VOICE OF ST. PAUL'S HOSPITAL FOUNDATION

Promise

SPRING/SUMMER 2009

St Paul's Hospital
FOUNDATION

SCANNING FOR TROUBLE
Cardiology and radiology join forces

LIFE WITHOUT PAIN
The Pain Centre offers relief from suffering

NEW BEGINNINGS
Advances in breast reconstruction

HEART + LUNG

The spirit of St. Paul's medical pioneers is inspiring a new generation of trailblazers

PM 40065475

MEETING THE CHALLENGES

As we move into spring and begin a new financial year, I want to take this opportunity to thank everyone who supported the foundation in 2008/09. Together, we were able to contribute to patient care and research in more than 20 programs across St. Paul's Hospital. We also celebrated the success of our 11th Lights of Hope campaign, raising more than $1.77 million. This success was remarkable and encouraging as the peak of the campaign in late fall coincided with the worsening of the economy; many people and companies were feeling the downturn in income, investment and stock value.

The economy is top of mind for most of us right now. Charities like St. Paul's Hospital Foundation depend on the generosity of donors like you who support our cause. The local and world economic situation has an inevitable effect on charitable giving and our ability to support the charities that we care about. If you are one of the people who supports St. Paul's because you have firsthand experience of the services provided at the hospital, I am sure you understand the needs of the hospital do not decrease during an economic downturn. Needs like innovative equipment, capital projects, research, education and special patient-care initiatives remain or increase during a recession.

As chair of the foundation, I can assure you that the staff of the foundation are working harder than ever to raise the resources to help St. Paul's Hospital meet the increasing needs of the communities it serves. I also want to assure you that the directors are constantly monitoring the state of the economy and the markets to try to minimize the negative impact on the business of the foundation. As we work through this, I cannot stress enough how important your donations are to St. Paul's Hospital. Thank you for choosing St. Paul's and, on behalf of the foundation and the hospital, I ask for your continued support.

Paul Hollands
Chair, St. Paul's Hospital Foundation
President and CEO, A&W Food Services of Canada Inc.

NOW MORE THAN EVER

The downturn in the economy that began last fall and rapidly escalated into a worldwide crisis has taken its toll on many in British Columbia. If you are one of the people affected by job or income loss, you will be acutely aware of the trauma and upheaval that seemed to catch Canada by surprise after the markets plummeted in September and failed to make a timely recovery. It's clear that we are all working through some challenging times. Recognizing that the dollars or time that you spend supporting St. Paul's Hospital are very valuable to you and to us, it's more important than ever for the foundation to communicate with our supporters and tell you how much we appreciate your contributions, as well as their impact on patient care and research. *Promise* magazine is a means to do just that.

In the past year, donors have helped more than 20 programs across St. Paul's. As an academic health centre, St. Paul's has many specialized or unique programs that serve patients from throughout the province and an important role in teaching and research. The well-established and respected Pain Centre and the new, innovative Advanced Cardiac Imaging Program are two great examples of why St. Paul's is a fantastic resource for an international calibre of patient care, education and science – plus it's located here in the city of Vancouver.

I hope that reading about these programs and services will help you understand the importance of your contribution and how grateful we are that you choose to support St. Paul's. We welcome your feedback on the information here or on the work of the foundation. ■

Stephen Shapiro
President and CEO
St. Paul's Hospital Foundation

Photograph: Brian Smith (Stephen Shapiro)

Promise

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St. Paul's Hospital FOUNDATION
Inspired care.

ST. PAUL'S HOSPITAL
PROVIDENCE HEALTH CARE

Cover photograph: Brian Smith

Spring/Summer 2009

COVER

FEATURES

DEPARTMENTS

FAST-TRACKING SURGERY

New operating rooms are dramatically reducing wait times for foot, wrist, ankle and hand surgeries

Hand and wrist surgeon Dr. Tom Goetz, surgical nurse Tamara MacLeod, and anesthesiologist Dr. Scott Bell in one of St. Paul's two new Surgical Procedure Rooms, home to innovative strategies to reduce wait times and shorten post-operative recovery for patients in need of hand, wrist, foot and ankle surgeries.

Innovation springs from many sources, not the least of which is funding. So, when St. Paul's Hospital's Department of Surgery received a capital infusion of $2.1 million from the Vancouver Coastal Health Authority to shorten wait times and improve efficiency through new infrastructure, it's no surprise the department managed to turn renovation into innovation.

Among the department's first innovations was the creation of two new satellite operating rooms called Surgical Procedure Rooms (SPRs), which opened for the first hand and wrist procedures in February. The rooms have adjacent pre- and post-surgery recovery areas and a specialized section for anesthesiologists – all designed with efficiency in mind. In fact, the Surgical Procedure Rooms are expected to double St. Paul's capacity for less complex foot, wrist, ankle and hand surgeries, allowing the hospital's surgical program to handle an additional 1,100 surgical cases and 6,000 clinic visits a year.

Cheryl Bishop, program director for the Department of Surgery, says changes to the physical space are just the beginning of the innovations in her department. With the help of another $5 million in funding from the provincial government's Lower Mainland Innovation and Integration Fund, St. Paul's Distal Extremity Surgical Project is also changing the way providers think about surgeries.

With the new operational funding, the department was able to implement its pioneering "swing operating room" concept last fall, where one surgeon works on two procedures in adjacent rooms at the same time, dramatically reducing wait lists in the process. These innovative surgeries are now performed in the new Surgical Procedure Rooms, which are also benefiting from equipment funded by an anonymous donor to St. Paul's Hospital Foundation.

In addition, anesthesiologists with the Distal Extremity Surgical Project have introduced innovative regional anesthetic blocks (highly localized anesthetic as opposed to general anesthetic) to manage pain during the surgeries. Historically only six per cent of hand, foot, ankle and wrist patients received regional blocks, but St. Paul's is looking to increase that number to 50 per cent, not only speeding up recovery time for outpatients, but also reducing their post-operative pain.

