

Sunnybrook

SAVING LIVES, ONE INNOVATION AT A TIME

REINVENTING SURGERY

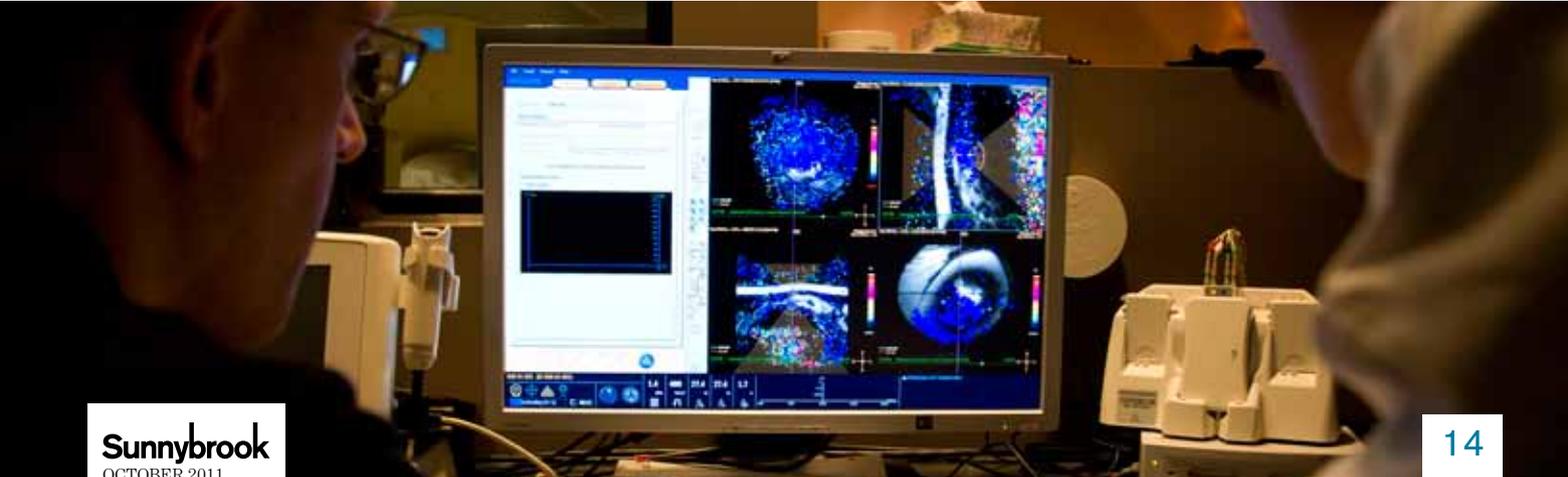
DOCTORS AT THE CUTTING EDGE – WITH NO SCALPEL IN SIGHT

Dr. Kullervo Hynynen's tumour-zapping ultrasound
+ Innovations in minimally invasive heart repair

ALSO INSIDE

Could a vaccine help beat metastatic cancers?

Hoarding: It's more than you see on reality TV



Sunnybrook
OCTOBER 2011

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INNOVATION SETS US APART

Because my volunteer work at Sunnybrook is well known by most of my friends, family and colleagues, I'm often asked what makes Sunnybrook so special. There are so many great hospitals, what sets Sunnybrook apart?

This is an important question and one that has many answers. But, there is one answer that goes to the core of what Sunnybrook does.

Sunnybrook cares for more people with their lives on the line than any other hospital in Ontario. Simply put, Sunnybrook is the place where the sickest people go for help.

Saving the lives of critically ill people is a mission that requires innovative answers to some of medicine's most difficult questions.

In this issue, you'll read about one such answer – minimally invasive procedures. These are treatments that don't involve opening up large parts of the body, but instead use small incisions – or no incisions at all – to deal with life-threatening conditions. Sunnybrook is leading the way in this area.

You'll read about testing the use of ultrasound to act as a scalpel to treat inoperable brain tumours. You'll read about how we are replacing defective heart valves without open-heart surgery.

These innovations are important for a number of reasons.

They save lives. These procedures can be done on patients too frail for traditional surgeries, who would have to simply live shortened lives with their conditions. They can treat disease in places where medical instruments simply can't reach.

They improve lives. Recovery from these procedures is shorter and less painful than traditional surgeries, getting patients back to their families sooner than ever before.

They save the health-care system money. They use fewer hospital resources and open up beds for new patients faster.

Sunnybrook is already Ontario's most efficient hospital but our innovations in minimally invasive treatments are about more than efficiency. They're about saving lives.

That's what makes Sunnybrook different.

There's so much more in this issue, too. As always, I hope you find information that is helpful to you or someone you know. Because this magazine is meant to be a resource for you, please tell me what you'd like to know more about.

Just email me at jennifer@sunnybrook.ca.

Jennifer Tory
Chair,
Campaign for Sunnybrook



Sunnybrook

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WE ARE SUNNYBROOK

faces of our staff and our community



THE VETERAN

Eyewitness to history

For Patricia Collins, the adage “a picture is worth a thousand words,” is most fitting. Upon entering her room in K-wing at the Sunnybrook Veterans Centre, you can’t help but notice a striking collage of black and white photos on the wall beside her bed. The faces are familiar; it’s like a page from another chapter in time: Shirley Temple; General Eisenhower and Prime Minister William Lyon Mackenzie King.

Each picture tells a unique and wonderful story, all of which begin when Ms. Collins (nee Holden), along with her mother and brother, moved from New Brighton, England, to stay with family friends in Montreal. A year and a half later, Ms. Collins joined the Royal Canadian Air Force, in April, 1942.

At the beginning of the

Second World War, the Air Force experienced a shortage of personnel. Ms. Collins was one of 17,400 women to serve with the Women’s Division of the Air Force. “I put my age up a couple of years,” she admitted. “I was really just hoping to meet new people and go dancing.”

Initially, she was a clerk typist. However, a short time later, at just 17 and with virtually no photography experience, Ms. Collins was sent to the Rockcliffe Air Station, an Air Force training site in Ottawa, for a twelve-week course on photography.

She passed the exam and a year later was posted to London as a senior photographer, where the assignments were mostly weddings, funerals and medal presentations. Sometimes, she and her Speed Graphic press camera were sent to

photograph the destruction caused by the bombings in London.

“From wartime, the thing I remember most was the first coverage of Belsen. It was horrible when those photos surfaced from the German concentration camp. I don’t recall his name, but they were taken by a reporter from the London Free Press. We stayed late that night to develop the negatives.”

After the war, Ms. Collins was hired by news agency Reuters, where she covered leading women’s fashion houses. As a young professional she was profiled for a Pathe Pictorial short movie called, *Women Going Places*. This mini-documentary was shown in movie houses and featured Ms. Collins as the modern woman in her role as photographer on Fleet Street.

“I remember being sent to photograph Queen Elizabeth at Buckingham Palace when she was leaving for her honeymoon. It was very magical.” During this time, Ms. Collins also captured leading American movie legends, such as Cary Grant, David Niven, and Rita Hayworth, while they were visiting Britain to help boost the economy after the war.

Ms. Collins’s life could be a movie in its own right. After the war, she became reacquainted with a fighter pilot named Art Collins, who was awarded the French Legion of Honour and Distinguished Flying Cross. He had tracked her down, and they married and raised five children together. As a mother, Ms. Collins shifted her photography talent to capturing the lives of their children and seven grandchildren. •



(from top) Patricia Collins with her husband, Flight Lieutenant Arthur Collins, who was awarded the Distinguished Flying Cross and the French Legion of Honour; her photograph of the then-General Dwight Eisenhower and Air Vice-Marshal Leckie; Mrs Collins at work during her one-year stationing in Dafoe, Saskatchewan.



THE RESEARCH TEAM

One cool medical crew

A cardiac arrest happens every 12 minutes in Canada. It is often sudden, cutting off vital blood supply to the brain. At Sunnybrook, a research project called PACT (Post Arrest Care Team) is changing the way these patients are treated.

One treatment the team is using for some cardiac-arrest patients in a coma sounds rather unorthodox: inducing a state of hypothermia for 24 hours to help the patient recover more fully.

“This therapy is meant to cool the body temperature of the patient to about 34°C. Normally we’re at about 37°C,” says Sandra Abud, registered nurse and member of PACT. “When the patient is cooled, research indicates that it protects against cell injury and cell death, and that is beneficial for patient outcomes.”

Twenty staff members from the Schulich Heart Centre’s Cardiovascular Intensive Care Unit (CICU) make up the team, including 19 RNs, five Critical Care physicians and two Emergency Department physicians. One RN, and one physician are available 24/7.

When an out-of-hospital

arrest is en route to Sunnybrook, PACT is notified and goes to the Emergency Department (ED) to work with ED staff to ensure the hypothermia protocol is implemented.

Pamela Meyer, patient care manager of the CICU, says, “The staff in the CICU are very enthusiastic and committed to this research initiative. It is giving us an opportunity to share our knowledge and expertise with others, as well as make a difference in the recovery and outcomes of these patients’ lives.”

“One of the reasons I knew I wanted to be a part of the PACT research project was a case we had a while ago in the CICU,” says Sandra. “A young woman who had had an out-of-hospital arrest came in, and because of the cooling techniques we implemented she survived and had a good outcome. Later she came back to the unit with her children to say thank you. It showed me just how powerful and necessary this research is. I really believe in this work, and it is extremely validating to see everyone work together to make it happen.” •



THE EMERGENCY MANAGER

The ER on wheels

For Patrick Auger, SARS was not only a crisis, but also the impetus to make a major career change. As a critical care flight paramedic, Patrick was already immersed in health care. But when the province got hit with the severe acute respiratory syndrome crisis in 2003, "it was a huge learning curve," he says. "SARS really identified that we needed a group of specially trained experts who could work in situations never encountered before."

In 2006, Patrick earned his Masters in Emergency Management and later took on a new role: Incident Commander with Ontario's Emergency Medical Assistance Team (EMAT), which is operated by Sunnybrook and the Sunnybrook Centre for Pre-Hospital Medicine. Referred to by many as a "hospital on wheels," EMAT is a first-of-its-kind mobile medical field unit that can be deployed anywhere in Ontario. Since EMAT's inception post-SARS, Patrick has been involved in four deployments – including an e-coli evacuation, two fires and the G8 Summit – and 12 training exercises.

EMAT has been able to recruit a group of experts in their respective fields.

Patrick's role in this multidisciplinary, 150-member team could arguably be the most challenging: making sure everything runs smoothly. Patrick says the devil is always in the details. "We have fuel systems, oxygen systems, ventilation and telecommunications. We've deployed full-scale training exercises in minus-25-degree weather, so you have to make sure all the doctors have warm coats. The little things add up to a lot." Thanks to Patrick's expertise, EMAT can set up a 56-bed unit that provides a staging and triage base within 24 hours anywhere in the province with road access.

EMAT's latest deployment in July included a 20-hour drive to Thunder Bay to assist with evacuees from fire-threatened communities in northwestern Ontario. "You get that phone call and you have to get things moving," he says. Sixteen-hour work days are normal during deployment, fed largely by adrenaline and the desire to do good work. "While these situations don't happen very often, we are there when they do and can make a tremendous difference. It's all very satisfying." •



THE BUG BUSTER

A gut check for C. difficile

Infection from *C. difficile* is one of the most common found in hospitals and long-term care homes. Most often, the bowel-damaging bacteria grow in patients who have taken antibiotics.

"The vast majority of patients with *C. difficile* have had some antibiotic exposure in the weeks leading up to their infection," says Dr. Nick Daneman (above), an infectious diseases physician at Sunnybrook and scientist in clinical epidemiology at Sunnybrook Research Institute. "Any discussion around antibiotic-resistant organisms has two problems we need to deal with—transmission of these bacteria between patients or health care workers, and overuse or inappropriate use of antibiotics in hospitals."

There are an estimated 220,000 cases of hospital-acquired infections in Canada each year. When a person takes an antibiotic, a natural selection process is launched, through which non-drug-resistant bacteria are killed off, leaving drug-resistant bacteria to multiply and emerge as the dominant strain inside the body.

"Organisms adapt to survive and we're giving them pressure from the antibiot-

ics to pick up new ways to overcome these treatments," says Dr. Daneman, who is also the physician lead of Sunnybrook's antimicrobial stewardship program, initiated two years ago in the hospital's intensive care units (ICUs). The program involves collaboration between the hospital's pharmacists and critical care staff to monitor antibiotic prescriptions in ICUs to reduce their use. Over one year, the ICUs saw a 21 per cent decrease in broad-spectrum antibiotic use, which was associated with a 30 per cent decline in *C. difficile* infections.

Dr. Daneman says more rigorous research is needed on curbing unnecessary antibiotic use and antibiotic resistance, at Sunnybrook and other hospitals. "One thing we learned through these quality improvement efforts is that this is a very young field and there's a lot still unknown out there," he says. "One of the goals of the program is to advance the science of antimicrobial stewardship to help not only our institution, but other programs around the world trying to introduce this concept in their hospitals." •



THE NURSES

Spreading the seeds of knowledge

When nurses specialized in cancer care visited Kenya, they learned that cancer in the local culture is often viewed as a curse.

