vermont Oxford Network (VON), a large, international venture to improve the quality of care for micro preemies. Sunnybrook is

PHOTOGRAPH BY JENNIFER ROBERTS



Eleanor Cohen, on the scene at Dufferin station.

BRAVERY AWARD

Subway superheroine

How an ER nurse saved a man on Toronto subway tracks and still got to work on time

BY JUNE ROGERS

It was 6:30 a.m. on June 26, 2014. Dufferin Street subway station, Toronto. Eleanor Cohen, an emergency room nurse at Sunnybrook, was reading a book on the history of genetics while standing on the eastbound platform on her way to work.

She looked up from her book when she heard a sound she recognized immediately: the crack of a skull hitting a hard surface, something that happens occasionally in emergency rooms when people faint and fall to the floor. She saw a man lying unconscious on the westbound tracks.

With her emergency training, Eleanor knew what to do. She assessed the situation: Trains had just pulled out going east and west, and she figured she had about two minutes to rescue the man. After two minutes, the head trauma he likely suffered would make him vomit, he'd aspirate and go into cardiac arrest. "As an emergency nurse, I know how long two minutes takes. When you're not panicking, you have a better sense of real time."

Eleanor instructed a passenger on the subway platform to press the emergency button and another one to run up to the attendant's booth to shut the subway system down. Then, unperturbed by the danger of the high-voltage third rail that runs the trains, the 5'2", 100-pound nurse jumped down on the eastbound tracks and over the median to the other set of tracks. She scooped up the unconscious man and heaved him – she figured he weighed about 160 pounds – onto the median between the two tracks and turned him on his side to prevent aspiration.

Eleanor searched the man's pocket for ID, but didn't find any. When he came to, he was disoriented and agitated, flailing his arms. She could smell alcohol on his breath.

As the next trains slowly pulled into the station, she managed to keep him safe. "It was a very controlled situation because everyone had been informed of the emergency," she says.

When the EMS arrived, the first priority was to immobilize the man's spine. "When the EMS got down on the tracks, I helped them put the man on the boards and secure a collar around his neck, something that I do every day in the emergency room, except in reverse."

Eleanor's expert training and skills have been honed at Sunnybrook's emergency department under Dr. Jeffrey Tyberg, chief of the Department

"As an emergency nurse, I know how long two minutes takes. When you're not panicking, you have a better sense of real time."

of Emergency Services. The department sees from 160 to 200 cases a day, totalling about 70,000 patients a year. It employs 100 nurses and 42 physicians, many of whom have travelled to, and worked in, disaster zones such as Haiti and Africa. The department works hand in hand with the trauma team, headed by Dr. Homer Tien, who is a colonel in the Canadian Forces Health Services and has served as a battlefield doctor in Afghanistan.

When a trauma patient is en route to Sunnybrook, a specialized team – including a team leader, two emergency nurses and residents in orthopaedic surgery, neurosurgery, general surgery and anaesthesiology – is mobilized to receive the patient. "Most of our patients come in as a result of car crashes and burns. But we also see stabbings, gunshot wounds and rare, complicated situations," she says. "We have more resources and expertise than any trauma centre in Canada that I know of."

Eleanor loves working in the emergency department because it fits her personality. "I'm hyper, curious and I need lots of stimulation, and I believe you have to have those characteristics in order to thrive and enjoy this environment. In emergency, there's always something new, stuff you sometimes can't control. We see the weirdest, worst, unluckiest things. Most times we get to fix them, and when we do, it's a pretty good feeling."

For her superheroine efforts at the subway station, Eleanor received a bravery award from 11 Division, Toronto Police Service. "It was amazing. I was in good company. There were bartenders and accountants who helped save people, too, and they didn't even have any training. That's really something."

As for the man saved, he was taken to hospital that morning and recovered with no long-term effects. After that emergency was over, Eleanor still had to get to work. So she ran the four blocks back to her home, washed her feet and arms of the soot from the train tracks, hopped in a cab and arrived a few minutes before her shift started at 7:30 a.m. "I was pretty pleased. I have never been late for work – ever!"

PHOTOGRAPH BY TIM FRASER



Liora Davidson with Dr. Arjun Sahgal, who has treated her brain tumours with stereotactic radiotherapy.

RADIATION THERAPY

Right on target

Pinpoint-precise radiation therapy is now possible with new technology

BY JENNIFER HOUGH

The devastating news – breast cancer – came on her 45th birthday, in December 2009.

Surgery, radiation therapy and chemotherapy followed, and Liora Davidson, an optician with two grown sons, believed she was in the clear. “I thought everything was behind me, then in August 2011, during our family vacation in Europe, I had a couple of seizures.”

The seizures intensified upon the Davidsons’ return to Toronto, and a CT scan at Sunnybrook confirmed two small brain tumours. “There are no words to describe the shock,” she says.