What is the net result of all this change? Increased capacity, shorter wait lists, reduced trauma and less time in recovery. Now that's innovation.-*Nancy Gratham*

Photograph: Brian Smith

PICTURES WORTH A THOUSAND WORDS

An innovative Diversity Services program is breaking down language barriers to enhance health-care delivery

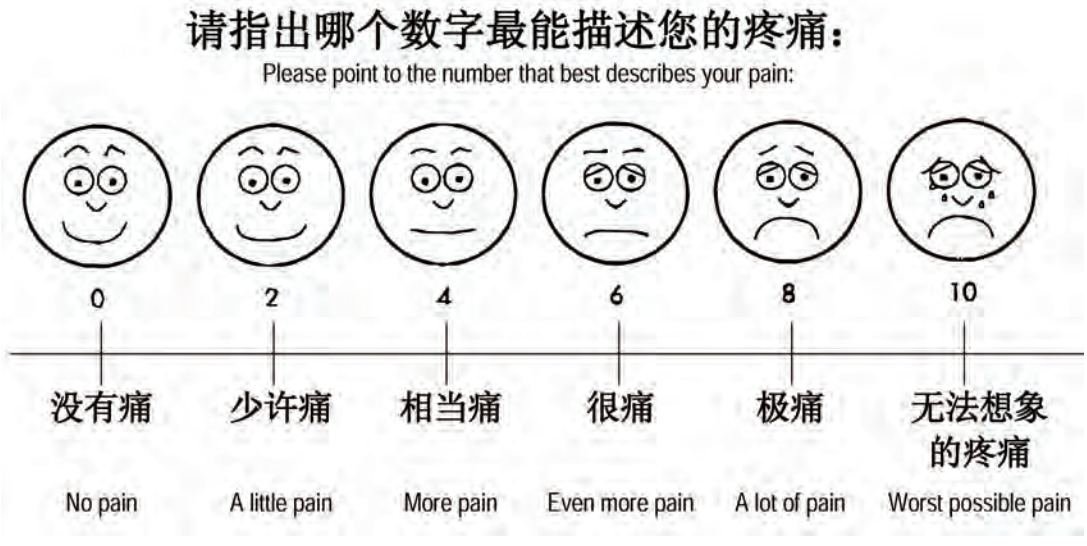
It's probably no surprise that the most recent Canadian census showed that only 48 per cent of respondents within the Vancouver health service delivery area listed English as their first language. It certainly didn't surprise Ann Vanderbijl, director of Diversity Services for Providence Heath Care. However, it did leave her thinking about the other 52 per cent of respondents, especially in light of the most recent research that details the many risks to patient safety when barriers to communication are not addressed.

The risks associated with language barriers include delayed assessment and diagnosis, inadequate testing, prolonged stays in hospital, and ultimately, says Vanderbijl, "disparities in health outcomes." To address this important concern, Diversity Services has been working on effective ways to anticipate and remove both language and cultural barriers between patients and care providers.

One of Diversity Services' communication enhancement initiatives comprises a series of simple pictograms, which caregivers at St. Paul's use for daily bedside communication. The line drawings relay information, instructions and requests about comfort, food, hygiene, mobility and toileting – essentially removing language issues from the equation. These pictograms were made possible thanks to financial support from St. Paul's Hospital Foundation's Enhanced Patient Care fund, which is funded by donors who give to Greatest Needs.

However, language isn't the only barrier to positive health outcomes. It's common in North America to assess pain on a scale of one to 10, but Vanderbijl says that method doesn't necessarily resonate with all cultures. Not only do other cultures quantify pain differently, they describe it differently too. While Providence Health Care has been a leader in interpreter and translation services for years, words aren't always enough.

In response, Diversity Services has created a pain assessment tool in 21 languages that incorporates a series of facial expressions that research shows effectively cross cultures. Not only is the language barrier addressed, so is the cultural divide. As far as Vanderbijl and the rest of the Diversity Services team at Providence Health Care are concerned, that's when the real communication begins. *-N.G.*



Diversity Services has created a pain assessment tool that incorporates facial expressions that resonate with all cultures.

STEPPING UP WITH SCOTIABANK

St. Paul's Hospital Foundation is part of the Scotiabank Vancouver Half-Marathon & 5k Charity Challenge this year. Set for Sunday, June 28, both the half-marathon and 5k courses end in scenic Stanley Park. Walkers as well as runners are encouraged to participate in the 5k, making it accessible to people at all levels of fitness.

In addition to being a healthy activity for a summer morning, this event is an opportunity to help St. Paul's Hospital Foundation by signing up to walk/run and fundraise, or by making a donation to someone who is planning take part in support of St. Paul's. Visit *www.vancouverhalf.com* for more information.*-Anne McLaughlin*

NEW APPROACH TO SALIVARY STONES

A leading-edge procedure is providing fast relief for a painful problem

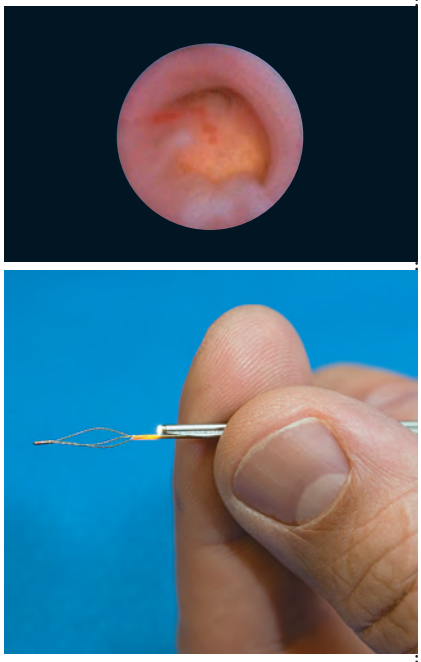
Imagine what would happen if your body didn't produce the roughly one to two litres of saliva it's supposed to generate each day. The list of problems is longer than you may think, including an uncomfortably dry mouth, difficulty eating, decreased sense of taste and tooth decay. If your body's lack of saliva is the result of a duct blockage caused by a salivary stone, you'd have to add pain and swelling to the mix.