The Odette Cancer Centre oncology nursing group of Kathy Beattie, Angela Boudreau, Marg Fitch and Sherrol Palmer-Wickham traveled to Nairobi and Eldoret. Their work, and the work of others at Sunnybrook, is helping to transform health care globally.

"We went to Kenya to help be a catalyst for moving things forward from within the system. We gained profound respect for these nurses who deliver care despite significant challenges," says Kathy Beattie, supervisor of the Chemotherapy Unit at the Odette Cancer Centre.

The group, who went as part of International Society of Nurses in Cancer Care twinning programs, saw how resourceful the local nurses are. For instance, there is no funding for free access to the Pap test. Instead, local nurses conduct acetic acid tests and visual examinations, a low-resource and moderately effective screening method for cervical

cancer.

The group met with health-care professionals at rural and urban facilities and local outreach clinics. They worked with staff from Aga Khan University Hospital and Moi Teaching and Referral Hospital to develop chemotherapy workshops for local nurses.

The group also learned about how cultural factors affect patient care.

"We learned that cancer is viewed as a curse and factored this sensitivity into our patient-care discussions with the participants," says Sherrol, manager of Ambulatory Clinics and the Chemotherapy Unit. "For a woman diagnosed, her personal 'value' is affected, as is the value of her family and the marriage-ability of her daughters. The woman and her family are viewed as cursed. Often she will not risk telling anyone about her illness and does not seek treatment."

For many of these reasons, cervical cancer, a highly preventable disease in North America, remains prevalent in African nations. •



THE FUNDRAISER

From grief to giving

"You don't have to be alone."

That's the message Jennifer Bassett has for those struggling with the loss of a baby, as she and her husband Cameron Sievert were in May, 2005. Their daughter Olivia had developed a diaphragmatic hernia and died shortly after being born at 30 weeks, weighing only 2 lbs 3 oz.

"You've had a loss, and it's okay to grieve — in fact, you're supposed to grieve," Jennifer says. "But you don't have to do it alone."

Jennifer and Cameron have thrown their support behind Sunnybrook's Perinatal Loss Clinic with a donation of \$25,000. The clinic will support women through their immediate physical recovery after the loss of an infant, and guide families through the next challenges, such as planning a funeral and interacting with family and friends. Families will find help in managing both their grief and relationships.

While she calls the care and service she received "phenomenal," Jennifer also points to holes in the system that will be filled with the Perinatal Loss Clinic. The clinic will offer mothers and fathers — equal partners in

this tragedy — a place for support and attention, and to deal with the loss in their own way.

"It's not just about the mother; my husband went through agony, too, as did the grandparents and the whole family," says Jennifer. "It equally affects the family, and after people receive this sort of devastating news, you need to take them somewhere and let them take it all in, have a cry and hug in privacy."

The clinic will also support important research into the causes of pregnancy loss, and will help develop new treatments. It will provide a place for consultations with counsellors and other health-care professionals, and a private room for family discussions.

In the end, Cameron adds, it will help families move on to the next phase in their lives.

"Life will get better; it's just very hard at the time to see that," says Cameron, whose family with Jennifer now includes Mackenzie Olivia, 5, and William Bassett, 4. "We now have a beautiful family, so we're really trying to make this clinic a hopeful place for other families." •

INSIDE THE HOARDER'S MIND

Obsessive pack rats are the latest 'stars' of reality TV. But as one of the world's foremost experts into this troubling condition, Dr. Peggy Richter aims to sweep away the misconceptions

It makes for fascinating reality television – the downward spiral of people living among mounds of belongings, from candy wrappers and new designer clothes to live and dead animals.

But Dr. Peggy Richter began shedding light on compulsive hoarding long before TV cameras and other media provided a public window into the often shocking and heartbreaking condition.

Dr. Richter, director of the Clinic for OCD and Related Disorders at Sunnybrook, is internationally known for her work in obsessive-compulsive disorder (OCD) and its subtypes, which include hoarding. In fact, Dr. Richter and her team have identified some of the genes that put people at risk of OCD. She's also the only psychiatrist in Toronto specializing in treating hoarders, whose compulsive behaviour can put their and others' health at risk.

Dr. Richter said there have been dramatic changes in the way OCD is perceived and studied since she graduated from the University of Ottawa's medical school and did her residency and fellowship work at the University of Toronto.

"Twenty years ago, when I was specializing in OCD, OCD itself was considered rare," she recalls. "When I wrote my first research grant to look at the genetic basis of OCD, I remember getting a letter of rejection at first, and one of the critiques said there is very little evidence it's genetic. If someone said that now, it would be laughed at."

The seriousness of hoarding was even more underestimated, she adds. "At that time, hoarding was considered just one symptom of OCD and not a very prominent one, and very little was known about it."

OCD is an anxiety disorder involving the brain and behaviour: The Boston-based International OCD Foundation says almost everyone has clutter, but hoarders take it to the extreme, living in filth as their lives are destroyed.

It's estimated five per cent of the population have hoarding tendencies. Behaviours typically surface in the early teens, and the average age of someone seeking treatment is about 50.



"When hoarders look back, they remember by age 13 they were having problems making decisions with what they can part with," says Dr. Richter. "Usually, hoarding is kept in check by family influences; parents say, 'We're cleaning out your room,' or in college, there may be restraints in terms of what they can accumulate. As they age, the problems seem to build through the lifespan."

There are also growing concerns about the personal and public health dangers of hoarding.

For example, a cigarette tossed on a Toronto high-rise

apartment's balcony started a fire late last year that left 1,200 people homeless and sent several to hospital. The fire quickly spread because of the excessive amount of material in the apartment.

As well, TV shows such as *Hoarding: Buried Alive* feature story after story of extreme cases: in one episode, the Humane Society seized 2,000 pet rats from one California homeowner and put them up for adoption.

More often than not, however, hoarding's clinical component – the underlying psychiatric illness – is not addressed in such programs, which usually concentrate on forced cleanouts of homes,

Dr. Richter stresses. "These shows do one very positive thing: They raise the visibility and awareness of the illness and lead to the increasing likelihood that family members of people affected by hoarding will come forward and seek help," she says. But "forced cleanouts can be very traumatic – the literature shows 90 per cent of those going through forced cleanouts reaccumulate and fill their homes again within a year."

Dr. Richter and others are working to have hoarding get its own unique psychiatric classification, which, if approved, would be significant for future research, treatment and care.

"Hoarding seems to be somewhat different from other forms of OCD in a number of ways," she says. "Neurological research now suggests ... it is associated with change and function in different areas of the brain," and may require more targeted treatment.

"We're even looking at the genetic basis – hoarding seems to run in families, but runs separately from OCD – and recognizing there is a much larger number of people afflicted with hoarding than we ever considered five or 10 years ago, and, in most cases, it doesn't accompany OCD."

Given that, hoarders haven't responded well to the only two clear first-line evidence-based treatments for OCD. There's drug therapy – primarily SSRIs (selective serotonin reuptake inhibitors, a class of antidepressant that also treat other mood-related disorders including anxiety disorders). And there's cognitive behavioural therapy (CBT).

"At this point, the treatments are generally speaking the same, but there's ongoing debate as to whether SSRIs are as effective for primary hoarding as other forms of OCD," Dr. Richter says.

Along with her research work, Dr. Richter's clinic at Sunnybrook provides consultation and assessment services for patients, who are then followed by other psychiatrists and family doctors. As well, Dr. Richter runs short-term CBT groups in 16-week sessions. Hoarders in those groups may not divulge their living circumstances to Dr. Richter for months, or even years.

"It's hard enough for them to talk about the OCD, but it is even more shameful to them to talk about their hoarding. By the time they seek treatment, they have developed insight [that they need help]. One can't treat an unknowing patient; a person who has a problem has to be

actively engaged."

Dr. Richter aims to "target the specific domains of dysfunction" by examining how they make decisions about discarding, and giving them the skills to help them let go of belongings.

"In my OCD group, they build up to going on shopping trips, walk into dollar stores, and walk out again without allowing themselves to purchase anything. That may seem like an impossible mountain to climb at first."

Despite the increasing public and media interest in hoarding, Dr. Richter doesn't get enough funding to help individuals one on one. Through research grants and some private funding, Dr. Richter can only maintain a part-time staff person who helps her with her research as well as her CBT groups.

However, support for Dr. Richter's services is getting a boost through the Sunnybrook Foundation, which conducts fundraising campaigns to support research, education and equipment initiatives for the hospital. ■

Sunnybrook will be hosting a speaker series on OCD and hoarding in January 2012. Please check sunnybrook.ca for more details in the new year.

Facts about COMPULSIVE HOARDING

How does it differ from collecting?

Hoarders seldom display their possessions, which are usually kept in disarray; collectors usually proudly display their belongings and keep them well-organized.

Why can't hoarders get rid of clutter?

Difficulty organizing possessions; unusually strong positive feelings (joy, delight) when getting new items; strong negative feelings (guilt, fear, anger) when considering getting rid of items; strong beliefs that items are "valuable" or "useful", even when other people do not want them; feeling responsible for objects and sometimes thinking of inanimate objects as having feelings; denial of a problem even when the clutter or acquiring clearly interferes with a person's life.

What things do people hoard? Mostly common possessions, such as paper (mail, newspapers), books, clothing and containers (boxes, paper and plastic bags); sometimes garbage or rotten

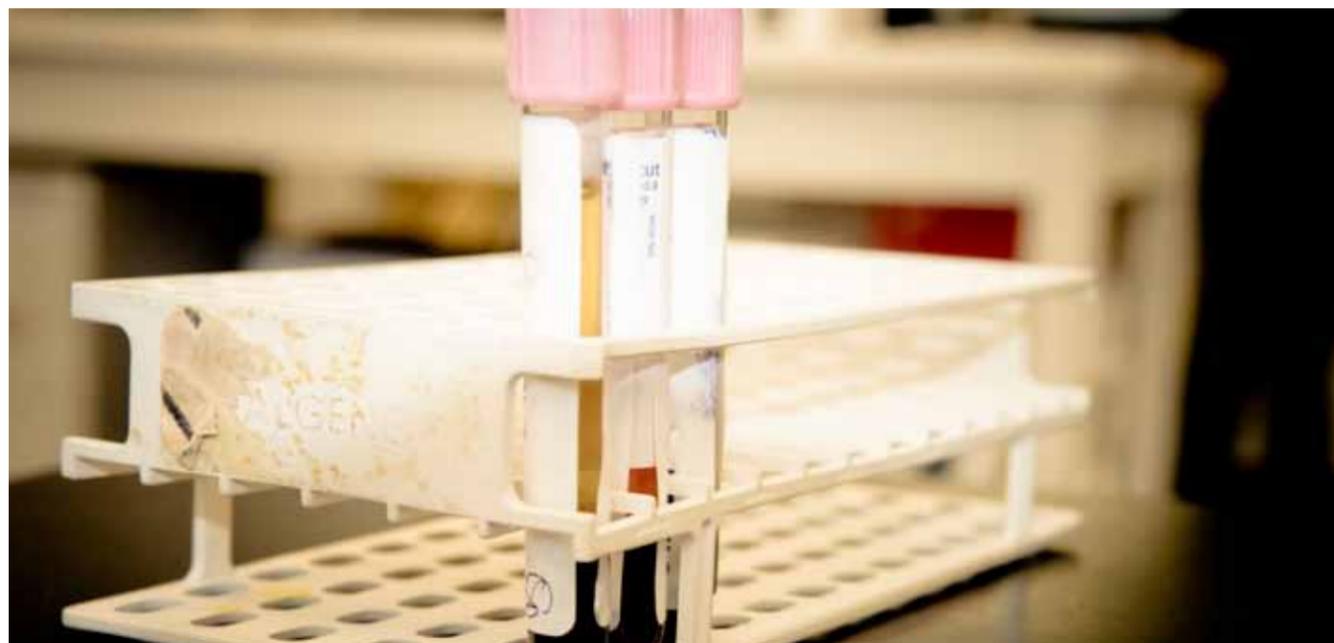
food; more rarely animals or human waste products.

Is it caused by poverty or hardship?

Hoarders may call themselves "thrifty" or blame their behaviour on having lived through a period of hardship. Research to date has not supported this idea. However, experiencing a traumatic event or serious loss, such as the death of a spouse or parent, may lead to a worsening of hoarding.

How is it treated? Usually with OCD therapies, including SSRIs and cognitive behavioural therapy (CBT). Other strategies: challenging the hoarder's beliefs about the need to keep items; going out without buying or picking up new items; getting rid of clutter, first by practicing with the help of a clinician or coach and then independently; joining a support group or teaming up with a coach to sort and reduce clutter; understanding that relapses can occur; developing a plan to prevent future clutter.

SOURCE: INTERNATIONAL OCD FOUNDATION



TEEN BLOOD VESSELS TALK

In a first-of-its-kind study, youth psychiatry researchers are teaming up with cardiac and imaging researchers to look at blood vessels of teens with bipolar disorder (BD) and healthy teens. Adults with BD are five times more likely to suffer from cardiac disease. Despite the strength of the association between bipolar disorder and cardiovascular disease, little is known about the biological factors involved. The research, funded by the Heart and Stroke Foundation of Ontario, will use ultrasound to look for differences between teens with BD and healthy teens in how blood vessels function. The researchers hope to one day find treatments that can both improve the symptoms of BD and reduce the risk of heart disease.