Liora is receiving ongoing treatment at

the Odette Cancer Centre, where high-tech radiation techniques are delivered with surgical-precision, using non-invasive tools that aim to selectively blast cancerous tissue while sparing the surrounding healthy tissue – the Holy Grail of radiotherapy.

One of the procedures being used in Liora’s case is stereotactic radiosurgery (SRS), administered by Dr. Arjun Sahgal, radiation oncology site lead for the Odette Central Nervous System Cancer Care team. He recently reported that patients aged 50 or younger, treated with SRS for limited brain metastases (spread from the original breast cancer in Liora’s

case), had improved survival rates compared to those treated with additional standard whole-brain radiotherapy.

SRS uses sophisticated MRI mapping to pinpoint precise areas to be treated. Image guidance is used to deliver high-energy radiation beams with extreme precision. A specialized head frame keeps the patient in the same position during the treatment. “This combination of technology and technique has been proven to reduce cognitive dysfunction and fatigue,” says Dr. Sahgal, “and we’re fortunate to have an SRS program here with a team of specialists in radiation therapy and neurosurgery.”

“Brain metastases can be controlled with SRS, with rates typically from 70 to even 80 per cent. We always have the option of using whole-brain radiotherapy, should new metastases appear,” says Dr. Sahgal.

“Using SRS and brain surgeries (sometimes surgeries are required if the tumours grow despite the SRS), we have been successful in controlling the tu-

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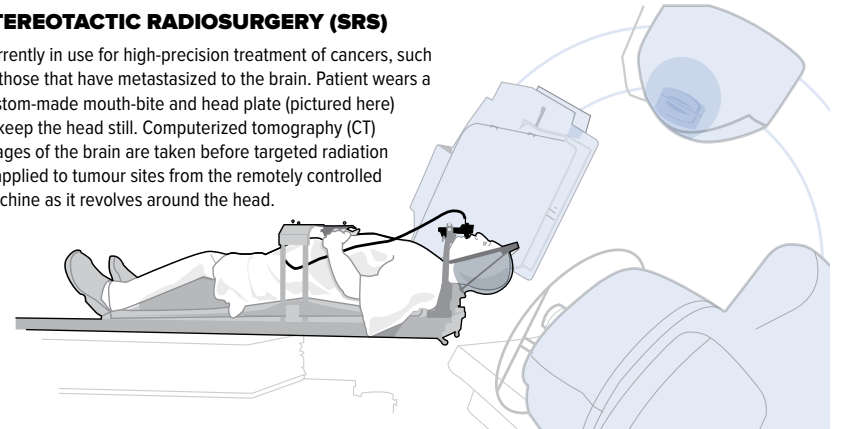
PHOTOGRAPH BY DOUG NICHOLSON

THE REVOLUTION IN RADIATION THERAPY

Advances in radiation therapy will transform outcomes for cancer patients, using state-of-the-art imaging and delivery technologies to target tumours with high precision and spare healthy tissue.

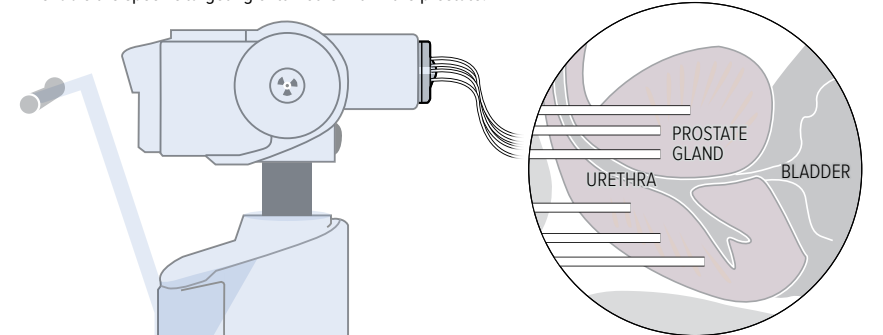
STEREOTACTIC RADIOSURGERY (SRS)

Currently in use for high-precision treatment of cancers, such as those that have metastasized to the brain. Patient wears a custom-made mouth-bite and head plate (pictured here) to keep the head still. Computerized tomography (CT) images of the brain are taken before targeted radiation is applied to tumour sites from the remotely controlled machine as it revolves around the head.