Thanks to a leading-edge procedure introduced at St. Paul's Hospital by Department of Otolaryngology (ear, nose and throat) head Dr. Robert Irvine, this painful problem can now be addressed quickly and effectively. The procedure involves locating and breaking up salivary stones using an endoscope and laser – equipment that was funded by donors to St. Paul's Hospital Foundation.

While this relatively non-invasive technique can be summed up in a few lines, it represents a seismic shift in how salivary stones are treated. In the past, the only option for persistent stones located directly within the salivary gland was removal of the gland. However, Irvine says patients are sometimes affected on both sides of the mouth and (for the many reasons already mentioned) losing two saliva-producing glands is definitely something to be avoided.

This new technique not only allows patients to keep their salivary glands, the outpatient procedure requires only a day or two for recovery, representing a mere fraction of the time it took to recover from the former surgical approaches.

For the 200 or so B.C. residents who will be affected by salivary stones this year, things are definitely looking up. They are indeed fortunate to have access to the only centre in Western Canada currently performing the pioneering endoscopic procedure, and Irvine can offer yet another worthy benefit: "There's no external scar!" *-N.G.*



Top: a detail of a stone in a salivary duct. Bottom: St. Paul's Dr. Rob Irvine uses an endoscope and laser to break up stones, then the wires at the end of the scope form a tiny basket once inside the duct to remove any bits of remaining stone.

RENAL TEAM PADDLES TO GOLD

A team of renal patients and St. Paul's doctors and nurses race to victory in their division

What started as an excuse to get active and raise awareness about organ donation within St. Paul's Renal Program eight years ago, has now earned the paddlers of the O2P Dragon Boat team shiny gold medals.

Last October, the team – whose name, O2P, expresses the wish "Oh, to pee" of all kidney dialysis patients whose condition prevents them from producing urine – showed they could compete with the best, winning gold in their division at an international dragon boat race in San Francisco.

Team founder and captain Lisa Venables, who has lived with kidney disease her entire life, came up with the idea for a dragon boat racing team while receiving dialysis at the renal program's Vancouver dialysis unit at 6th and Cambie.

Among the people Venables recruited for the team were other people living with kidney disease, and St. Paul's renal nurses and physicians, including Drs. Anthony Chiu and Ron Werb.

Since then, the team has been an invaluable source of exercise, and social and emotional support for the members. It has also inspired the Renal Program's larger fitness- and health-promotion program for kidney patients called Paddle to Wellness.

For Venables, the dragon boat team has also allowed team members who are kidney patients to show they won't be defined by their disease.

"We have certain limitations, but if you have a proper diet and take care of yourself, you can participate in almost anything," says Venables.

The O2P Dragon Boat Team is looking for new members. To join, visit *www.o2p.ca.*
-Leslie Dickson

Photograph: Brian Smith (endoscope)

Putting their hearts into a national women's health education initiative are (from left to right) Providence Health Care President & CEO Dianne Doyle, St. Paul's Hospital Foundation President & CEO Stephen Shapiro, Dr. Andrew Ignaszewski, Division Head of Cardiology, and Bobbe Wood, President & CEO of the Heart and Stroke Foundation of BC & Yukon.

THE HEART TRUTH

A new program is promoting awareness of heart disease and stroke risks among women

Women across Canada are learning "The Heart Truth" thanks to a national public health education campaign that recently received support from both St. Paul's Hospital Foundation and Providence Health Care. As a result, the Providence Heart + Lung Institute (HLI) at St. Paul's signed on as a sponsor earlier this year.

The Heart and Stroke Foundation's The Heart Truth campaign is designed to increase awareness around women's risk of heart disease and stroke and empower women to take action to protect their heart health. Most women do not realize that heart disease and stroke are the leading cause of death for Canadian women and their most serious health concern.

As a cardiologist, Dr. Andrew Ignaszewski, Division Head of Cardiology within the HLI and leader of the hospital's Healthy Heart Program, is very much aware of the risks.

"Women tend to believe that heart disease is a man's disease, yet women are actually more likely than men to die of a heart attack or stroke," explains Ignaszewski.

"My colleagues and I asked St. Paul's Hospital Foundation and Providence Health Care to join us in supporting The Heart Truth campaign. The cardiologists have made personal contributions because we feel so strongly that education and information can save women's lives."

St. Paul's Hospital Foundation President and CEO Stephen Shapiro notes that donors have supported many outstanding heart-related projects over the years: "We are happy to be working with our great partner the Heart and Stroke Foundation on this important campaign for women's heart health."

Heart and Stroke Foundation of B.C. & Yukon President and CEO Bobbe Wood is pleased that the HLI has joined the campaign.

"We are delighted to have the Heart and Lung Institute at St. Paul's as a sponsor of The Heart Truth campaign," says Wood. "We will advance our outreach to women, share The Heart Truth message and work together to improve the heart health of women and their families. It is our privilege to work with St. Paul's Hospital Foundation and Providence Health Care on this important initiative."