AN OUCH-FREE PROSTATE EXAM

It's not pleasant, but it's often a life-saver: that annual digital prostate exam. Because prostate tumours are stiffer than the tissue that surrounds them, they can be felt. But digital exams aren't very precise. To detect this cancer more effectively and determine its location in the prostate gland, Sunnybrook researchers are studying a new imaging technology. It uses a combination of imaging and vibration to highlight any areas of stiffness in a patient's prostate. The ability to detect prostate cancer and to know its exact location within the gland with imaging would mean more precise and targeted treatments, potentially reducing the debilitating side-effects most men experience when undergoing today's treatments.

STROKE AS A SECOND LANGUAGE

When a doctor suspects a stroke, she relies on the description of symptoms that the patient gives to make a diagnosis. Therefore, the ability to accurately describe those symptoms to health-care providers may influence the kind of care a patient receives. The diversity of our community means there are a lot of people who aren't native English speakers. Dr. Baiju Shah is studying differences in quality of care and how well stroke patients recover for those who are proficient in English and those who are not. There is very little research studying stroke diagnosis and treatment for people with language barriers. The results of this study will lead to greater understanding of the impact of language on health care.

RADIATION'S DIABOLICAL DUO

Nausea and vomiting are two side-effects radiation patients would gladly live without. Unfortunately, this diabolical duo often goes under-treated. They detract from a patient's quality of life and lead to increased health-care costs. Right now guidelines to prevent these side-effects exist, but it's believed that they're not generally followed and the management of nausea and vomiting vary widely. Dr. Kristopher Dennis wants to solve this problem. He'll bring together a group of international experts from 16 countries to design a web-based survey of radiation oncologists. The survey will document how patients are (or are not) treated. The hope is the results will help to explain why these symptoms are under-treated and, eventually, point to changes in care that will help patients say goodbye to them altogether.

(above) Sunnybrook's Dr. Martin Yaffe and his team are working on a better method for predicting a woman's breast cancer risk, incorporating factors such as breast density (opposite page) Researchers are examining the blood of teenagers with bipolar disorder to try and discover why adults with BD are five times more likely to suffer from heart disease.

BETTER BREAST CANCER PREDICTION

The Internet abounds with calculators that tell women their risk of a breast cancer diagnosis. These calculators are based on models developed from good science that's been learned over years of research. But, they're missing something personal. Dr. Martin Yaffe and two colleagues from the University of Virginia are teaming up to develop a breast cancer risk model that takes into account breast density, an important predictor. A more predictive model will help ensure that women receive the most appropriate screening plan based their own physical characteristics. Among other benefits, it's hoped that a better model leads to earlier detection and more effective screening.

HEART-ATTACK REPORT CARD

Surviving a heart attack in Ontario depends on where you live. Survival rates vary from 7 per cent to 12 per cent, depending on the region, and the reasons for the differences are unknown. One reason might be access to emergency angioplasty, which uses a balloon to open a blocked heart artery and is performed at only 14 hospitals in Ontario. Doctors have been trying new strategies like transferring patients to the nearest angioplasty hospital rather than treating the patients at their local hospital. But it's not clear if this is helping survival rates. Dr. Jack Tu is going to find out that answer and, in the process, develop report cards on the quality of care heart attack patients received in each region in Ontario for the 6,000 patients treated between 2008 and 2010. He and his team will identify ways each of these regions could improve treatment and survival rates for heart attack patients. We estimate that, with improvements, it may be possible to save up to 600 lives each year.

DRUG TRIAL MAY BRING HOPE ON ALS

ALS is a disease that eventually traps a person in one's own body, over time shutting down the muscles that make a body work. But a new drug may help slow this progressive and ultimately life-ending process. In previous phases of testing, dexamipexole, while proving to be both safe and tolerable in patients, was shown to slow the decline of physical functioning and prolonged life. The next phase of the study is now underway at Sunnybrook, home of Canada's largest ALS clinic, along with five other ALS centres across the United States, Europe and Australia. Patients will be randomly given a specific dosage of dexamipexole or a placebo for a period of between 12 and 18 months. Aimed at patients with ALS in the earliest phase of the disease, researchers are hopeful they will be able to offer people living with ALS a new weapon in the fight against this disease.

FOCUSED ON SCALPEL-FREE SURGERY

TARGETING MULTIPLE ULTRASOUND BEAMS DEEP
INSIDE THE BODY MAY ONE DAY MAKE THE
PHRASE **GOING UNDER THE KNIFE** OBSOLETE

BY MICHAEL MCKINNON



Neurosurgeon Dr. Todd Mainprize is leading a groundbreaking study into using high-intensity focused ultrasound to treat brain tumours.

IF SUNNYBROOK RESEARCHERS HAVE THEIR WAY, THERE WILL BE A TIME WHEN PATIENTS ARE NO LONGER FORCED TO GO “UNDER THE KNIFE.”

There will be no such thing as an inoperable brain tumour, and uterine fibroids will be destroyed without incision. The brain's natural defences will be safely bypassed to see medications delivered for a wide variety of brain diseases, and radiation doses will be cut by more than half.

And it will all be thanks to focused ultrasound.

“It will be the tool of every surgeon,” says Dr. Kullervo Hynynen, director of imaging research at Sunnybrook Research Institute. “Think about 50 years from now: Nobody is going to cut a patient's skin open if they have a tool that is non-invasive. It is definitely going to be the wave of the future.”

To be sure, high-intensity focused ultrasound (HIFU) is still in its infancy, but promises to some day lead to a standard of surgery without the scalpel. Based on traditional ultrasound, such as that used to create images of fetuses in utero, the procedure involves focusing ultrasound waves—beams that don't individually cause tissue damage—into a target a few millimetres in diameter, producing enough heat to destroy tumours or tissue while leaving surrounding bone and tissue untouched. That target can be deep within the human body, leaving bone and tissue in the beams' path unharmed—so no incision is needed. Magnetic resonance imaging is used both to pinpoint where the beams are to be focused and to monitor the procedure's success.

“The fact that Dr. Hynynen's team is able to take ultrasound waves and accurately focus them through a one-centimetre-thick skull to deliver thermal energy and be able to heat up and coagulate either a tumour or tissue in the brain is absolutely amazing,” says Dr. Todd Mainprize, a Sunnybrook neurosurgeon and principal investigator in an about-to-launch 10-patient study into the viability of HIFU's treatment of brain tumours. The study—Canada's first and one of the world's first—will see researchers treat brain tumours with patients awake, without anesthesia and with their skulls intact.

It's far too early for Drs. Hynynen or Mainprize to discuss

results of the study, but the helmet invented by Dr. Hynynen's lab that makes the study possible is a breakthrough on its own. Treating the brain posed a problem: Focused ultrasound heats bone at a rate of about 20 times that of soft tissue. In other words, sending ultrasound into both the brain and skull at the same strength would overheat the skull, cooking the brain. Scientists worldwide were long-convinced that brain tumours could not be treated this way.

Dr. Hynynen, who has led international interest in focused ultrasound for 30 years, overcame the issue with a helmet invented in his former lab at Harvard Medical School—the same lab in which his team was the first to show in 1998 that HIFU can safely penetrate an intact skull. Shaped like a 1950s salon hood hair dryer, the helmet's large hemispherical transducer distributes the ultrasound waves around the skull to eliminate excessive heating in one spot. (Sunnybrook researchers use the InSightec system, invented by Dr. Hynynen's team and further developed by InSightec, for brain treatments, and a Philips Healthcare MR-guided HIFU unit for all else.)

“Dr. Hynynen has taken this from an idea, that everyone said was impossible, to now, where a device is ready for human trials,” says Dr. Mainprize.

The next problem was the fact that skull thickness varies throughout the skull, causing the ultrasound waves to distort differently. CT images of the skull and advanced computer software allow Sunnybrook to correct for the uniqueness and varied thickness of each patient's skull.

“To do that, we have to divide the transducer by about a thousand small elements, and drive each of them separately to correct for the distortions,” says Dr. Hynynen.

Again, researchers are quick to point out that trials—those in brain tumours, as well as bone metastases, uterine fibroids and others—are in early phases or about to launch, and little is known with certainty about how well HIFU will work in a clinical setting. But they also say HIFU shows great promise in a wide variety of conditions.

Dr. Gregory Czarnota, director of the Odette Cancer Research program at the Sunnybrook Research Institute, says early results of a phase 1 trial of HIFU's treatment of painful bone metastases at Sunnybrook are so promising that Sunnybrook researchers are leading the expansion of the 10-person trial into a 30-patient study with sites in Canada, the U.S. and Europe this fall. This could be good news for patients suffering from the pain of cancers that have spread from their primary sites to bone.

“Of the seven patients enrolled so far, all had good-to-excellent pain response, related primarily to how much of the bone we can actually treat with the ultrasound—and some as soon as hours after the treatment,” says Dr. Czarnota. “Some patients had scored their initial pain at nine out of 10, and a



Dr. Kullervo Hynynen (in foreground) oversees a procedure using the HIFU helmet.

“NOBODY IS GOING TO CUT A PATIENT'S SKIN OPEN IF THEY HAVE A TOOL THAT IS NON-INVASIVE.”

Kullervo Hynynen,
director of imaging research at
Sunnybrook Research Institute

day later it was down to a one or a zero, and then just pain free since.”

He says it's possible HIFU is doing double-duty, targeting the metastases within the bone but also creating an anesthetic effect through the act of heating the bone.

But while Dr. Czarnota says the possibility of treating bone disease without radiation is exciting—and the HIFU treatment takes half an hour, compared with up to five return trips for radiation—he says even more exciting focused ultrasound treatments may be

on the horizon. Focused ultrasound shows promise in greatly improving radiation therapy's effect on the tumour, which could lead to doses of radiotherapy being cut by more than half with the same results. As well, by making blood vessels “leakier,” low-intensity focused ultrasound could allow 20 to 50 times more chemotherapy into the tumour.

“HIFU has the power to introduce surgery without a scalpel, but also make chemotherapy and radiation therapy much more powerful,” says Dr. Czarnota. “And we're talking hugely significant increases.”

Similarly positive results have been found in the treatment of uterine fibroids, which lead to pain, bleeding and infertility in one in four women at some point in their lives. Hysterectomy is one traditional treatment, a procedure that leaves women infertile and can require up to two weeks of recovery time. Early results of uterine fibroid trials at Sunnybrook and Thunder Bay Regional Health Sciences Centre, though, suggest much-improved results. The procedure hasn't reached the point where it's equal to other treatments, but Dr. Elizabeth David, the study's principle investigator, says she's confident it will get there with the help of ongoing tweaks and adjustments.



Dr. Gregory Czarnota,
director of the Odette
Cancer Research
Program

“There is no incision, no scarring and very little post-operative care. It’s truly non-invasive, where everything else is really minimally invasive,” says Dr. David. “HIFU doesn’t even involve a needle.”

In fact, the greatest discomfort these patients experience is from lying face-down on the table for the required three hours. Sedation is “exceedingly light,” says Dr. David, and some have returned to work the following day.

“We have patients who went cycling the same day of their surgery,” points out Dr. Hynynen. “You cannot do that after a hysterectomy.”

But perhaps most exciting is HIFU’s ability to help scientists safely open up the blood-brain barrier, the brain’s natural defence against toxins that also prevents medications from reaching the brain. The HIFU technique is slightly different here; researchers are not heating or destroying tissue, but rather injecting microbubbles—tiny bubbles of gas—into the bloodstream. Once targeted by focused ultrasound, the bubbles expand to open the blood-brain barrier safely by temporarily pushing aside protective cells to allow the delivery of brain medication; the barrier closes on its own within about six hours.

“The brain is a privileged site—whatever is in your blood stream does not get across the blood vessels into the neurons unless the brain wants it there,” explains Dr. Mainprize.

“We can use focused ultrasound to reversibly and safely open up the blood-brain barrier to allow for the delivery of medication of promising chemotherapy agents to these brain tumours,

treatments that would otherwise not be possible or effective because they wouldn’t get to the tumour. That’s Dr. Hynynen’s team’s work, and that’s phenomenal. It’s a very exciting time.”

Dr. Mainprize says there are other methods of opening the barrier, but most are not very effective and many open the entire barrier, exposing the brain to the risk of toxins. HIFU’s precision allows just a small door in a specific area of the barrier to be opened, creating opportunities for designer drugs to target tumours, depression, Alzheimer’s disease, stroke and more.

“Almost everyone I speak with thinks it’s going to revolutionize brain treatments on many levels,” says Dr. Hynynen, adding that the potential hasn’t been proven yet in patients. “Suddenly we have all of these medicines that can be used in brain treatments and they haven’t been used before. Now we can use them and use the imaging to target where they are going in the brain so we can limit side-effects—and that can have a huge impact.” ■

HEADS AND TALES

While the sports world wrestles with a wave of concussions and similar brain injuries, a Sunnybrook clinic has been leading the way in research and treatment



Glenn Higgins' bike accident has caused damage to his sense of smell and taste.