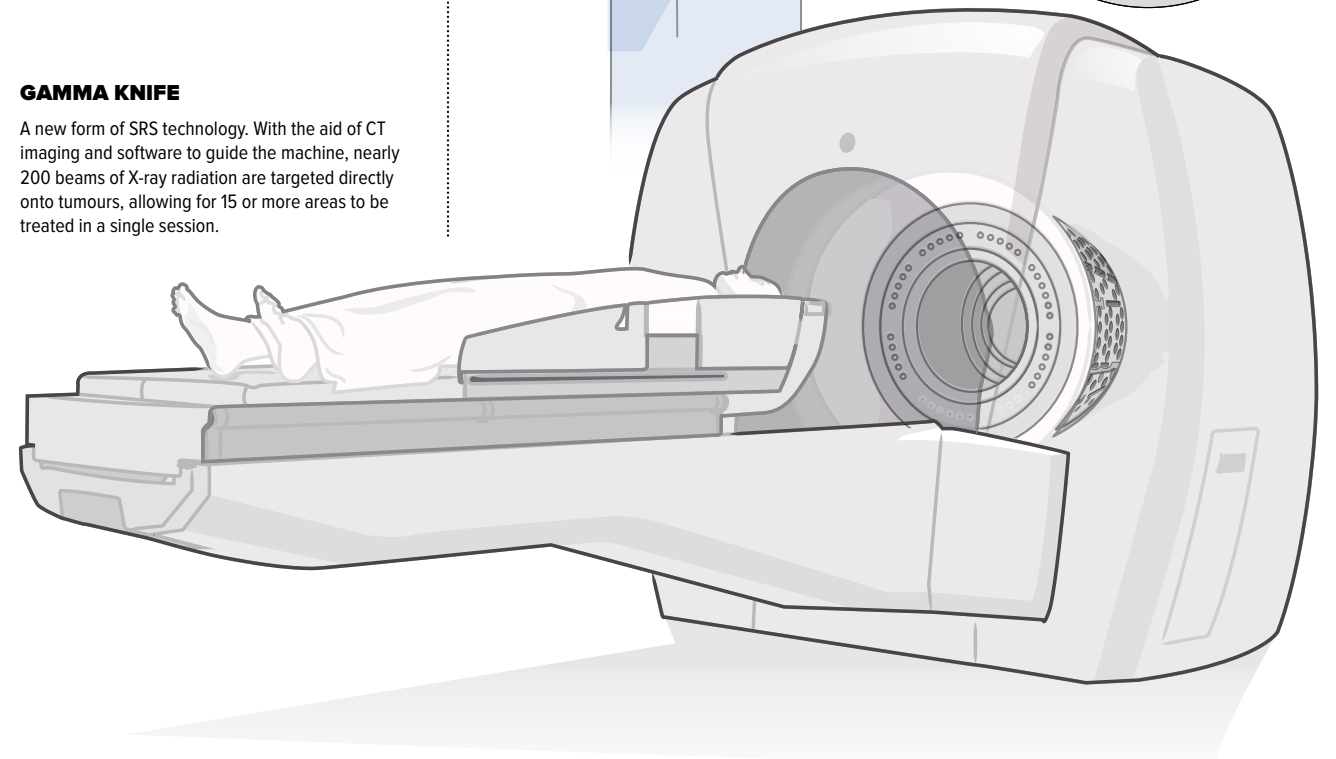
HIGH DOSE RATE (HDR) BRACHYTHERAPY

Uses a single, temporary high activity source placed into catheters that deliver a high dose of radiation to the prostate gland while sparing surrounding healthy tissue. Future magnetic resonance imaging guidance will enable the specific targeting of tumours within the prostate.



GAMMA KNIFE

A new form of SRS technology. With the aid of CT imaging and software to guide the machine, nearly 200 beams of X-ray radiation are targeted directly onto tumours, allowing for 15 or more areas to be treated in a single session.



GRAPHIC BY TONIA COWAN

mours in Liora's brain now for three and a half years since her diagnosis of brain metastases," says Dr. Sahgal, "and without having to treat her with whole-head radiotherapy."

"The great advantage of SRS is that it is a one-time procedure," says Liora. The patient comes in and gets fitted for the head gear and either has the treatment that day or the next. "It can save an open-head surgery, and many radiation sessions after that. In my case it did not work 100 per cent, but it gave me some long breaks." Sometimes surgery is still required, says Dr. Sahgal, if the tumour grows despite the SRS, as it did in Liora's case.

The idea is to have a suite of options available to tailor a course of action to individual needs. "By thoughtfully using surgery, SRS and combined approaches, we are able to control brain metastases in a way we have never been able to before, and with better results than the historic standard of whole-brain radiation therapy," says Dr. Sahgal.

Next-generation procedures like SRS are part of Odette's Cancer Ablation Therapy (CAT) program, where transformative technologies, such as precision image guidance, medical robotics and improved localization techniques, are paving new frontiers.

Dr. Calvin Law, chief of the Odette Cancer Centre, says innovation within the CAT program will redefine radiation delivery, making treatments incredibly effective with far fewer side-effects.