The Heart Truth campaign aims to raise awareness among women of ways to reduce their risk of heart disease and stroke, and give them the tools they need to protect themselves. Established in 2008, The Heart Truth is supported by founding sponsor Becel and contributing sponsors Dempster's, Ocean Spray, Pfizer Canada Inc., Rogers Consumer Publishing, Shoppers Drug Mart and Providence Heart + Lung Institute at St. Paul's Hospital. For more information on The Heart Truth campaign go to *www.thehearttruth.ca.-A.M.*

Photograph: Brian Smith

5 GREAT WAYS TO give

1. DONATE TO ST. PAUL'S HOSPITAL FOUNDATION

Mail: 178-1081 Burrard St., Vancouver, B.C. V6Z 1Y6

Phone: 604-682-8206
Web: www.helpstpauls.com

2. GIVE A GIFT OF SECURITIES

By donating securities directly to St. Paul's Hospital Foundation, you could save a significant amount of money at tax time. Charitable gifts of publicly traded shares and mutual funds are now exempt from capital gains tax and earn you a charitable receipt for the full market value.

3. HONOUR A LOVED ONE

Make a donation in honour or in memory of a family member or friend.

4. MAKE A BEQUEST

Include a gift to St. Paul's Hospital Foundation of Vancouver in your will. You may not realize that there are also other ways to make a future or planned gift, including life insurance, an RRSP or RRIF, or a trust.

5. LIGHTS OF HOPE

Make an early commitment to support this year's Lights of Hope fundraising campaign. Call 604-806-8560

A PLAN WITH HAART

Dr. Julio Montaner's plans to bring HIV treatment to the street offers hope for a healthier future to people living with HIV in Vancouver's Downtown Eastside

A small, cramped office in St. Paul's Hospital filled with nondescript furnishings piled high with papers seems an unlikely locus for some of the most cutting-edge research on HIV/AIDS treatment in the world. But it's here you'll find Dr. Julio Montaner, director of the B.C. Centre for Excellence in HIV/AIDS and president of the International Aids Society, the world's leading organization of HIV/AIDS professionals.

Montaner, a practising clinician, has been at the forefront of HIV research for decades, most notably in 1996 when he led a clinical trial into a new drug regimen – a triple-drug therapy called highly active antiretroviral therapy (HAART).

The use of HAART was a breakthrough in the care of HIV-positive patients. It extended life expectancies for HIV-positive patients by decades and in many cases reduced the amount of virus in the blood to undetectable levels, quickly making it the gold standard for treatment.

NEW OBJECTIVES

While the Argentina-born physician happily notes that the triple-therapy treatment "decreased the death rate in B.C. by 90 per cent or more among people infected with HIV who engage in HAART," Montaner now has a bigger goal in mind. He wants to actively seek out HIV-positive individuals who are not being treated and ensure they receive adequate care, starting in Vancouver's Downtown Eastside, where the rate of HIV among injection drug users is 30 per cent.

"If you don't engage in treatment, you're out of luck," he explains. "Unfortunately, not everybody's accessing the treatment. The benefit of antiretroviral therapy is not being translated in those that are at a disadvantage."

The reasons for seeking out infected individuals who are not accessing treatment are twofold: To prevent those individuals from dying of AIDS and to prevent them from transmitting the virus to others. HAART can help reduce the infection rate by reducing the number of copies of the HIV virus in an infected individual, making them less likely to transmit it to others.


Dr. Julio Montaner

Using HAART to prevent transmission of HIV is a provocative notion – one that is slowly gaining acceptance in the scientific community but has yet to be tested. By focusing on the Downtown Eastside with an emphasis on injection drug users, Montaner plans to demonstrate that he can reduce the number of new infections in the area by treating as many HIV-positive people as possible. He's calling his research proposal Seek and Treat for Optimal Prevention of HIV/AIDS (STOP HIV/AIDS).

"We have been shopping [the proposal] around for a period of time," he admits. Finally, last September, the proposal received a boost when it was endorsed by former U.S. president Bill Clinton, and then Montaner was chosen as the inaugural recipient of the Avant-Garde Award from the U.S. National Institutes of Health's National Institute on Drug Abuse (NIDA), which comes with $2.5 million over five years.

Since then, he says, "We've had a strong expression of interest from the provincial government and we are at advanced stages of negotiations to find a strategy that would make it viable in these difficult fiscal times to deploy this kind of program."

OVERCOMING BARRIERS

The STOP HIV/AIDS project is no small undertaking. Dr. Thomas Kerr, a research scientist with the Centre for Excellence who is working on cohort studies in the Downtown Eastside says, "The greatest challenge with this project is that we're trying to overcome many of the existing barriers to treatment. But we won't ever see this population enjoy the benefits of treatment, nor will we see a strong, effective treatment provision on prevention, until we start addressing these real problems."

Dr. Kerr notes that some of the actions required include: Interventions to make sure people who are incarcerated receive medication immediately; working with patients on managing their side effects to ensure they adhere to treatment; and advocating with regional health authorities to enhance programs that have shown success with addiction treatment.

It's going to require a large financial commitment up front, acknowledges Montaner. However, he points out (referring to mathematical models on the cost of long-term HIV/AIDS treatment) every infection prevented means a savings of $250,000 to $1 million.

"The investment becomes actually cost-averting over time," he says. "You save more money down the road because less and less people are being infected."

And you can bet that once he's tackled the Downtown Eastside, Montaner won't stop there. In fact, the World Health Organization has already worked out a mathematical model for South Africa, where only one-third of HIV-positive people are receiving treatment.

"If we treat them all starting today, within 40 to 50 years the epidemic will be totally controlled," says Montaner.

If anyone's got the energy and drive to get the job done, it's Julio Montaner. ■

To find out how you can help the B.C. Centre for Excellence in HIV/AIDS at St. Paul's Hospital, call 604-682-8206.