Glenn Higgins hopped on his bike, waved to his wife and pedalled up the street to the local high school. It was a sunny morning in late August, and he wanted to make the most of the weather to log some laps on the asphalt track, away from the traffic and dogs that sometimes disrupted his rides.

"For whatever reason, I left without my helmet," says Glenn. It was the first time he'd done so in 23 years.

Glenn was cruising around the track at 40 km/h when without warning the bike's chain seized. The bike flipped and drove him headfirst into the ground. He blacked out.

He awoke to a woman standing over him asking if he needed help. He told her he was fine, but the blood pouring down his face said otherwise. She telephoned 911 and Glenn's wife. Later, hospital

X-rays and CT scans showed that Glenn had a broken shoulder, two fractured vertebrae, skull fractures and brain bleeds.

An ambulance rushed Glenn to Sunnybrook's Tory Regional Trauma Centre. "It was a desperate situation. I had a basal skull fracture and all I could think about was 'that's what killed Dale Earnhardt Sr. at the Daytona 500 NASCAR race'," says Glenn.

After five days in Sunnybrook's Critical Care Unit, Glenn returned home for a two-month-long recuperation that included physiotherapy for his shoulder and rest for his brain. He was often forgetful, at a loss for words, had trouble concentrating and difficulty sleeping. Glenn had suffered a moderate traumatic brain injury (TBI). As part of his treatment, he started making regular visits

to Sunnybrook's Traumatic Brain Injury Clinic.

Brain injuries such as concussion have grabbed headlines recently with the prolonged sidelining of hockey player Sidney Crosby and the lawsuit launched by former football players against the National Football League. The clinic has been in operation at Sunnybrook since 1999, filling a gap in the care of mild to moderate TBIs. It receives referrals from within the hospital, but also from community doctors and general practitioners. "The aim is really to try to sort out what the major treatable problems are at the outset and, by treating those, determine what other areas may dampen down on their own, or require additional intervention," says Dr. Scott McCullagh, a neuro-psychiatrist and the clinic's director.

When the head hits a surface—like



Concussions in the NHL, including the one suffered by Sidney Crosby, have raised the profile of traumatic brain injuries

asphalt or a car dashboard—and suddenly stops moving, the brain continues its trajectory and smashes into the skull. The action can squeeze, tear and stretch tissue, blood vessels and nerves. Using a variety of measures, doctors grade the brain injury as mild, moderate or severe. Physical, emotional and cognitive symptoms, including headaches, dizziness, difficulty sleeping, unhappiness and irritability, and trouble with concentration and forgetfulness, are common among those with mild and moderate TBI.

The vast majority of people with mild TBI recover within three months of the incident. But for roughly 10 to 15 per cent, the symptoms can persist. "Five years later they might still have headaches and be depressed—and they may have lost their job and their lives might have fallen apart," says Dr. McCullagh. Instead of taking a wait-and-see approach, the clinic aims to assess individuals within three months of the injury and offer early intervention. Often treating one symptom, such as mood or sleep disturbance, will improve others such as concentration. The outcome after a moderate TBI is more variable, but the same principles apply.

Two months after Glenn was thrown from his bike, the TBI clinic's medical team tested his concentration, word recall, pattern recognition, and ability to complete a logic puzzle. He drew clock faces, 3D cubes and took a smell test. He and his wife were provided with support and reassurance over time, as well as

education about strategies for coping and gradually resuming his activities.

Glenn's injuries include damage to the areas of his brain that govern his sense of smell and taste. A year on, he still has partial hearing loss in his left ear and his sense of smell remains "wonky." Chocolate and Irish whiskey are among the big losses, he says. "I can't detect the complex flavours any longer."

The TBI clinic has a strong clinical research mandate. Among their research questions: What factors influence recovery from a TBI? The clinic has tracked more than 2,200 patients through their treatment, including hundreds of variables for each, to help doctors chart recovery. The team is also studying post-traumatic stress disorder among TBI clinic patients, and the links between TBI, mood and cognition. Dr. McCullagh is also a member of the Ontario Neurotrauma Foundation, and a senior contributor to a comprehensive set of guidelines that offer the best evidence on the assessment and treatment of mild brain injuries and persistent symptoms.

Despite his ordeal, Glenn is remarkably upbeat. "I know it will take some time, but the nerves will knit themselves together again. One day I'll bite into a really good piece of chocolate and the taste that I remember will click and I will be done," he says. "I'll call the clinic so they can say, 'This is how long recovery can take.'" Dr. McCullagh says he looks forward to that call. ■

TRAUMATIC BRAIN INJURY BY THE NUMBERS

200

One of every 200 Canadians sustains a traumatic brain injury every year.

66

Roughly 66 percent of patients at the TBI clinic have been in motor vehicle accidents.

90

About 90 percent of brain injuries are graded as mild to moderate.

10

10-15 percent of those with mild TBI continue to experience symptoms one year after the incident, well beyond the typical recovery period of three months. These can include headaches, sleep problems, fatigue and depression, as well as difficulties with their balance and thinking. The outcome after moderate TBI is more variable.

495

Sunnybrook's Traumatic Brain Injury Clinic saw 495 patients in 2010, including 193 new patients.

UP NEXT IN THE WAR AGAINST CANCER: A VACCINE?

There are few worse diagnoses than cancer that has metastasized. But researchers hope to one day save lives with a simple vaccine

Cancer survivors never want to hear the “M” word – metastases. It means cells from their original tumour have travelled to another part of the body and are forming cancer again. Metastatic disease is bad news – it is responsible, for example, for 90 per cent of breast cancer deaths.

Researchers at Sunnybrook are working on a brand new approach to the dreaded “M”. It is a vaccine that, if successful down the road, will have the ability to prevent metastases. It has been tested in mice and is almost ready for human trials. It will be tried first in breast cancer, and if it works, it will be used for colon cancer as well.

“We would use it early, after the diagnosis,” says Dr. Jean Gariepy, a senior scientist at the Sunnybrook Research Institute and the brains behind the future vaccine. “We could remove the tumour and then give the vaccine, which would stop rogue cancer cells that float elsewhere.”

In Canada, this year there are expected to be 23,600 new cases of breast cancer. Between 20 and 30 per cent of these patients will develop metastatic disease with no known treatment. Breast cancer is known to migrate to the lung, liver, bone, peritoneal cavity and sometimes the brain. Right now, there are few good treatments for metastatic breast cancer, says Dr. Gariepy. “It’s the one for which there are very few solutions. We mostly use palliative drugs.” Just over 5,000 Canadian women are expected to die of breast cancer this year.

An important marker for risk of metastases is a protein called carcino-embryonic antigen (CEA). This antigen is found in 56 per cent of breast cancer cells and all colon cancer cells. It is also shed in the blood. “For breast cancer,” says Dr. Gariepy, “high levels of CEA in your blood at diagnosis indicates you are in line to develop metastatic disease later in life.”

In essence, women with breast cancer who have CEA in their blood or cancer cells have dramatically lower chances



of survival than women who don’t have CEA.

CEA molecules tend to leave the primary tumour and lodge in other organs. They form cancer by clumping together. Dr. Gariepy’s novel new vaccine is designed to block the part of the CEA molecule that likes to stick to itself.

In order to work, the vaccine had to accomplish this and something else: it had to look a bit foreign to the immune system, so that the body knew it should mount an attack. Dr. Gariepy’s lab has achieved this. “Not only would it block the formation of nodes of breast cancer elsewhere, but it would also get circulating antibodies doing surveillance for months and months for something seen as foreign,” he explains.

He and his team have tested the vaccine on mouse models, and it has been a huge success.

“We give mice the vaccine. Then we inject cancer cells and don’t see any tumours in the peritoneum or lungs; we know it’s due to antibodies the mice are making,” says Dr. Gariepy.

The beauty of vaccines for cancer, says Dr. Neil Berinstein, a Sunnybrook oncologist and world authority on cancer

vaccines, is that they don’t have the same side-effects as chemotherapy and radiation. “To improve outcomes with minimal side-effects, that’s been the Holy Grail,” he says.

Dr. Berinstein and his colleague Dr. Kathy Pritchard, a leading breast cancer expert at Sunnybrook, are helping lead the new vaccine closer to the bedside. Right now the team is developing a protocol for a phase I human trial, which will test whether the vaccine works, and whether it is safe. This could begin in about a year.

“I’m thrilled by Sunnybrook’s ability to mobilize people to try to help me move it forward. It has happened very quickly here,” says Dr. Gariepy. Drs. Berinstein and Pritchard knew the project was worthwhile. “We were impressed and excited. We do believe the data he has is exciting enough to take into the clinic,” says Dr. Berinstein, adding that it might be 10 years before the vaccine is actually available.

“Vaccines are one of the next frontiers for cancer therapies. You’re going to see huge growth in this area. And this is exciting because it’s home grown in Canada.” ■



a P.A.R.T.Y. to end all parties

A Sunnybrook program that exposes teens to the honest truth from trauma survivors may well save lives by preventing reckless behaviour

by Dan Birch

Paramedics and other first-responders deliver a dose of reality to P.A.R.T.Y. teens by sharing tales from the front lines.

How do you get invincible teens who don't bat an eye at blood and guts to recognize the potential consequences of their risky behaviour?

You throw them a P.A.R.T.Y.

And for some teens, the effects of Sunnybrook P.A.R.T.Y. show: their legs weaken, they go flush and they pass out.

But it's not your typical teenage party. This P.A.R.T.Y. – Prevent Alcohol and Risk-Related Trauma in Youth – uses a unique blend of engaging speakers including injury survivors, emergency response workers and health-care professionals, plus visits to Sunnybrook's trauma room and Critical Care Unit, to help teens recognize their injury risks and make smart decisions to reduce them.

Of course, making kids faint isn't the point. But if their physical reactions are any indication, Sunnybrook's P.A.R.T.Y. Program is getting through to them.

"It is a very powerful way to communicate the importance of making informed choices," says Joanne Banfield, manager of trauma injury prevention within the Sunnybrook RBC First Office for Injury Prevention, which encompasses P.A.R.T.Y.

Indeed, over the two-plus decades the program has been running, Banfield says many students have said their visit to Sunnybrook was their most memorable high school trip. "P.A.R.T.Y. stands out. It's one they never forget," she says.

Irene Petrou, a teacher at Milliken Mills High School in Markham and a past P.A.R.T.Y. attendee herself, is introducing her students to the program.

"It's crucial that we expose them to the realities of everyday living," she says. "Students tend to have an immortality complex and believe nothing 'bad' will happen to them, so this is a hands-on experience."

The program is a reality check for youth, adds Toronto Police Service constable Keith Ingram, who has been a P.A.R.T.Y. speaker for more than two years. Vehicles are the most common sites for teenager deaths in the developed world, he says, adding that the most risky driving behaviours include speeding, impaired driving, cellphones and other distractions, and not wearing seatbelts.

P.A.R.T.Y. veteran speaker Geoff MacBride, a Toronto paramedic, discusses different injuries and their consequences with students. "It's really a no-holds-barred approach. There is some pretty graphic stuff," he says, noting that he gets students to lie down on a backboard and places a neck brace on them for added effect.

From its humble beginnings at Sunnybrook in 1986, P.A.R.T.Y. has spread across Canada and has gone international, with programs set up in the United States, Japan, Brazil, Australia and Germany. Sunnybrook remains the program's national headquarters.

Some of these international seeds, Banfield notes, were planted after doctors from afar encountered the program first-

hand while working at Sunnybrook's Tory Regional Trauma Centre. Impressed with what they saw, the doctors have taken the initiative to bring P.A.R.T.Y. back to their home countries. Banfield's speaking engagements at international conferences have also been important to this global expansion.

So what is a typical day for P.A.R.T.Y. participants? Through the eyes of paramedics, police, nurses, physicians, social workers, coroners and injury survivors – some in acute care, others in rehab or back home – they learn the details of what really happens during, immediately following and in the years after an injury.

The team also helps students understand the effects alcohol and drugs have on decision making, judgment, concentration and coordination, and the terrible consequences that can result. The kids gain perspective on exactly how incidents impact the body, especially the brain and spine. The program concludes by challenging teens to individually and collectively commit to promoting behaviours that minimize the risk of injury.

Sunnybrook created the program both at the request of teens and with their input, Banfield emphasizes. "It was important to ensure the messaging was directed with teens in mind." It was equally necessary that a realistic setting – what she calls "vivid clinical reality" – was at the heart of P.A.R.T.Y. "We don't sugar-coat things," she says.

"I wish that when I was a kid I had this," says 61-year-old Elton Horner, a quadriplegic who has been sharing his story with P.A.R.T.Y. teens since 1988.

The program works because of its authenticity, he says. "Number one: getting the message right from the horse's mouth. That's a lot different than having your teacher tell you not to do this and not to do that."

Elton's life changed dramatically in 1983 while driving impaired. He failed to negotiate a turn and, not wearing his seatbelt, was launched from his vehicle. A lengthy hospital stay, a year's worth of rehabilitation and under-employment followed.