"Our team brings together experts in medical physics, radiation therapy, electronics, radiation oncology and more. They are creating world-first treatments that achieve our most-important goal: invent the future of health care for our patients," says Dr. Law.

To this end, the CAT program is planning to introduce several new radiotherapy technologies within the next few years, including next-generation gamma knife and an MRI brachytherapy suite.

In the field of SRS, the gamma knife is a dedicated brain radiosurgery machine built for a faster, more seamless treatment, allowing many tumours – up to 15 or more – to be treated at once. The technology optimizes the placement of approximately 200 small beams of radiation to deliver a strong dose of radiation while sparing surrounding healthy brain tissue. The machine is also frameless, allowing the

"The goal is to target the area better, reduce side-effects and give patients a better quality of life."

— Dr. Gerard Morton,
radiation oncologist

patient to be kept motionless using options that are less invasive than the traditional head frame. These include a mouth-bite or a simple mask-based system. For the gamma knife coming to Sunnybrook, work is underway to develop a more unique integrated image guidance system. The net result will be a less-complicated procedure that is more comfortable for the patient.

Another effective radiation technique is high dose-rate (HDR) brachytherapy. This involves placing a radioactive source within catheters that are temporarily implanted inside the body to deliver a high dose of radiation to the treatment area. Already a well-established approach for prostate cancer, advances in image guidance are now revolutionizing the targeting of tumour(s) within the prostate.

Radiation oncologist Dr. Gerard Morton is currently running a clinical trial to investigate whether high dose-rate brachytherapy, given in a single 20- to 30-minute treatment, has the biological effect of sparing healthy tissue in men with low- to intermediate-risk prostate cancer. "Technological advances have allowed us to give high doses of radiation internally to remove cancer with little toxicity," Dr. Morton says. "The goal is to target the area better, reduce side-effects and give patients a better quality of life."

Looking to the future, it's about increased accuracy and individualizing treatments, says Dr. Morton. "Rather than treating everyone the same, we want to interrogate the cancer using imaging and biomarkers to map out areas that might be more resistant to radiation and dose the patient accordingly or monitor response to treatment and adapt treatment as the cancer responds."

Sunnybrook moves a step closer to this Holy Grail when the MRI brachytherapy suite arrives next year.

A one-stop shop for high-precision radiation, specialized equipment will allow real-time imaging and treatment to occur simultaneously, making it the first brachytherapy suite of its kind in the world.

"Research and development is ongoing to use robotics to improve accuracy and allow insertion of needles in a way not previously possible," Dr. Morton adds. "MRI, ultrasound and genetic information will give us more information on how to treat cancers and individualize treatment." ■

A NEW THERAPY FOR WOMEN'S CANCERS

About 10,000 Canadian women annually are diagnosed with gynecologic cancers that include cancers of the cervix, uterus, ovaries, endometrium and vulva.

MRI-guided brachytherapy is set to change how radiotherapy is administered in

certain cases.

"Using MRI-guided brachytherapy for cervical cancer and other gynecologic cancers will allow us to individualize each patient's treatment to better target the cancer and spare healthy normal structures," says Dr. Lisa Barbera, radiation oncology site lead for the Odette Gynecologic Cancer Care team. "These new tools will allow us to innovate ways of targeting treatment based on imaging characteristics, enabling us to increase the dose, when needed, in the safest possible way."

The vision of the future of radiation treatment of gynecologic cancers was further reinforced when the centre recently recruited radiation oncologist Dr. Eric Leung. He specializes in interstitial brachytherapy – whereby devices containing radioactive material are inserted directly into body tissue – for advanced gynecological cancers. MRI-guided brachytherapy will allow Dr. Leung and the Gynecologic Cancer Care team to advance this treatment by allowing better targeting using MRI guidance. •

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DRUG SAFETY

When good drugs do bad things

Dangerous interactions and rare allergic reactions are the downside of otherwise safe medications. That's where the Drug Safety Clinic comes in

BY KATIE ROOK

Sonia Whyte-Croasdaile left work one Friday in March 2011, wishing her co-workers a good weekend.

Rather than return to the office three days later, the social worker, who is also a nurse, was hospitalized with a sudden illness that would temporarily disfigure every square inch of her body, nearly blind her and in the process reorient her life.

"I left work on Friday evening thinking I would see them on Monday, but that Monday hasn't come yet," she said in a recent interview.

Sonia was referred to Sunnybrook's

PHOTOGRAPHS BY DOUG NICHOLSON

Drug Safety Clinic, where Dr. Neil Shear and his team each month investigate hundreds of people suspected of having a drug allergy or sensitivity – through skin tests, drug challenges and laboratory investigations. He is among those striving to understand if a reaction to two doses of pink-eye medication may have caused 90 per cent of the skin on Sonia's body to blister and burn so significantly that her eyes sealed shut and the lining of her mouth and throat collapsed – symptoms that were found to be associated with a rare skin condition known as Stevens Johnson Syndrome (SJS).