Photograph: Perry Zavitz

INSPIRED GIVING

The caring of the Sisters moves one man to remember St. Paul's in his will

Norma Houle has many happy memories of her father Norman Galloway, who passed away in 2007 at the age of 93. She describes him as innovative, creative, determined and hardworking – a man who left school at age 15 and worked as a boat builder at Vancouver Shipyards. Houle recalls that she and her two sisters grew up believing that their father could do anything. He could also surprise them.

After his death, the family found Galloway had left a bequest in his will to St. Paul's Hospital Foundation, but nobody knew exactly why the Foundation was chosen, as he had never been a patient to anyone's knowledge. However, they did know that St. Paul's was on Galloway's regular route to work at the shipyard during the Depression. He would likely have seen up to 700 people a day lined up at the side entrance of the hospital, as it was widely known the Sisters of Providence fed those in need, and no hungry person would be refused a meal. He told his daughters how impressed he was that the Sisters could be counted on to help and how much respect he had for the Catholic order that operated St. Paul's, even though he did not consider himself to be a religious person. Houle feels sure that his memories of St. Paul's and his deep respect for the work of the Sisters led her father to remember St. Paul's in his will.

Galloway's mother tried to raise him on her own by working as a cook in remote logging camps until he was about four years old. She then sent the young Galloway to St. Raphael's boarding school on Nicola Street where he was subjected to strict rules and hard work. Houle still has his 1927 school report: her father "excelled in drawing and was very good with arithmetic." Those skills would go on to serve him well as he built his own fishing boats and the larger vessels at the shipyard. The sisters remember that he could also teach himself to do anything, including appliance repairs and house construction. The drawing ability from St. Raphael's came in handy when he created his own inventions, which included an ingenious extension that increased the sleeping capacity of the family's Volkswagen camper van.

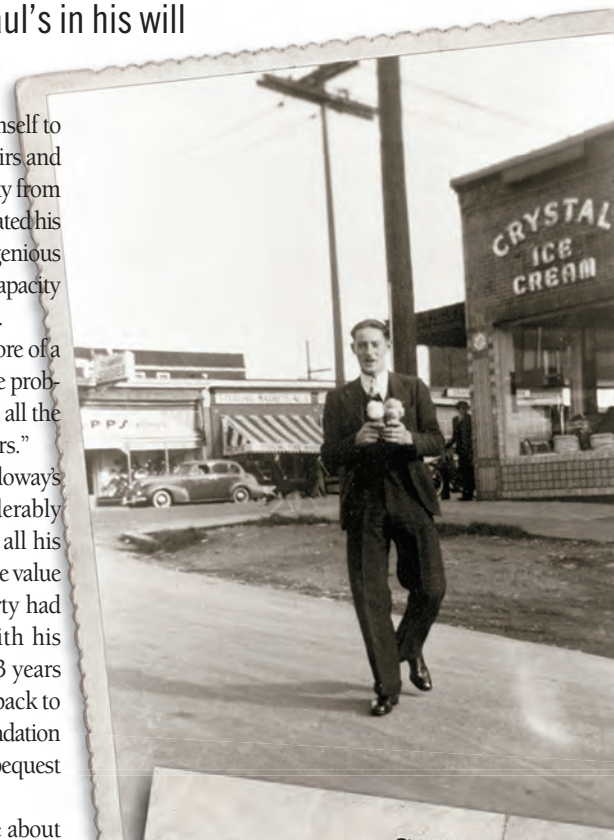
"It was too bad my father wasn't more of a business-type person," Houle says. "He probably could have made some money on all the amazing things he created over the years."

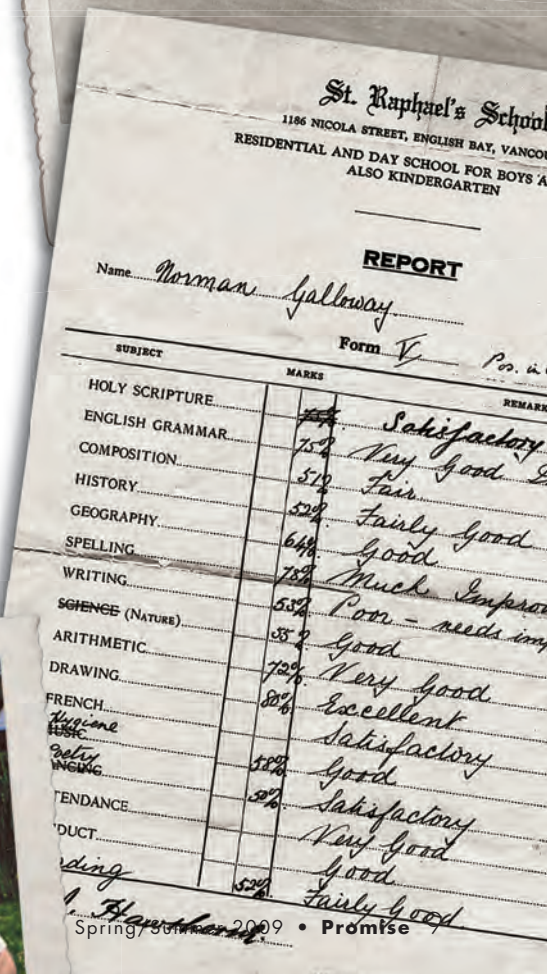
As with many of his generation, Galloway's family home had appreciated considerably over the years. Having lived frugally all his life, he was surprised to discover that the value of his home and surrounding property had almost made him a millionaire. With his beloved wife Ella already gone after 63 years of marriage, Galloway vowed to give back to the community. St. Paul's Hospital Foundation was one of three charities to receive a bequest in his will.

The foundation spoke with Houle about what her father would have wished for the bequest. A decision was made that part of his gift would be used to help the kidney program and the rest to help bring a high-definition CT scanner to B.C. (see *Better Scanning, Better Care* on page 10) – innovation from an innovator.