Participants in the program get the chance to wear goggles that simulate driving under the influence of alcohol, and (opposite page) to hear hospital staff tell the gruesome truth about trauma patients.

Elton speaks to P.A.R.T.Y. students at Sunnybrook twice a week during the school year, telling them how his risky behaviour changed his life and guiding them through the hospital's rehabilitation area. The students are inquisitive about his injury's effect on others, he says. "They want to know how my friends took it and how my family is."

Elton's story and those of the other injury survivors definitely touches the youthful audience.

"I can see in the kids' faces that they are aware of what's going on," he says. Elton has also received feedback from students and their parents that highlights changed behaviour among participants. "I have driven with a drunk driver. And after what I've seen today I'm definitely not doing that again," is one such comment.

Sarah Ginn, an injury survivor entering her second year as a P.A.R.T.Y. speaker, also elicits a reaction from students. "They grab my hand and say, 'It's amazing to meet you,'" she says of youth who approach her after she speaks.

Sarah's story is at the same time deeply tragic and incredibly inspiring. Now 30, Sarah was a friendly and vibrant young woman looking to the future when the car she was a passenger in was struck by an oncoming vehicle in January of 2003.

Although she was wearing her seatbelt, it was not working properly. Slack in the seatbelt caused it to wrap around the vehicle handle and unravel during the impact from the other car. Sarah went hurtling into the windshield, initially causing a bleed in her brain, a torn liver from the seatbelt and collapsed lungs. Sarah's sister, Lisa, was also in the car, and was transported to Sunnybrook with broken ribs, punctured lungs and a suspected fracture of her spine.

Rushed to Sunnybrook by air, Sarah laid in a coma for six weeks with little chance of survival. But she beat the odds and woke from the coma, and then underwent 16 surgeries, countless hours of speech and cognitive rehabilitation and ongoing physical therapy. Her long-term injuries include being legally blind, being unable to taste or smell, and continuing cognitive and memory losses.

But that's what happened – not what is happening now. Sarah recently graduated to become a registered holistic nutritionist and is excited to return to Sunnybrook as a P.A.R.T.Y. speaker. She says being able to offer guidance to youth and to give back to Sunnybrook is an "honour and a blessing."

Sarah's mom, Eveline, says that as much as students are shocked and saddened by what they hear, they also draw inspi-



ration from the courageous battles waged by survivors. "Sarah has fought. It's been a long seven years," says Eveline, who along with her husband, David, speaks to participants about how tragedy affects parents.

The students are often much more appreciative of their parents after hearing the two speak, Eveline says. "You know you've touched them and you know you've reached them," David adds.

A recent study, published in the March issue of the *Journal of Trauma-Injury Infection & Critical Care*, indicates that all of this messaging and vivid clinical reality is connecting with youth. The researchers found P.A.R.T.Y. participants are less likely than non-participants to suffer traumatic injuries.

"It validated that the work [behind P.A.R.T.Y.] and all the time and energy – and let me tell you, it was a lot of hard work – was in fact worth it," Banfield says of the study. It documents, in a scientific way, the anecdotal evidence that has been building for years: P.A.R.T.Y. participants are more likely to take a pause, reconsider and avoid risky behaviour.

The Sunnybrook researchers combed through data from a 10-year period, randomly matching 1,281 former P.A.R.T.Y. participants with an equal number of non-participants, all the while keeping four variables in mind (same age, gender, residential area and initial year in Ontario's driver's license database). There were fewer traumatic injuries in the P.A.R.T.Y. group – 43.3 per cent vs. 47.4 per cent. This means non-participants were at a 22 per cent greater risk of a traumatic event.

"These results show us that exposing teens to this kind of learning has tangible benefits and applicability in the real world," says Banfield. "It is very rewarding to release these findings during the 25th year of the program."

P.A.R.T.Y. benefits more than just its target audience. The speakers also get something out of it, Elton says. "It turned out to be really cathartic for me. I hadn't really talked much about what happened – just sort of kept it inside." But by opening up to students, Elton found he was willing to share more of his story.

David, who has witnessed his share of trauma as a police officer, also describes P.A.R.T.Y. as a bit of a healing mechanism. Informing youth about the consequences of risky behaviour "helps us get the pieces of our life back a little bit. It doesn't fix it, but it does help."

With well over 120 P.A.R.T.Y. Program sites in Canada and around the world, the program shows no signs of slowing.

The intention, Banfield says, is to have P.A.R.T.Y. operating in every lead trauma hospital in the country within five years and to double the overall number of sites where it is delivered.

Banfield and her team are also looking to evolve the program's delivery model so that it can be presented outside of hospital settings in an effective way. "Not everybody can come to the hospital," she notes. "What else can we develop that is pretty close to what we have here, but doesn't take as many resources and allows us to cover off all the high school students?"

Certainly, a bright future is in store for P.A.R.T.Y., which can only mean a brighter future for program participants who will be less likely to take dangerous risks and suffer tragic consequences. ■

'I BUY LOTTERY TICKETS TO ONE DAY GIVE THEM A MILLION DOLLARS'

Money can't buy the kind of advanced care one patient received at the Ross Tilley Burn Centre, but he shows his gratitude however he can

On a chilly winter night in Toronto, Bob Johnstone leaned over his kitchen stove to reach for something. Flames from the burner caught his loose shirt and "went poof." Soon he was engulfed in flames. Quick to react, he ran outside onto the deck and dove into the snow, rolling around until the flames were extinguished.

"I didn't think it was serious," recalls Bob, the mellow-voiced, long-time journalist and broadcaster, best known for hosting *Today in History* radio vignettes on CBC in the 1980s and '90s. But with almost a quarter of his body burned, his life was now in severe danger. Bob was not a young man – almost 80, in fact – at the time of the accident.

He was rushed by ambulance to nearby Sunnybrook, where he was admitted to the Emergency Department (ED). Luckily for Bob, Sunnybrook is home of the Ross Tilley Burn Centre (RTBC), where the majority of the province's burn victims are treated. The centre is named in honour of Dr. Ross Tilley, a highly skilled Canadian burn surgeon and a pioneer in the treatment of burns during the Second World War.

RTBC is the only burn program of its kind in Ontario, providing everything from admission to acute care, follow-up, rehabilitation and reconstructive surgery.

"People who come here have access to the best possible outcome because of our dedicated resources and dedicated space," says Anne Hayward, a social worker in the RTBC. "The way we are set up, every member of the team is integral, from surgery to wound care, to therapy, to cleaning, to psychology, to teaching, to follow-up. All components contribute to the person's care and recovery."

When burn patients arrive at the hospital, the team springs into action. That night in the ED, Bob was put on a ventilator. He was prepped for surgery. Bob remembers being told that he could die. He consented to aggressive treatment, but not if it was deemed futile. At

79, with diabetes and a heart condition, as well as deep second- and third-degree burns to 24 per cent of his body, his chances of surviving were low.

Bob was given finely calibrated pain medication to keep him comfortable, and then he was sedated. The date was Jan. 4, 2009. "I woke up and my wife was holding my hand. I went back to sleep. I woke up and she was holding my hand again. The next time I woke up we started talking. I found out it was February 10."

"They not only saved my life, they saved the quality of it too"

Bob Johnstone
Burn patient

While Bob was in and out of consciousness he had several skin-graft operations. His burn ran along his right torso, from his belt to armpit, as well as across the top of his right shoulder, and on part of his neck. Doctors took skin from his legs to graft onto the damaged skin. ("They took some from my bum, too, but I haven't seen that lately," he jokes.)

"His injury was significant," says clinical nurse specialist Judy Knighton, who remembers Bob fondly. "He did well to survive. This speaks to his determination and the ability of the team."

He was in Sunnybrook for a month and then made a smooth transition to St. John's Rehab Hospital. He was a patient there until early March, and then moved home and continued therapy as an outpatient.

"I feel good," he now says. Bob still does exercises such as the "wall crawl" (inching fingers up the wall) to prevent

his grafted skin from becoming tight, but otherwise he has made a remarkable recovery. "You've got to keep fighting," he says.

This veteran journalist is gushing in his praise for staff at the Ross Tilley Burn Centre. "The thing I recall is the kindness. I was minutes away from death. They not only saved my life, they saved the quality of it, too," says Bob, who is now 81, and enjoying time with his wife, his two daughters and his two grandchildren.

The centre recently underwent an accreditation review by the American Burn Association, which is a step in verifying that a burn centre meets the association's standards. RTBC will be the only hospital in Canada to achieve this standard for burn care.

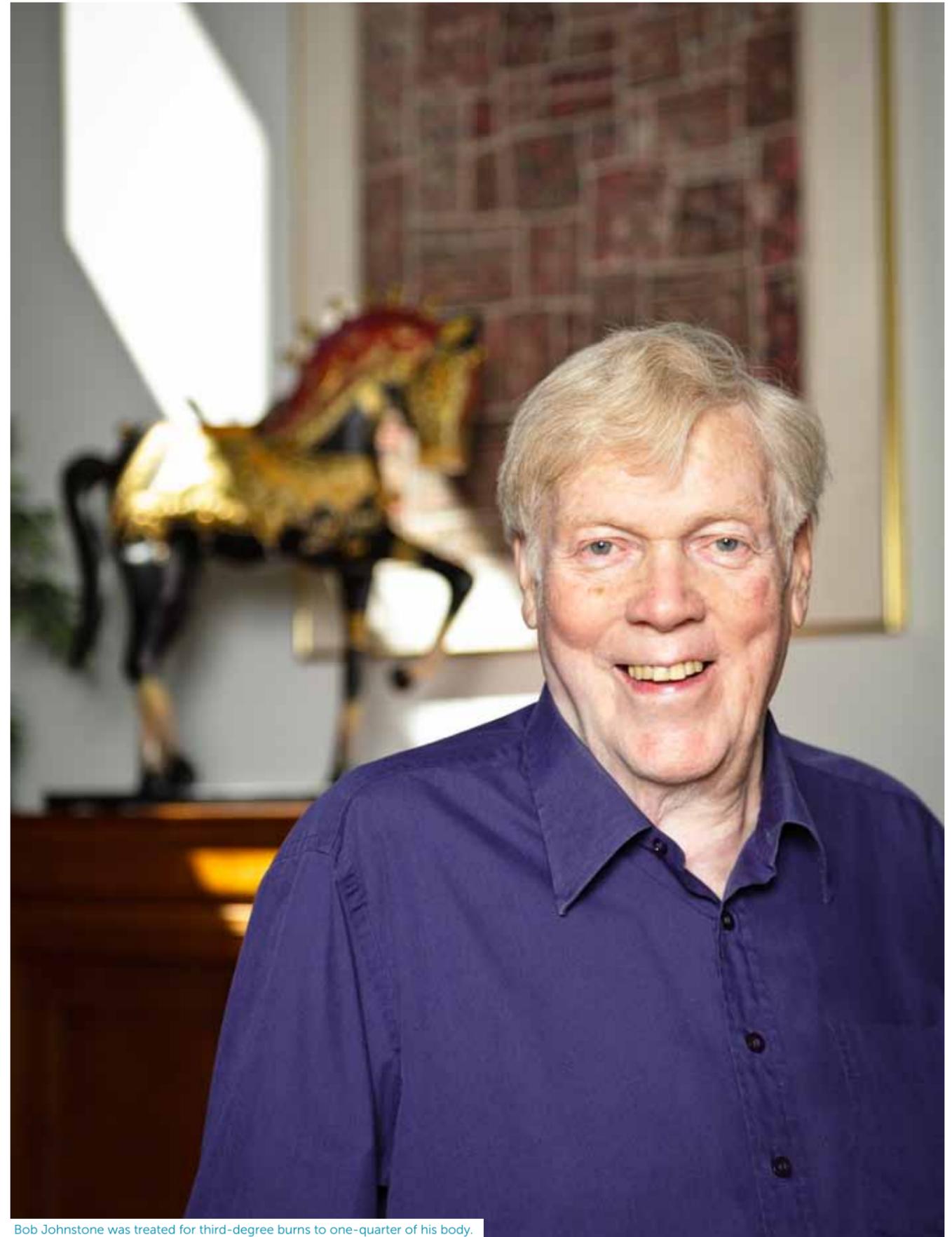
But it's individual kudos that have a personal impact on the centre's staff.

For instance, Bob and his wife Maggie have been back to visit the staff at RTBC. "They want people to know how well they're doing and that it mattered. It reinforces what we do and why," says Ms. Hayward.

Ms. Knighton agrees seeing patients come back is gratifying. "Most of us who work here are passionate about the work we do. We get to know the families and patients very well. We get to see the benefit of our hard work and see people go on to live happy, productive lives," she says. "Many burn survivors say they are like a phoenix, rising from the ashes to be more beautiful than before."

Like many grateful patients, Bob has a desire to give back to Sunnybrook. While he donates to the Sunnybrook Foundation what he can, he says he'd love to do more. "The reason I buy lottery tickets is I hope to one day give them a million dollars."

He sends the staff at RTBC a fruit basket every Jan. 4 and at Christmas time. "Words can't express how I feel for those people. Hardly a day goes by when I don't have some memory of them." ■



Bob Johnstone was treated for third-degree burns to one-quarter of his body.