Sonia's story illustrates the very serious and relatively rare adverse drug reactions the Drug Safety Clinic experts encounter. The majority of patients come to the clinic to be evaluated and tested for more common reactions, including immediate-type allergies, to drugs of all classes.

Every month more than 350 patients from across Ontario consult with up to four of the clinic's medical experts to determine the potential causes of symptoms ranging from hives and rashes to severe burns to organ and brain damage.

Reflecting on the occasion of the clinic's 30th anniversary, Dr. Shear recalls that from its beginning, the value of collaboration among dermatology, allergy and immunology, clinical pharmacology, pharmacy and research experts was clear.

"There were a whole bunch of things which showed us that we could give people quality advice

"When you can get important drug safety information out to front-line doctors, you can influence prescribing," says Dr. David Juurlink (left).

that wasn't crystal ball-type stuff."

Over the years, the clinic has fine-tuned its approach for optimal patient care.

"We not only manage their diagnosis and conduct drug testing (where appropriate), but we also follow up regarding their care and recovery, and arrange for further testing if needed, including genetic testing. In these latter cases, we notify them if their family members should be warned as well because it's genetic. The goal is to know what's safe going forward."

"People who go through this need a very thoughtful and comprehensive approach in the advice they get to guide them in their future therapy."

Finding the clinic gave Sonia back the hope she had lost through six weeks of burn treatments at Toronto-area hospitals, where doctors concluded she was suffering from SJS.

At the clinic, "that's when my whole outlook on life changed – when I met Dr. Shear," she says.

"He was the only one who was able to tell me what may have caused it. He said: 'This is going to be your home.'"

Dr. Shear and his multidisciplinary team conducted a series of allergy and similar tests and helped Sonia develop a list of medications that she needs to avoid.

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THE MEDICATION DETECTIVES

When consulting on rare cases such as that of Sonia Whyte-Croasdaile, the Drug Safety Clinic sometimes draws on the work of researchers like Dr. David Juurlink, who consider dangerous drug reactions from a different perspective.

Canada's decades-old universal health care system has afforded Dr. Juurlink an invaluable tool: extensive and anonymous data sets from which to infer the effects of drugs in real-world practice.

By analyzing how large numbers of patients react to a drug, Dr. Juurlink is able to quantify risk.

His work has influenced how doctors prescribe.

For example, doctors changed how they treat patients with heart failure after Dr. Juurlink found that a rise in the use of heart drug spironolactone coincided with an epidemic of hospitalizations for high levels of

potassium in the blood that can sometimes lead to fatal irregularities of heart rhythm.

More recently, Dr. Juurlink's team discovered that, in some patients, a popular antibiotic, gatifloxacin, was causing some patients to experience dangerous swings in blood sugar. After the study was published, the drug manufacturer pulled the drug from the market.

Another study found that people given antibiotics such as cotrimoxazole (Septra or Bactrim) alongside certain heart drugs were at increased risk of sudden death. Dr. Juurlink suspected dangerously high potassium levels were to blame, as his group's previous work had suggested.

"We don't often know how safe a new drug is in real-world practice, and one of my research objectives is to clarify the safety profile of drugs once they come to market," he says.

"When you can get important drug safety messages out to front-line doctors, you can influence prescribing. Moreover, we often do more than just document a drug's risk; we demonstrate the safety of alternatives. This can make it easier on doctors and patients, and can help demystify topics like drug interactions." •



left:
Dr. Elizabeth Weber

Sonia's gratitude is a familiar refrain to clinic manager and pharmacist Jackie Campbell, who alongside Dr. Shear and Dr. Elizabeth Weber, helps determine a patient's tolerance to various drugs. "We not only investigate which medications patients can and can't take, if they react to one drug, but we also try to find an alternative for them," she says. "Ours is a small, tight multidisciplinary team. Few clinics have such integrated pharmacy involvement, which is key to the nature of the work we do."

Three years since Sonia's health challenges began, she concedes that she may never know definitively what triggered the SJS, such as a drug allergy or a virus. Her appearance bears no hint of past illness, but pain and discomfort persist: Sonia's eyes are so sensitive to light she wears sunglasses indoors; the skin regrown on the soles of her feet is so raw that she cannot comfortably walk barefoot; she says she is not surprised to collapse from exhaustion while doing something as simple as washing a dish. She believes the recovery has led to an evolution in her perspective. "I see me as the new, refined Sonia with a different purpose." Her focus has shifted to advocacy and the support group she founded for others with SJS. Upon being discharged from the hospital, Sonia asked that her husband cover the mirrors in their home. "The person in the mirror looking back was not me. I couldn't accept that." Through the example and support of the clinic, Sonia says she was inspired to help others. "Now, it's about reaching out to others. To get to that place, I had to have this makeover. Now I look in the mirror and see a new person. I've never stopped looking at her." 📧

Losing memories to Alzheimer's is devastating enough. Now imagine losing your future.