Galloway's legacy is now joined with the legacy of the Sisters of Providence – the medical care, research and teaching that happens every day at St. Paul's Hospital. ■

If you would like more information on how to make a difference at St. Paul's by including a legacy gift in your will, Yolanda Bouwman, Manager, Planned Giving, would be happy to speak with you. Please call her at 604-806-8914 or contact her via e-mail at ybouwman@providencehealth.bc.ca




St. Raphael's School
1186 NICOLA STREET, ENGLISH BAY, VANCOU
RESIDENTIAL AND DAY SCHOOL FOR BOYS A
ALSO KINDERGARTEN

REPORT

Name Norman Galloway
Form V

SUBJECT	MARKS	REMARK
HOLY SCRIPTURE		Satisfactory
ENGLISH GRAMMAR	75%	Very Good
COMPOSITION	57%	Fair
HISTORY	52%	Fairly Good
GEOGRAPHY	64%	Good
SPELLING	78%	Much Improv
WRITING	53%	Poor – needs imp
~~SCIENCE~~ (NATURE)	55%	Good
ARITHMETIC	72%	Very Good
DRAWING	88%	Excellent
FRENCH		Satisfactory
Hygiene		
Poetry	58%	Good
ENDANCE	50%	Satisfactory
DUCT		Very Good
ding	52%	Good
		Fairly Good

From top to bottom: Norman Galloway as a young man in front of a West End ice cream shop; Norman's 1927 school report; Norman with his wife, Ella.

Photographs: courtesy of Norma Houle

Better Scanning Care

ST. PAUL'S NEW HIGH-DEFINITION CT SCANNER HAS OPENED THE DOORS TO EXPLORING THE POSSIBILITIES OF ADVANCED CARDIAC IMAGING

Last January, Balbir Sandhu, a 50-year-old surveyor with a family history of heart disease, found himself on the leading edge of St. Paul's advanced cardiac imaging technology. The Surrey resident was one of the first people to be imaged using the hospital's new, state-of-the-art, $2.2-million computed tomography (CT) scanner.

The new CT scanner constitutes a major leap forward in imaging technology, delivering high-quality images in high-definition with 50-per-cent clearer resolution as compared to those images produced by conventional CT scanners. In addition, the new scanner uses at least 50-per-cent less radiation – dramatically reducing exposure for patients. St. Paul's was the first hospital in Canada to acquire the General Electric (GE) CT 750 HD 64-slice scanner. And only a few dozen of these cutting-edge devices are currently in use around the world, including at leading health centres such as the Mayo Clinic in the United States.

SCANNING FOR TROUBLE

Lab tests showed that Sandhu had high cholesterol levels, but he was poorly tolerant of the medications prescribed for this. He did not have any major cardiac symptoms. Nevertheless, he had just turned 50, and both his father and brother had died in their early 50s."I was a little concerned," says Sandhu.

A stress test to measure how well Sandhu's heart functioned during exercise proved normal. However, his brother also had normal stress-test results – and that was just a few months before he died. "It [a normal stress test result] didn't ease my mind."

Sandhu wanted to be sure there were no other problems. His family physician sent him to a heart specialist who referred him to St. Paul's Hospital's Cardiology Department, part of the Providence Heart + Lung Institute. For cardiologist Dr. Brett Heilbron, Sandhu was a good candidate for imaging using the new scanner, as the test could clarify whether he needed aggressive medical therapy or not.

Just as he had hoped, the 15-minute test brought Sandhu some peace of mind, but showed that he had early buildup of plaque in his arteries. Sandhu had wondered whether he needed to stay on his cholesterol-reducing medication. "Now I know I have to stay with it," says Sandhu, citing the scan results. "It's a decision that's made."

ADVANCED CARDIAC IMAGING

The CT scanner will have a crucial role in a new program under development within the Providence Heart + Lung Institute at St. Paul's Hospital. Led by Heilbron and radiologist Dr. Jonathon Leipsic, the Advanced Cardiac Imaging Program is a unique collaboration between radiology and cardiology. With highly specialized training in cardiac imaging, Drs. Leipsic and Heilbron are experts in this relatively new field.

"Until about five years ago, we couldn't do coronary CT," says Heilbron. "We weren't able to scan fast enough to freeze the motion of the heart." The new scanner has changed all that.

In selected patients, CT scanning is a valuable alternative to the traditional X-ray angiogram – a procedure during which a catheter is threaded from an artery (usually in the groin) to a coronary artery that is then visualized using using X-rays. While the procedure is commonplace, it is not without attendant risks.

"There is a risk of bleeding because you have to go in through a large artery in the groin, and also a risk of stroke, heart attack and death," says Heilbron. "The total likelihood of something bad happening is quite rare – less than two per cent – but it's not zero."

The advantage of a coronary CT scan is that it is less invasive, safer, less expensive and also faster.

"For those patients who have atypical chest pain, who may have inconclusive test results such as a stress test that is in the grey zone or a nuclear perfusion study that could be a false positive, the CT scan may be necessary," says Heilbron.

"What we find is that we can pick up disease at an earlier stage and intervene earlier. Conversely, we can identify those patients who don't have atherosclerosis [hardening of the arteries] and don't need aggressive therapies or long-term cholesterol-lowering drugs or long-term aspirin. We can look at the coronary arteries using non-invasive technology that allows us to make a diagnosis in the majority of patients that we scan."