A middle-aged man with glasses and a black short-sleeved button-down shirt stands on a wooden deck. He is looking slightly to the right of the camera. In the background, there is a swimming pool with a blue metal frame, a wooden fence, and some greenery. The lighting suggests it's late afternoon or early morning.

PINPOINT PRECISION

SUNNYBROOK TEAMS ARE DEVELOPING HEART PROCEDURES THROUGH OPENINGS AS SMALL AS A NEEDLE PUNCTURE AS AN ALTERNATIVE TO OPEN HEART SURGERY. THIS MEANS LOWER RISK AND FASTER RECOVERY FOR PATIENTS.

STEVE SEGAL WAS THE FIRST PERSON TO UNDERGO SUNNYBROOK'S NEW MINIMALLY INVASIVE MITRAL VALVE PROCEDURE.

by Alexis Dobranowski

STEVE SEGAL IS THINKING ABOUT TAKING UP GOLF, NOW THAT HE CAN WALK THE 18 HOLES.

A faulty mitral valve had been keeping Steve off the greens, until a team from Sunnybrook repaired that valve using a leading-edge minimally invasive mitral valve repair procedure.

Doctors had been monitoring 58-year-old Steve's leaky mitral valve for over 20 years.

A faulty mitral valve means the flaps of the heart's one-way mitral valve don't close properly and leak, causing blood to flow backward into the left atrium. This means decreased blood flow to the body, placing extra burden on the left ventricle and the lungs.

As Steve's leak worsened, so did his energy level. He wasn't able to "leap tall buildings," he jokes.

But in seriousness, Steve says, the leak did affect his day-to-day life: he suffered extreme fatigue, couldn't walk long distances, couldn't take the stairs and had frequent headaches.

Then Steve heard of a brand new procedure used by Sunnybrook's team of experts, made up of surgeons and cardiologists, who can repair faulty mitral valves without open-heart surgery.

In April 2011, Steve was the first patient at Sunnybrook to undergo the state-of-the-art percutaneous – where access to inner organs is gained via needle-puncture of the skin, rather than by cutting the patient open – mitral valve repair procedure. Sunnybrook is now one of just two centres in Canada offering it.

During this ultrasound-assisted procedure, a small catheter is delivered to the heart through a blood vessel in the leg. The surgeon then carefully clips the faulty flaps of the mitral valve back together. The heart continues to beat normally during the procedure, which takes only about 75 minutes.

"I was out of the hospital in a day, and it might have been even sooner if I wasn't the first patient," Steve says. "I'm walking up stairs now. I'm riding the exercise bike."

While surgeons have been repairing leaky mitral valves for years by splitting open the breast bone, this new clipping procedure means faster recovery with fewer complications, says Dr. Gideon Cohen, cardiovascular surgeon. To date, a third of all patients

"INVENTING AND PERFECTING MINIMALLY INVASIVE PROCEDURES IS A NATURAL FIT FOR SUNNYBROOK," SAYS SCHULICH HEART CENTRE CHIEF BRADLEY STRAUSS.



who need mitral valve repair haven't been treated because they are not physically able to withstand conventional open-heart surgery. It's simply too high risk.

"The results with this mitral clip procedure have been truly remarkable," he says. "Patients have enjoyed shorter hospital stays, less pain and an earlier return to normal activities."

As someone who had open-heart surgery to fix a nearly ruptured aorta eight years ago, Steve saw immediately the benefits of the minimally invasive mitral clip procedure. He says there's simply no comparison.

"I was in the hospital for over a month after my surgery in 2004," he says. "With the clips, you aren't exposed to the trauma of surgery, the insult to the body. There's less chance of infection because you aren't opened up."

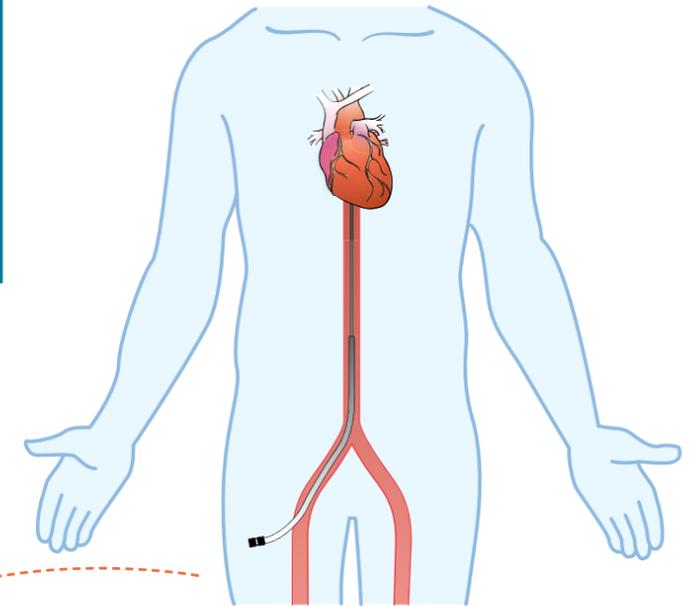
And the best part: he got to recuperate at home in the care – and cooking, he laughs – of his wife and two children.

The mitral clip procedure is the latest in a series of minimally invasive procedures being pioneered at the Schulich Heart Centre. From beating heart bypass, to replacing faulty aortic valves through an opening the size of a fingernail, Schulich's team of expert cardiologists, cardiac surgeons, vascular surgeons and cardiac anesthetists are working together to come up with the most innovative ways to treat the heart and damaged blood vessels.

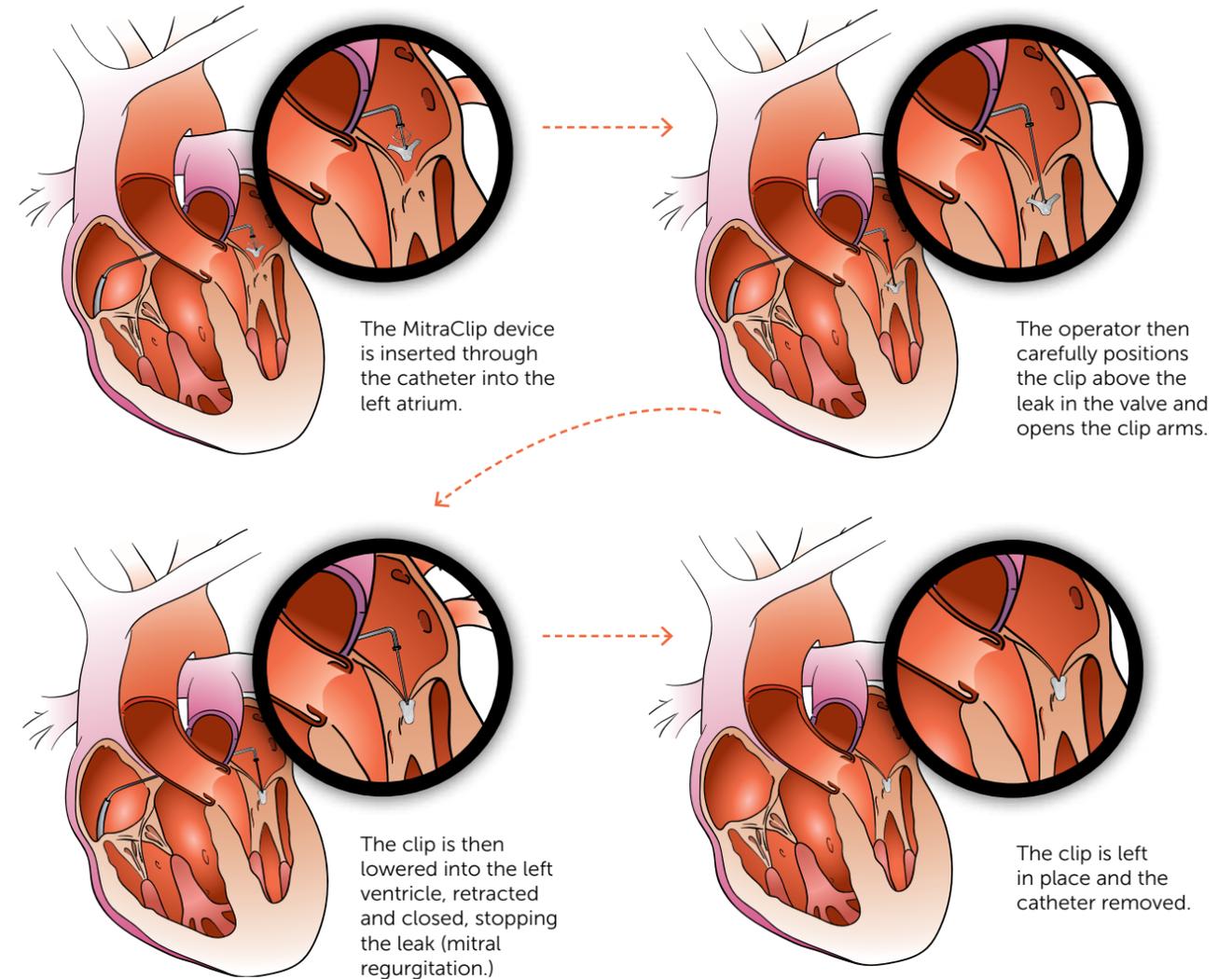
It was just 50 years ago that open-heart procedures were becoming popular. And now, surgeons and cardiologists are trying to find more and more ways to do procedures without opening patients up at all.

(CONTINUED ON PAGE 34)

MITRACLIP: A MINIMALLY INVASIVE MITRAL VALVE REPAIR PROCEDURE



A small incision is made in the groin to access the femoral vein; the surgeon or cardiologist then inserts a catheter through the femoral vein to the right atrium and across the interatrial septum to the left atrium.



“It’s a huge deal – cutting someone’s chest open, putting them on a heart-lung machine, keeping them in hospital to try to recover,” Schulich Heart Centre Chief Dr. Strauss says. “Clearly that is very invasive.”

Schulich’s experts have been at the forefront of designing and implementing new less invasive options. In Sunnybrook’s Arrhythmia Invasive Suite, for example, surgeons don’t even invade the patient’s personal space.

“What’s really unique when you are watching the procedure is that the doctor isn’t even in the room,” Dr. Strauss says. “They are all sitting in a room next door and it looks like they are playing computer games. That’s pretty minimally invasive.”

It’s stereotaxis, a way of locating where a surgeon needs to be in the heart by the use of these magnets that are beside the patient.

“It gives you a 3D map of where you are in terms of placing the catheters,” Dr. Strauss says. “Our experts have really been taking the lead on this.”

Dr. Strauss says as leader of the Schulich Heart Centre, he strives for innovation and wants to maintain a cutting-edge program that embraces new technology.

“And then, of course, bring it all to patients.”

Transcatheter Aortic Valve Implantation

When Ron Armstrong travelled to Buffalo, New York last winter to catch a few games in the World Junior Hockey Championships, he dreaded each final buzzer. And not because of anything that was happening on the ice.

“I didn’t want to have to go outside,” he recalls. “It was so hard to walk and move around.”

Ron, 77, had a long history of heart problems and had undergone two open-heart bypasses, one in 1975 and another in 1996.

When he began having chest pains and difficulty breathing last year, he thought it was angina again. Instead, his aortic valve was deteriorating.

Narrowing of the aortic valve, or stenosis, occurs when the aortic valve, which keeps oxygen-rich blood flowing from the heart into the largest artery in the body, becomes blocked, impairing flow of blood to the rest of the body.

“These patients experience bad chest pains, profound fainting attacks, significant shortness of breath, leading all the way to heart failure,” says Dr. Sam Radhakrishnan, an interventional cardiologist. “Once

DR. GIUSEPPE PAPIA, VASCULAR SURGEON, SAYS THE SCHULICH HEART CENTRE’S TEAM APPROACH SETS IT APART FROM OTHER HOSPITALS



they develop these symptoms, particularly the heart failure symptoms, unfortunately medications are solely palliative. They don’t treat the underlying problem. And by not treating the underlying problem, the valve continues to narrow such that the heart is unable to cope and ultimately fails.”

Mortality is upwards of 50 per cent in the first year for patients with critical aortic stenosis.

“That’s worse than most cancers actually,” Dr. Radhakrishnan says.

Ron visited a cardiac surgeon who advised him it would be too risky to operate on the valve in the traditional way: open-heart surgery.

But he told Ron of a new procedure being offered at Sunnybrook, where a team of cardiologists and surgeons could repair the valve without opening the chest.

During transcatheter aortic valve implantation (TAVI), a team of specialists, including a cardiologist, a cardiac surgeon and a vascular surgeon, accesses the body through an artery in the groin, or through a small incision under the collar bone or in the chest wall, and advances the valve to the heart.

“It was unbelievable, like snapping your fingers and feeling better,” Ron says. “I immediately felt better. Before I even went for my follow-up appointment a month later, I was already going down to the gym in my condo and going on the bike.”

Inside the catheterization lab, it takes a whole team to perform a TAVI.

Dr. Giuseppe Papia, vascular surgeon, says each procedure involves a combination of techniques: expertise from the cardiologists, cardiac surgeons and vascular surgeons.