The prospect of Alzheimer's is terrifying for Sadie. She's 28 years old. Her dad was just 57 when it took his life, putting her risk at an unnerving 50%. Sunnybrook's Brain Repair Group aims to develop treatments that will help restore and preserve critical cognitive functions in cases of familial Alzheimer's and other dementias. Learn more about Sunnybrook's Hurvitz Brain Sciences Program: [sunnybrook.ca/brain](https://www.sunnybrook.ca/brain)

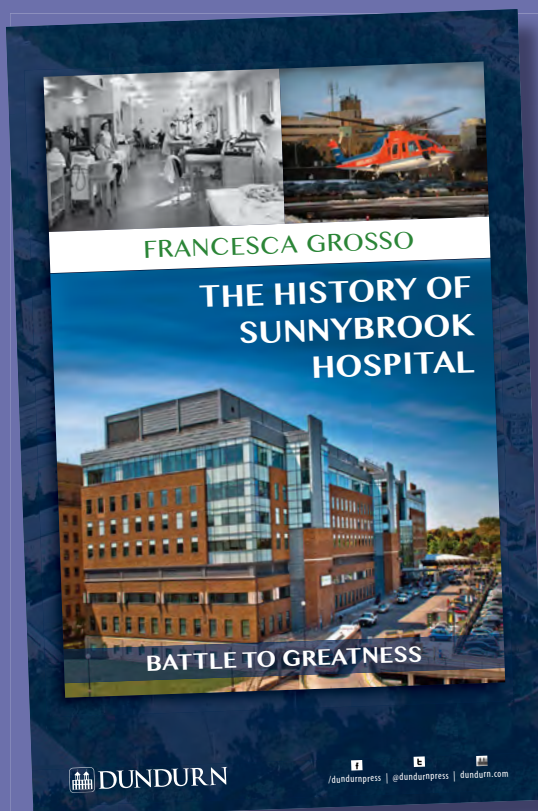
In the seven decades that have passed since Sunnybrook first opened its doors, millions of patients have received the best treatment and care that the hospital's talented staff has to offer. However, it wasn't until I read Francesca Grosso's fascinating new book that I realized how much more there is to this world-famous hospital. As a former patient, I simply say "thanks Sunnybrook".

- Mike Filey, Toronto historian, writer and author

A past like no other hospital in the country. Francesca Grosso brings to life the hospital's unique and tumultuous history: the early days as a Veterans' hospital, growth into a community and teaching hospital, and the rise to become a world-class health-care facility leading in patient care, innovation, teaching and research.

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GIVING BACK

The man in the blue vest

Stanley Weigen loved Sunnybrook, and it showed in his dedication to volunteering

BY KATHY BLAIR

After Stanley Weigen passed away at age 81, his daughter Janet Shiner received a few of his belongings, including one she knew was special to him: his blue Sunnybrook volunteer vest. "He loved wearing his blue vest," Janet says. "He carried it religiously in his car, cleaned and in a special spot."

Stanley's volunteer commitment to Sunnybrook began nearly 20 years earlier, when, newly retired, he arrived at the hospital to discuss meaningful volunteer opportunities. Stanley settled on the geriatric day hospital, where he became fast friends with recreational

therapist Mary Anderson. There he found his niche, first as a volunteer, then as a donor for various needs identified by the day hospital. Finally, Stanley left a gift to the day hospital in his will.

"Stanley had a great gift of the gab and a lovely disposition," Anderson says fondly. He approached her with the idea of starting a current events group for the day hospital's patients, a number of whom were then retired professionals eager to debate the news of the day. Stanley brought in newspapers and helped to spark lively discussions.

Born during the Depression, Stanley

always regretted being unable to attend more than a single year of university, daughter Janet says. Even without much formal education, he rose to the position of vice-president at Peerless Carpet Corporation.

In his leisure time, Stanley had long fed his love of history, reading voraciously, particularly on the Second World War. The current events group gave him an opportunity to share his passion for history and enrich the days of the hospital's patients, Janet says. His daughters donated his large collection of war books to the Sunnybrook library.

Stanley made his first donation to Sunnybrook when he observed Anderson bringing a garden area to life behind the day hospital with planters, a putting green and water garden. His initial gift purchased 40 yew bushes to line the path, brick to create a walking circuit and an arbour and bench.

After several years of regular volunteering, Stanley remarried and began to spend half the year in the United States. He would still visit the day hospital when in town and often asked Anderson, "What do you need around this place?"