Heilbron stresses that catheter angiograms will always have a place in cardiology-related diagnostics and therapy: "There will always be some patients who are best managed with them: if they are at high risk; if they've got unstable angina; if their history is very convincing for angina; or if they're very likely to require an angioplasty [a mechanical method of widening the arteries] it's better to go straight to an angiogram than to do another non-invasive test." However, Heilbron anticipates

BY CLAUDIA CORNWALL

CT SCANNING 101

The first X-ray machines sent out single beams of X-ray particles called photons through a patient's body to generate an image. CT scanning or computed tomography, first developed in the mid 1970s, represents an advancement of this technology. A CT scanner still employs X-rays, but unlike with a conventional machine, the X-rays rotate around the subject. During each rotation a series of images are collected and then combined by a computer producing a detailed three-dimensional view. Think of CT imaging as looking into a loaf of bread by cutting the loaf into thin slices. When these image slices are reassembled by computer software, the result is a very detailed, multidimensional view of the loaf – the same thing happens with the body. As CT scanning technology has improved, it has become possible for more and more images (or slices) to be collected during each rotation of the device. St. Paul's new scanner is a 64-slice scanner, meaning it captures 64 views per rotation. Since it rotates extremely quickly (three times per second), it is able to collect a tremendous amount of data, producing an image of greatly enhanced resolution and detail. □

Clockwise from top: St. Paul's cardiologist Dr. Brett Heilbron (right) and radiologist Dr. Jonathon Leipsic are using their specialized cardiac imaging training to diagnose and rule out heart problems with the new high-definition CT scanner; The scanner provides highly detailed images of organs and small structures throughout the body, including coronary arteries, stents (wire mesh tubes used to keep arteries open) and the chambers of the heart.

that the new scanner will gradually take on more and more patients.

In addition to delivering many benefits for heart patients, the new scanner will also be used to help diagnose health problems throughout the body, including early stroke detection and diseases of the lung, liver and kidney.

RESEARCH POSSIBILITIES

Leipsic is delighted with the research possibilities provided by the new scanner: "The fact that we were one of two beta sites selected in Canada is something to be excited about.

"My interest stems from the recognition that in order to do really advanced cardiac work we need to improve the technology. Coronary arteries are small structures but we have to see them to the smallest detail. The scanner that will afford you that will win out. On that basis, I feel that this new GE scanner is the answer. It will be better in evaluating the coronary arteries and in evaluating heavily calcified arteries, which is currently extremely challenging."

St. Paul's selection as a beta site (a site involved in multi-centred trials to validate research technologies for clinical use) didn't happen by accident. Last June, when Leipsic heard that GE was considering St. Paul's, he travelled to Milwaukee, Wisconsin, to persuade GE of the merits of his hospital.

"I described the merits of our hospital to the head of research," says Leipsic. "I stressed the collaboration we have between radiology and cardiology. I made it really clear that I felt that St. Paul's is optimally positioned for research and clinical applications. We don't want to be late to the game. We wanted to be involved in some of the initial technology validation. In order to do that, we needed to get the scanner early.

"We are very grateful to St. Paul's Hospital Foundation and its donors for recognizing the need to bring the scanner to St. Paul's as soon as possible," says Leipsic.

And now, research is already underway.

"We're doing one multi-centre trial collaborating with Cornell," says Leipsic. "We want to find out how good the scanner is at measuring the severity of the narrowing of the coronary arteries. We're going to look at the radiation dose reduction, which is a unique feature of this scanner. We're also going to look at stents [wire mesh tubes used to prop open arteries that have recently been cleared using angioplasty; previous CT scanning technology couldn't see them very well]. The scanner is also a robust tool for whole-body imaging, which is extremely important given its role in the general medical imaging department. It will play a large role in acute stroke assessment and in the evaluation and characterization of abdominal masses."

Leipsic is especially pleased with the fact that the new scanner operates using a significantly less radiation: "Radiation has been a real Achilles heel for CT scanning. It's not good to get a nice image if the radiation dose is very high. We have to remember, 'First, do no harm.'" ■

St. Paul's Hospital Foundation committed $200,000 in crucial seed money from various donors to bring this powerful new CT scanner to the hospital, providing timely access to this leading-edge technology for both patient care and research. The Foundation continues to actively raise the additional $2 million needed from the community-at-large to complete the purchase. To find out how you can donate, please call 604-682-8206.

Photographs: Brian Smith

Pulmonary pioneer Dr. Peter Paré with St. Paul's iCAPTURE scientist Dr. Denise Daley.

Photograph: Brian Smith

BY VICKI O'BRIEN

Heart+Lung INNOVATION

A new generation of gifted physicians and stellar scientists explore the frontiers of heart and lung medicine, building on the tradition of innovation of St. Paul's medical pioneers

Just as heart and lung interactions occur with our every breath, the history of heart medicine is inextricably linked to the history of lung medicine.

At St. Paul's Hospital, the war against heart and lung disease has a colourful 60-year history. Its roots lie with a succession of talented young physicians invited to head west from teaching hospitals in Central and Eastern Canada, lured here by the opportunity to create brand new diagnostic and treatment services in the early days of cardiopulmonary care.

Attracted to St. Paul's by progressive administrators and the visionary Sisters of Providence, they were sold on the hospital's community spirit and family atmosphere. Over the next six decades they proved that a small centre could deliver the same excellence in research and patient care as larger institutions, often at a lower cost.

In the 1950s and '60s, finding space to expand, learn and teach within St. Paul's was just as challenging as it is today. It often meant spending long hours toiling in tight quarters, working on world-class projects and programs with little or no staff or equipment. These early pioneers paved the way for then unimaginable innovation. What's more, they did so in an environment where competition for funding was fierce, where collaboration between institutions was almost non-existent, and where minimal research was being done at the bench or bedside.

Stories abound about the many advances in heart and lung care and research at St. Paul's over the last half-century. Here are a few that illustrate how early advances in cardiac care at St. Paul's set the stage for the hospital's current specialists, and how groundbreaking lung research conducted decades ago has influenced the next generation of St. Paul's scientists studying respiratory health.