“The exciting thing about the vascular team at Schulich is that we provide a service that I don’t think you’ll find anywhere else in Ontario and possibly in Canada: the endovascular work we do in the cath lab,” Dr. Papia says. “When it comes to TAVI, the question is, ‘Can you get to the vessels?’ That’s what Dr. Andrew Dueck and I do. We are the access guys in a sense.”

(CONTINUED ON PAGE 36)

Dr. Papia says that team approach is what sets the Schulich program apart from other heart centres.

“We really benefit from our combined knowledge sharing and skills,” he says. “We pick the best procedure and we treat patients. We pick the best procedure for each patient.”

Dr. Radhakrishnan agrees.

“Our TAVI program is unique in Canada in that interventional cardiologists, cardiac surgeons and vascular surgeons are involved in the majority of cases. While it’s fair to say that virtually all TAVI programs screen for eligible patients through multidisciplinary assessments, many still compartmentalize off the actual procedure to those that can be performed by interventional cardiologists alone or cardiac surgeons alone. That’s not the approach we’ve taken, and frankly, I think we’ve been very successful, because it brings the collective expertise of the relevant Schulich Heart Centre specialists to the table for every patient.

“Our collaborative approach has enabled us to be on the leading edge of this remarkable and novel procedure in Canada.”

EVAR: Endovascular Aneurysm Repair

Dr. Papia and Dr. Dueck have been instrumental in pioneering – and advancing — a minimally invasive alternative for treating potentially fatal aortic aneurysms.

Treating aortic aneurysms — blood-filled, balloon-like dilations of the aorta caused by degeneration of the aortic wall — used to require large incisions.

Sunnybrook now offers a state-of-the-art, minimally invasive procedure called endovascular aneurysm repair (EVAR).

“We fix the aneurysms through two small incisions in the groin in the main arteries of the leg,” Dr. Papia explains. “We put up a series of wires and catheters, pre-ordered devices – off-the-shelf devices but custom designed, based on a unique software we have in our clinic.”

Purchased by a generous donor, the software makes matching the size of the medical equipment to patients very accurate, Dr. Papia says.

“Just an example, we did six EVARs last week — none of them stayed past the weekend. They all went home within two days,” Dr. Papia says. “Traditionally with a big, open operation, they have a one- to two-day ICU stay, a one-week hospital stay and a six-week recovery with a much higher complication rate. So this is just an unbelievable piece of technology.”

With hundreds of EVARs successfully completed, Dr. Papia and Dr. Dueck are now setting their sights on advanced EVARs.

“These involve the vessels of the kidneys and the gastrointestinal organs. When aneurysms are involved there, the open procedure becomes much more high risk than the closed procedure,” Dr. Papia said.

Using highly specialized custom grafts and planning out the procedure on the computer, the surgeons are able to take on cases turned down from other heart centres. Until recently, the procedure was funded entirely by donors. Thanks to the work done at Sunnybrook, it is now funded by the Ministry of Health.

Many minimally invasive procedures — for example, EVAR — are born when a Sunnybrook scientist or medical company invents a device that allows for a new way of doing a proce-

“PATIENTS HAVE ENJOYED SHORTER HOSPITAL STAYS, LESS PAIN AND AN EARLIER RETURN TO NORMAL ACTIVITIES.”

DR. GIDEON COHEN, CARDIOVASCULAR SURGEON

cedure. Then, staff becomes trained on the new procedure, and the surgeons, imaging scientists and researchers all then work together to perfect its delivery. Sunnybrook Foundation raises money to fund it so enough procedures can be performed to show the Ministry of Health it works, and works well.

So, Dr. Strauss says, Schulich’s experts have to know what’s going on in terms of the latest technology.

“We have to be at the table when the new technology comes out, and make sure we have access to it,” he says.

What does the future hold?

While most minimally invasive valve procedures are presently reserved for high-risk patients, Dr. Radhakrishnan thinks that will change in the near future.

“In five to 10 years, we’ll see these minimally invasive techniques used on a larger subset of patients for their cardiac disorders,” Dr. Radhakrishnan says. “Certainly the skill sets of the operators and the technology will evolve and improve. And, equally important, the detailed non-invasive imaging needed to allow for further advances in these therapies will also improve.”

Advances in imaging play a huge role, Dr. Strauss says.

“We have Dr. Graham Wright, who is the director of research for the Schulich Heart Program and he is an imaging scientist,” Dr. Strauss says. “He understands how imaging contributes to the planning and the carrying out of the procedure. He’s been very involved in trying to develop new imaging techniques, especially with MRI, to help us move forward.”

Inventing and perfecting minimally invasive procedures is a natural fit for Sunnybrook, he says.

“I wish we just had more hours in the day,” Dr. Strauss says. “That way, we could develop all the stuff that we could because we have everything here to make ourselves an incredible place of innovation.”

But for patients like Steve Segal and Ron Armstrong, Sunnybrook is already a place of innovation.

“They gave me a new lease on life,” Ron says. “The older we get, the more risky open surgeries are. But the team at Sunnybrook explained it all to me and I wasn’t nervous at all. Now, I walk a couple miles a day. I golf. I’m really thankful.” ■

REMOTE CONTROL

It can be hard for ERs to assess the severity of a burn. But thanks to technology, help can come from afar



Dr. Marc Jeschke consults with a remote burn patient via the wonders of telemedicine.

A patient comes into a small town's emergency room with burns. Can the local hospital help, or does this patient need to be rushed to a burn centre?

"Most ERs are very uncomfortable in assessing a burn," explains Dr. Marc Jeschke, director of the Ross Tilley Burn Centre, "and it's very difficult because it's not their expertise."

Yet, he points out, with serious, deep burns, treatment is not just a question of dealing with pain and scarring. "With big burns you're actually fighting for your life."

To help ERs decide what to do, Sunnybrook's prestigious burn centre is offer-

ing a new consultation process through a recent initiative called Teleburn.

The initiative is part of the Ontario Telemedicine Network. At least 30 hospitals, some in remote areas, now have cameras in their emergency rooms, able to transmit images of their patients to a monitor at Sunnybrook.

"So we get a phone call," Dr. Jeschke says. "Someone from CitiCall Ontario calls me, and says, 'We have a patient.' Our burn centre has an in-house resident, a fellow and an attending, so the resident will take the call and look at the patient, just like going down to the ER here. Instead of going there physically, he goes

to the TV, turns it on and looks at the patient. Then we can say, this patient has to come, or this patient can stay, given the circumstances and the facility they have."

"It enables us to actually plan acute treatment," he adds. "If it's a severe burn, we say, 'Come right away. You need to be at a specialized centre as soon as possible.' Because the earlier they come to us, the better it is."

On the other hand, if the burn is not serious and the patient can be treated near his or her home, the Teleburn consult can potentially dispense with the need for burn patients and their families to

travel, avoiding both stress and expense. The Ross Tilley staff also does followup work with patients in rehabilitation and their doctors outside of Toronto, mostly through phone consultations.

Sunnybrook's burn centre already provides advice to emergency room staff faced with burn patients all over the province.

"A burn," says Dr. Jeschke, "is a very complex injury, and a very long injury, and most people are not aware of that."

Yet survival rates for burn patients have increased greatly over the past 20 years. Previously, medical experts added the size of the burn to the patient's age and if they reached a score of 100, they expected only a 50-per-cent rate of survival. Today, thanks to scientific research and breakthroughs in treatment, that survival rate is considered likely with a score of 140, depending on variations. "A 30-year-old with 90-per-cent burns and no inhalation – I would fight for his life," says Dr. Jeschke.

"With big burns you're actually fighting for your life."

“ Dr. Marc Jeschke
director, Ross Tilley Burn Centre

In fact, while still a medical student in Tuebingen, Germany, it was the enormous challenge of treating burn patients that attracted him to specialize in their care. "I was interested in the complexity of the injury," he said, "in the combination of surgery, critical care and reconstruction, but mostly the aspect of the science. Because it's a very underappreciated scientific approach and a very challenging critical entity."

Before coming to Sunnybrook in 2010, Dr. Jeschke worked at the Shriners Hospitals for Children in Galveston, Texas, a centre that sees about 2,000 young burn patients every year.

At Sunnybrook, he says, he has found "a very fertile, enriching environment for academic science. The critical care department here is world-class, and the burn centre is just one aspect of that." 📧

GOLD STANDARD



The Ross Tilley Burn Centre's 80 medical professionals treat almost 2,000 patients a year, a number that is on the rise.

This year their work was recognized as among the best in the world when the American Burn Association and the American College of Surgeons awarded the unit its burn centre verification. The process of going through verification is a lengthy and arduous one, says Dr. Jeschke, and has been awarded to only one other hospital outside the United States.

"It means you do everything according to evidence-based medicine," he says, "according to the newest standards of care, and according to publications. You fulfil all criteria in all aspects: in medicine, [intensive care], research, teaching, nursing, pharmacy and so on.

"It's a tremendous honour for Sunnybrook," he adds, "but it's also a tremendous potential for Ontario, in that they have a burn centre that is one of the world-recognized burn centres."

BOTOX: IT'S NOT JUST FOR WRINKLES

What does urinary incontinence have to do with a neurotoxin? It's the most unlikely treatment, but Sunnybrook researchers have discovered something that can improve the quality of life for thousands living with urinary incontinence. They're using botulinum toxin A, or Botox, to decrease episodes of incontinence for patients living with this condition due to spinal cord injury or multiple sclerosis.

The first North American study with a one-year follow up found episodes of daily urinary incontinence decreased by up to 57 per cent, with benefits lasting up to nine months. The study was led by Dr. Sender Herschorn, a urologist at Sunnybrook.

"Many Canadians are living with incontinence, which is debilitating both physically and emotionally," says Dr. Herschorn. "Treatment with botulinum toxin A is minimally invasive and this one-year data shows strong potential for effectiveness and tolerance in patients."

WORKS LIKE A CHARM

Each year, the chemotherapy suites at the Odette Cancer Centre has over 23,000 patient visits. That's a lot of visits and it can get hectic. A unique web-based scheduling system can now make things a little easier and a lot faster for patients and the staff who care for them. CHARM (Chemotherapy Appointment Reservation Manager) automates processes to more quickly and efficiently manage the administrative side of chemotherapy treatments. It also makes possible better communication with physicians for follow up on more complex treatments. CHARM has helped to reduce wait times and improved patient and staff safety at the same time. Freeing up time for patients is a boon to improving quality of life. "Together with the upcoming expansion of our Chemotherapy Unit, CHARM and other quality improvements will further benefit patients and their loved ones," says Dr. Maureen Trudeau, head of Medical Oncology and Hematology

RECONSTRUCTION AT TIME OF BREAST CANCER TREATMENT

When cancer affects the breast, for many women the alteration of their femininity can be an emotional journey. For some women, the Odette Cancer Centre has an approach to breast reconstruction that can help soften that distress. The Immediate Breast Reconstruction Clinic offers appropriate patients same-time access to experts in breast cancer surgery and immediate reconstructive surgery. The clinic is a unique collaboration led by three breast surgical oncologists, two plastic surgeons trained in oncologic reconstruction, and radiation oncologists.

Lori Vajda, 42, had breast cancer. She came to the Clinic because she ultimately needed a double mastectomy. "It gave me tremendous added confidence knowing my surgeon and my plastic surgeon were working together," says Lori. "They removed the cancer and lowered my risk while doing immediate reconstruction to help me regain a sensual and important part of who I am as a woman."

ON THE TRAIL OF 'MINI-STROKES'

Sunnybrook's team of stroke specialists have been leading an aggressive approach to diagnosing and treating 'mini-strokes' before they lead to potentially devastating larger strokes that can leave people with paralysis and other permanent disability.

Sunnybrook's Scotiabank Rapid Investigation and Stroke Prevention Program featuring the Dr. Thomas and Harriet Black High-Risk TIA Unit is one of only a few clinics of its kind in the country specializing in urgent care for high-risk Transient Ischemic Attacks (TIA) or so called 'mini-strokes'.

Mini-strokes are important to recognize because they can be critical warning events of an impending serious stroke that could happen within days or weeks. Treatments applied rapidly after a TIA can reduce the risk of a major stroke by as much as 80 per cent.

By providing fast-track consultation with stroke specialists, state-of-the-art neurovascular diagnostic tests, and initiation of a personalized treatment plan, the Sunnybrook clinic aims to prevent more strokes, avoid hospital admissions, and condense months of patient tests and appointments into a single day.



HANDHELD HEARTS

Sunnybrook's cardiac inpatients may be surprised to learn how "mobile" their hearts are even when they're resting in bed. Nurses and other health-care staff in the Schulich Heart Centre are carrying handheld devices that provide a quick view of cardiac waveforms. "This new technology lets me see heart rhythms right away so I can quickly respond to my patients' needs," says registered nurse Metilda Manuel.

The first-in-Canada technology not only ensures staff are continuously on top of each patient's condition, it also allows them to send messages to each other. The result? The right staff connecting with the right patient, as well as decreased ambient noise from overhead loud pages. Look for the new technology in the Dr. Brian W. Gilbert CICU and the E & G and P & L Odette Family Cardiac Inpatient Unit.