Stanley's gifts led to purchases of lounge furniture in the waiting area, a treadmill in the physiotherapy gym and a laptop and projector used for staff rounds and patient education. In recognition of his generosity, the recreation therapy treatment room is named in his honour. Stanley's estate gift will be used to buy comfortable new chairs for patients.

"Stanley played a very big role in helping us," Anderson says. "Sometimes it's the little things that matter the most."

Janet says, "This was a way for dad to give back and a way to make a difference. He was always loyal to Sunnybrook, in terms of his time, his philanthropy and his passion."

A year to the day after their father's death, Janet and her sister Maureen Weigen-Liebovitz visited Sunnybrook's geriatric day hospital last June, where they chatted with Anderson and strolled the "Stanley Weigen Walkway."

"It's gorgeous and so quiet there," Janet says. "It's like a little piece of heaven." Discovering during their visit how much the day hospital appreciated their father "has been so meaningful for my sister and me," she adds.

Stanley would, no doubt, be pleased to know that Janet and Maureen will continue to make this pilgrimage each June 10 to mark his passing and to celebrate his enduring legacy to the geriatric day hospital. ☘



Recreational therapist Mary Anderson, with a photo of the late Stanley Weigen, says he "played a very big role in helping us."

PHOTOGRAPH BY DOUG NICHOLSON

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Highlights: One night deluxe hotel in Barcelona, 11 nights cruise, Overnight onboard in Venice & up to 41 Free Shore excursions.

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21 DAY "ILLUMINATED SKYLINES & HORIZONS"

Feb 18-Mar 10/16 "Hong Kong/Tokyo" on *Seven Seas Voyager*

Highlights: One night deluxe hotel in Hong Kong, 16 nights cruise, Overnights onboard in Xiamen, Shanghai, Tianjin/Beijing, Kobe/Kyoto and Tokyo, up to 58 Free Shore excursions & 4 Day/3 nights Extraordinary Deluxe post land program "Sunrise Over Tokyo" experience.

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RESEARCH & INNOVATION

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LABOUR OF LOVE ON THE PAIN OF CHILDBIRTH

Anesthesiologist Dr. Pamela Angle is finding more accurate ways of measuring the pain – and pain relief – women feel during childbirth.

“Initially what I wanted to do was develop an index that would measure the quality of pain relief that women got from different epidural-type drugs that we give, and from the different methods of giving them,” she says. “Then it became clear to me that you can’t understand pain relief without really understanding pain.”

Current methods for measuring pain, however, are neither standardized, nor sufficiently validated by women’s actual experiences during labour and delivery.

As director of Sunnybrook’s Obstetrical Anesthesia Research Unit, Dr. Angle has spent eight years developing and refining more sophisticated tools to help women describe their pain experiences. The instrument she came up with includes questions and pain pictures, making it, she said, the first measurement tool based on women’s real

perceptions.

“Within anesthesia,” she says, “there are many ways to treat the same kind of pain, and no cohesive teaching about how to best approach things. That has implications for the quality of pain control we give. Part of my work will look at how to measure what quality pain relief means to women in labour.”

Dr. Angle also plans to develop scales to measure side-effects of epidurals, which will allow women to make better choices about the kind of pain relief they want.

“More meaningful ways to measure pain relief during childbirth has cost-saving implications,” she says, “because we will now be able to compare how effective new technologies and drugs are compared with older, less expensive approaches from women’s perspectives.

“More accurate tools,” she says, “will really let us get at the woman’s experience, and I think that’s a huge thing. It’s basically the foundation for research in obstetrical pain relief.” •

LITHIUM: NOT SO BAD TO THE BONE

Researchers discovered several years ago that lithium – commonly used in treating bipolar disorder – has a beneficial effect on bone healing.

So scientists at Sunnybrook Research Institute Dr. Diane Nam and Dr. Cari Whyne have been working together to find how lithium can best be used in healing bone fractures.

“As a clinician, I want to know when to give it, how much to give and for how long,” explains Dr. Nam. “You have to figure out the practicality of an existing drug if you are going to use it for a different reason.”

When a bone breaks, the body immediately starts the healing process. A bridge of cartilage forms, and, soon after, this is replaced with new bone by mature bone-forming cells in order to complete healing.

Lithium seems to have an effect on the Wnt signalling pathway, a biochemical pathway that is activated during fracture repair. “Lithium changes the pathway and speeds up the process of this conversion to mature bone-forming cells, which are the cells that actually create new bone,” Dr. Nam explains.

Timing, however, is critical. The Sunnybrook researchers found that starting a two-week treatment with a low dose of lithium seven days after a fracture resulted in a 46 per cent better bone mend.

Dr. Nam and Dr. Whyne will next look at how lithium may also improve healing in bone fractures of elderly patients with osteoporosis, a disease that affects bone density and increases risks of fractures. Statistics show that one in three women experience osteoporosis-related fractures, and one in five men.