BACK IN LEAFS NATION – AT 99

The Grant-a-Wish program ensures Sunnybrook's elderly veterans still get to have the time of their life



Martha Roy didn't need to call for a genie: Her wish was granted by her friends at Sunnybrook Veterans Centre.

She peered at the bright ice below her at the Air Canada Centre and blew kisses at the players in blue and white as they stood on the ice celebrating a victory. That's veteran Martha Roy's most cherished memory of a recent outing to a hockey game.

Mrs. Roy has hockey in her blood. Her brother, Sammy Ecarnot, once played semi-pro hockey back in her birth province of Saskatchewan. In honour of him, she and her husband held season tickets for the Toronto Maple Leafs for years, until her husband's death.

Now, at 99, Mrs. Roy is unable to get out to the games. But it became possible through the unique Grant-a-Wish program at the Sunnybrook Veterans Centre.

"That was the biggest surprise. I was only here a short while, so I didn't expect to get my choice quickly," Mrs. Roy says. "During the game, I was up there and banging my hands and jumping up and down like a 15-year-old. I was so excited."

The Grant-a-Wish program provides two wishes in a lifetime for every veteran at the centre. More than 500 people have

benefitted from the program so far since it was launched at Sunnybrook in 2005 to honour the Canadian Year of the Veteran.

The average age of veterans at the centre is 89. For the most part, they are brave men and women who served in the Second World War or the Korean War.

Mrs. Roy earned a British Empire Medal for her work at the Canadian military headquarters in England, serving as the chief telephone operator during the Second World War. By 1942, when she took the job, she had had years of experience in the field; her childhood house

in Montmartre, Sask., was retrofitted to become the first telephone operation station in the town.

"My job was to send the girls around, arrange for holidays and supervise important calls," Mrs. Roy says. "I remember walking the streets of London. For somebody coming from a small town, I had never been to the big city. Regina had been the biggest city I had been in. It was quite the experience."

Up to \$14,000 is awarded annually to the veterans at the centre. Each month, 11 wishes are granted – 10 "gem" wishes that cost up to \$150, and one "pearl" wish that can be up to \$1,000.

"We were looking for a way to fulfill the hopes and dreams of the veterans who live at Sunnybrook."

Leanne Hughes
co-ordinator, Grant-a-Wish program

Among other wishes, the program provides an opportunity for veterans to receive a visit from a relative who cannot usually make a trip, or to go out to dinner when their condition prevents a visit to a restaurant.

"Some of the veterans first saw it as charity, but over the years it has been helpful for them," says Leanne Hughes, the co-ordinator for the program at Sunnybrook. "We were looking for a way to fulfill the hopes and dreams of the veterans who live at Sunnybrook. That's where the spark of the program came."

The program is entirely driven through donations. This year, Sunnybrook has a new online campaign to raise funds for the veterans: Operation Raise a Flag. Canadians of all ages can show their appreciation by purchasing a flag and sending a heartfelt message.

Early on Remembrance Day morning, staff will plant flags with attached messages throughout the grounds, so the veterans will see the flags from their bedrooms when they wake up. 🇨🇦

Visit www.raiseaflag.ca for info

PAYING TRIBUTE

Canada's Veterans will wake up to a red and white sea of support this Remembrance Day



A new Sunnybrook initiative, Operation Raise a Flag, encourages Canadians to sponsor a Canadian flag and write a message of thanks to our Veterans for their courage and sacrifice.

The flags – there's a goal of 5,000 – will then be placed on the lawn in front of Sunnybrook's Veterans Centre on the morning of November 11, so Canada's veterans can see that citizens across the country recognize and value their courageous contributions.

Flags are available for \$20 or \$50, with the larger donation purchasing a larger flag.

Anyone wishing to take part in Operation Raise a Flag can visit www.raiseaflag.ca.



**OPERATION
RAISE A FLAG**

Sunnybrook

TIME IS OF THE ESSENCE

Doctors could be able to tell within days if tumours are being killed by chemotherapy or radiation,



Melanie D'Silva took part in research into faster assessments of whether cancer patients are responding to treatments such as chemotherapy.

If all patients were as enthusiastic in their support as Melanie D'Silva, Sunnybrook would be famous across the globe.

"I'd do anything for Sunnybrook," she says with an excitement that belies the difficult challenges she's faced since her diagnosis in January of an aggressive form of breast cancer. From the start, she says, "they've been great. I hate to use the word amazing so much, but that's what this experience has been."

As part of her Sunnybrook experience, Melanie, a corporate human resources professional, participated in research aimed at using non-invasive imaging to determine whether a neoadjuvant (pre-surgical) chemotherapy or radiation treatment is working in patients diagnosed with cancer.

Dr. Gregory Czarnota, radiation oncologist at Sunnybrook's Odette Cancer Centre and principal investigator in two studies in which Melanie is participating, says the findings are exciting.

"Using low-frequency ultrasound in patients, we've found that we can detect cell death as early as one week into

chemo treatment," Dr. Czarnota says.

"This is new research. We wanted to find out if we could measure cell death (apoptosis) in tumours, and at what stage in pre-surgical treatments, using non-invasive imaging methods."

He says the ultrasound and spectroscopy imaging used in the research "has the potential to further reduce toxicity for women while determining at a very early stage whether the chemotherapy being used is working most effectively to reduce the tumour."

Unlike current methods of assessing treatment efficacy (such as PET or CAT scans) that typically take several months to determine results, the ultrasound imaging used in Dr. Czarnota's studies involve no radiation nor injections of a contrasting agent or dye used to see the activity.

In a related study, Dr. Czarnota and his team used a diffuse optical spectroscopy (DOS) system called SoftScan, developed by ART Advanced Research Technologies in Montreal, to measure tumour activity changes throughout chemotherapy

treatment.

Melanie participated in both studies and was eager to do so after reading about Dr. Czarnota's research in a magazine while waiting to meet him for her first consult after diagnosis.

"Yes, it's about giving back, but it's more than that," Melanie says. "Participating in research is exciting and it made me feel involved in my treatment. It was a learning experience, one that kept me engaged."

For Melanie it did mean extra visits and tests. The ultrasound investigation involved scans before and after the first chemotherapy and then at eight weeks, four weeks and one week before surgery.

The DOS imaging study used near risk-free infrared light and was done in six sessions throughout her pre-surgical treatment. She was positioned lying face-down on a scanning table, her breast comfortably placed through an opening in the table and resting in a container filled with warm liquid.

"The research associates were very considerate of potential side-effects from

"Participating in research made me feel involved in my treatment. It was a learning experience, one that kept me engaged."

Melanie D'Silva
Patient

my treatment, and made sure there was little or no discomfort while doing the scans. They also went to great lengths to coincide the scans with other scheduled medical appointments for my convenience," she says.

With findings as promising as the research team has had thus far, there is great potential to inform treatment for other cancers beyond breast, says Dr. Czarnota. This would include esophageal, stomach, pancreatic, and kidney.

"Cancer patients won't have to wait months to find out a chemo treatment isn't killing a tumour," says Dr. Czarnota.

Oncologists will be able to make changes to the drugs, saving cancer patients precious time and optimizing treatment.

Melanie is now post-treatment following the pre-surgical chemotherapy where

she was part of Dr. Czarnota's research study and is now doing physiotherapy rehab at a centre located close to her beloved Sunnybrook.

She says her Sunnybrook team – her general practitioner who is part of the hospital's Family Practice centre, her primary nurse who coordinated all her tests and treatments, the oncologists, technicians and nurses, and the researcher she calls Dr. Greg (Czarnota) – have "restored my faith in our hospital system."

Melanie says she's gratified she was offered the opportunity to help the many other people who have cancer. "There has been so much progress in cancer treatment and how else would we have come this far without these studies.

"It's about giving back, but it's also about being involved." 📧

Going the extra mile



With her warm smile and kind demeanour, it's easy to see that Smitha Casper-Desouza was born to do the work she does. As the patient care manager for one of Sunnybrook's in-patient surgical oncology units, she makes it her mission, along with her staff, to ensure patients have the best experience possible during their stay in the hospital.

A recent hospital-wide initiative launched earlier this year has helped Smitha take her daily mission to a whole new level, and to inspire her staff to do the same.

We Care is an initiative launched throughout Sunnybrook that puts a strong emphasis on customer care. The program's goal is to create 'Sunnybrook Moments,' opportunities where extra effort is put into creating a special experience for patients and their families, visitors, and colleagues. We Care was developed by a committee composed of front-line staff and managers who consulted with patients and their families. It is based on four key components, or tools, to create those special moments. The 4 Cs, as they're called, are: compassion, communication, consideration, and comfort.

It's an initiative that Smitha and her staff have embraced enthusiastically. "These aren't foreign concepts to us," says Smitha, "but this focused approach allows us to set goals together and really make a difference for our patients." For this team, Sunnybrook Moments they've created have covered a broad spectrum. From preparing a space for a family member to

sleep overnight near an ailing patient, to taking an extra moment to sit down, hold a hand, and listen to a patient's fears and concerns, Smitha says her team is always trying to make a difference, no matter how small.

So far, Smitha says she has already seen an improvement in the unit's patient satisfaction scores, which validates all of the work the C6 Surgical Oncology team has done. She says the 4Cs, which are posted on the unit, are always a reminder for her and the team to review, and to help them go the extra mile. "We get busy. We tend to sometimes do things mechanically. The 4Cs are not about being mechanical. They are about actually sitting down, listening, and focusing on what the patients' and the families' needs are."

She says it's not always easy, and not every patient will have the best experience, but Smitha and her team can always refer to the goals they have set together to create Sunnybrook Moments and to identify how they can make things better for someone else. "It's all about patient care. We might have the best strategic goals, or the best strategic plan and financial plan – but if we have gaps in care, we have failed our patients."

So with We Care as a guide and Smitha Casper-Desouza headlining the charge, the Surgical Oncology Unit is just one team at Sunnybrook that plans on continuing to create special Sunnybrook Moments and making the customer experience that much better, one patient at a time.

THEY DON'T JUST WORK HERE . . .

Sunnybrook's dedicated staff and extended family have dipped into their own pockets to help fund the life-saving work we do



I Love Sunnybrook volunteers Heather Gauthier and Yvonne Wong put the finishing touches on treats for a staff rally.

The life-saving innovations discovered at Sunnybrook rely on donations from the community. Donors pay for building expansions, equipment and research. They pay for clinical trials of new treatments and new procedures that aren't funded by the government.

The people of Sunnybrook know that to ask others to invest in their work, they need to do the same. When staff donate their own money to fund their own work and that of their peers, it speaks volumes about how dedicated they are to the care Sunnybrook provides.

Sunnybrook staff, with help from friends and family, blew past a \$100,000 fundraising target to collect more than \$150,000 during the I Love Sunnybrook Campaign, a two-week initiative that

took place in February and March.

Participants defied the late-winter blahs by heating things up with a little friendly competition as part of the hospital's larger Campaign for Sunnybrook fundraising effort. Members of team "Cutting to the Chase" (the Division of General Surgery) squared off against "Kick A** Cancer A** Kickers" and other departmental teams within Sunnybrook.

"Cutting to the Chase" raised over \$8,400, making it one of the top fundraising teams. More than 60 enthusiastic team captains from various departments helped to rally employees, who could choose to designate funds to their own department or area of need.

Vasu Patel, an administrative assistant at the Odette Cancer Centre, raised

money but also made a personal gift by donating 14 inches of her own hair to the centre. New to the hospital when the campaign began, Vasu says it offered her the chance to bond with her new colleagues. "This was definitely a great way for me to meet new people within my department and also within the Sunnybrook campus," she says.

Ru Taggar, chair of the I Love Sunnybrook Campaign and the hospital's director of quality and patient safety, says the strong results demonstrate "that our staff, volunteers and doctors are really invested in the quality of our care and everything that we do for our patients." 📌

THANKS! (IN 140 CHARACTERS OR LESS)

It's not only our mailbag that receives thank-you letters from patients and their families – social-media site Twitter also features shout-outs to our people. Here's a sampling from the Twitterverse

A big big thank you to the doctors and nurses @SunnybrookHSC CVICU. They're the best in the world at what they do!

@Tweek27

Thanks to @SunnybrookHSC emerg last night in the Blue Zone for taking care of the wife. Best hospital I've been to!

@martinhauck_ca

#Finallyhome and couldn't have been in better hands today - staff @ Sunnybrook were so friendly and accommodating. Thank You @SunnybrookHSC!

@JennnHolmes

This month marked the anniversary of being diagnosed with cancer. So much has happened and so much better now. Thank you @SunnybrookHSC

@PierreMoatti

Big thanks to @SunnybrookHSC, especially orthopedic surgery; amazing example of excellence in healthcare delivery

@NasimFazl

Thanks and congratulations @SunnybrookHSC for 35yrs of RBC Injury Prevention and 25yrs of the P.A.R.T.Y. Program

@TrafficServices

Thanks to the MDs and nurses @SunnybrookHSC 4 great care of my husband. They did a great job.

@katcoo

Bone scan ftw; Most nap-like medical procedure ever! Seriously staff at @SunnybrookHSC make every procedure easy. Heads above any other.

@laurendorphin