“Patients at higher risk of impaired healing, such as those with osteoporosis, could significantly benefit from lithium after a fracture,” says Dr. Nam. “Osteoporotic fractures are steadily increasing as our population ages, and this is a very big problem we face.” •

ARTERIES KEEP IT FLOWING

Having diabetes puts patients at a higher-than-average risk of developing heart disease. A team at Sunnybrook’s Schulich Heart Centre is ensuring that diabetic patients receive the most effective treatment, should they need open heart surgery.

Open heart surgery, or coronary artery bypass grafting, reroutes blood around blocked arteries, increasing blood flow to the heart muscle tissue. There are a couple of ways to approach the surgery: by grafting a healthy artery from the wrist or forearm, or a vein from the thigh, to a blocked heart artery.

Current practice favours using the vein, but new research shows that for diabetic patients with multiple blocked heart arteries, an artery from the wrist or forearm is a much better option. A recent clinical trial showed that five or more years after heart surgery, less than 5 per cent of patients with an artery from their wrist had blocked grafts. In the vein group, it was more than 25 per cent with blocked grafts.

“The artery from the forearm or wrist has a lot of things that make it attractive from a surgical perspective,” says Dr. Stephen Frenes, holder of the Bernard S. Goldman Chair in Cardiac Surgery. “It’s not delicate. And, as we learned, a significantly better option for diabetic patients.”

Dr. Frenes and colleague Dr. Saswata Deb, cardiac surgeon, both hope that the Sunnybrook study will be the push needed for more cardiac surgeons to use arteries over veins in open heart surgery for diabetics. For more than three million Canadians living with diabetes, all facing a greater chance of needing open heart surgery, this is a potentially life-saving game changer. •

UNLOCKING MITOCHONDRIAL MYSTERIES

Studies of our DNA have revealed a lot of useful information about the increased risk a person might have for certain illnesses. Yet much about the genetic nature of illness remains to be discovered.

Researchers at Sunnybrook and the Centre for Addiction and Mental Health are now looking at another piece of the genetic puzzle, the mitochondria. Passed down along our maternal lines, these are the tiny structures present in every cell that turn glucose into the energy our cells need to function. “They are the engine of the body,” says Dr. Peggy Richter, head of Sunnybrook’s Frederick W. Thompson Anxiety Disorders Centre, “and carry within them their own DNA.”

A psychiatrist, Dr. Richter has studied obsessive-compulsive disorder (OCD) – and the genetic mechanisms that could underlie it – for more than 20 years. “Although there is very good evidence to support that OCD is genetically transmitted,” she says, “finding major genetic factors has been elusive.” That led her to focus on the mitochondria.

“We took another look at genotyping we had done years ago,” she explains. Her team looked at markers specifically involved in the energy metabolism systems in human DNA that interact with the mitochondrial genes and found a suggestion of involvement of one gene.

A follow-up study looked at genes involved in energy regulation in greater detail. “We observed a number of minor positive findings for five genes,” says Dr. Richter. Encouraged by the results, she will soon start a further study, “where we will look at directly decoding the DNA ‘alphabet’ in the mitochondria gene letter by letter,” she says. “Very few studies have been done like this, and we’re very excited.”

If specific changes in the mitochondrial genetic code are identified that relate to OCD, it would suggest that the functioning of the body’s energy system may be important to developing this chronic illness. •



SURGERY BY SOCIAL MEDIA

Kids say the smartest things

One morning last November, Shauna Ritter's Grade 5 class at Dr. J. Edgar Davey Elementary School prepared for a surgery taking place 85 kilometres away. Settled into their seats, they followed along as Sunnybrook live-tweeted a minimally invasive colon cancer surgery – all to raise awareness about colon cancer prevention and screening. Shauna seized the chance to take her students' learning to new heights and led the class in a Skype chat with surgical oncologist Dr. Shady Ashamalla after the procedure. Here are some of the things they learned.

The most challenging surgeries are the ones that the cancer has stuck to other organs in their body cuz it's hard to take it all out.

Vama

I found out you can take out part of your large intestine and still be alive.

Rawhiya

I learned that colon cancer can be caused by cells that don't work properly.

Ar Dah

There are a lot of ways to decrease the chances of getting colon cancer like healthy eating and vitamins.

Kibrom

Video games help doctors learn to do surgery.

Mumijah

If the cancer is really big it can block the whole large intestine in your body and become painful.

Ar Dah & Rebecca

We learned that the large intestine can be removed and reattached to the small intestine.

Yuusuf & Mumijah

We learned what the colon is. It is a part of your large intestine and your colon is on the right side of your body.

Mya & Tristan

It takes 26 years from Grade 5 to become a surgeon.

Mirela & Leonita



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