BREAKING NEW GROUND

Among the early young stars recruited to develop heart medicine at St. Paul's was Dr. Doris Kavanagh-Gray, the hospital's first cardiologist. Her primary role was to develop electrocardiogram (ECG) services (a test that reads the electrical activity of the heart) and establish a new catheterization laboratory. Her contribution was vital for a hospital bent on performing complex heart surgeries. (During a catheterization procedure, a thin, flexible tube is inserted into a patient's artery or vein, usually through an artery in the leg, and threaded up into the heart. In addition to being a vital diagnostic tool for cardiologists, it would later become a procedure to clear blocked arteries.)

One of Kavanagh-Gray's contemporaries was the brilliant Dr. Harold Rice, who when he arrived in B.C. had already developed an electroencephalogram (EEG) machine to study electrical activity of the brain. Joining St. Paul's in 1958, he invented and built Canada's first heart bypass machine, which takes over the role of the heart and lungs while a surgeon makes repairs. He went on to produce much of the equipment needed for the hospital's emerging heart and lung services.

The first open-heart surgery at St. Paul's in 1960, made possible by the commitment of physicians like Rice and Kavanagh-Gray, allowed the hospital to attract talented young cardiologists and cardiac surgeons. These medical leaders built on the work of the early pioneers and helped establish St. Paul's as B.C.'s premier centre of cardiac care. In 1994, on its 100th birthday, St. Paul's launched the flagship Heart Centre, which consolidated many of the province's highly specialized cardiac programs.

Kavanagh-Gray, 78, who retired in 1997 as head of cardiology after a 46-year career at St. Paul's, says she is proud to have played a significant role in developing a world-class Heart Centre in Vancouver.

"Looking back, I think my greatest achievement was launching the cath lab," says Kavanagh-Gray. "When we first opened, we were only allowed to do two procedures a week; when I left, we were doing four a day." (Today the hospital performs between 16 and 20 such procedures daily.)

During her tenure Kavanagh-Gray implemented many other innovative changes, which considerably enhanced St. Paul's cardiac expertise: she recruited the first specialist at St. Paul's with a knowledge of both heart and lung disease (Dr. John Boone) and the hospital's second cardiologist, Dr. Dwight Peretz, to set up and run St. Paul's first Intensive Care Unit (ICU). Kavanagh-Gray also developed a sabbatical program for St. Paul's Department of Cardiology, enabling cardiologists to take leaves of absence in order to learn new techniques and procedures from specialists at other hospitals.

ADVANCING HEART CARE

If the valuable contributions of pioneers like Kavanagh-Gray represent the historic development of world-class heart care at St. Paul's, then heart surgeon Dr. Jamil Bashir, 40, the youngest of St. Paul's Hospital's six cardiac surgeons, exemplifies its extremely bright future.

A University of Alberta Medical School gold medal winner, Bashir

Sikander Sahota and his grateful parents with Dr. Anson Cheung.

SIKANDER'S STORY

Though less than a centimetre wide, a tiny device created to give a boost to hearts weakened by disease had a big impact on the life of one Burnaby teenager last fall – it ensured he would see his 14th birthday.

Seemingly healthy, Sikander Sahota suddenly fell ill last October. After his mother took him to BC Children's Hospital, doctors discovered he was suffering from viral myocarditis, a life-threatening condition in which his body was attacking his heart muscles, causing his heart to function at just 20 per cent of its normal capacity.

Sahota was rushed to St. Paul's Hospital where Dr. Anson Cheung, head of the B.C. Acute Heart Failure Program, immediately implanted a temporary Impella heart pump – also known as a ventricular assist device (VAD) – which draws blood away from the heart, giving it a chance to recover.

In doing so, Sahota became the youngest person in the world to be fitted with Abiomed's Impella LP 5.0 heart pump, a device Cheung says is crucial to the recovery of patients like Sahota.

"Because it is tiny in size and can be implanted minimally invasively, it's less risky for the patient, buys time for heart recovery and avoids further damage to the heart muscles," explains Cheung.

The pump bought Sahota invaluable time – and a future. Just days after he arrived at St. Paul's Hospital in critical condition, Sahota was able to resume typical activities of a teenager, including soccer.

Not bad for a piece of equipment smaller than your baby finger.

Since its inception at St. Paul's Hospital in 2002, the B.C. Acute Heart Failure Program (with the help of startup money provided by donors to St. Paul's Hospital Foundation) has implanted more than 110 long- and short-term VADs in heart patients, saving dozens of lives. The program, part of the Providence Heart + Lung Institute at St. Paul's Hospital, is now funded by the Provincial Health Services Authority and is a national leader in ventricular assist device implantation. □

Above left: Dr. Doris Kavanagh-Gray pioneered electrocardiogram services and heart catheterizations at St. Paul's Hospital; Cardiac surgeon Dr. Jamil Bashir (above right) says the use of devices for the treatment of heart failure is the fastest growing of all the cardiovascular disciplines.

initially joined the St. Paul's team in 1993 at age 28, as a general practitioner (GP) assisting with open-heart surgery. After leaving to study aortic surgery and excimer lead extraction in the U.S. and Sweden, he returned to St. Paul's as a resident and joined the surgical team in 2005.

Bashir's expertise is important; in addition to performing standard heart surgeries, he is an expert at repairing the heart's electrical system in complex, severely compromised patients. With our rapidly aging population, and what Bashir describes as "an epidemic of heart failure in North America," the treatment of heart failure using devices is the fastest growing of all the cardiovascular disciplines.

Bashir notes that we have come a long way since the 1950s when the early cardiac pioneers began performing surgery – 60 per cent of their patients died.

"Today, when it comes to most routine major heart surgeries, we have an almost zero per cent mortality. It isn't just our surgical skills that have improved: we've also seen enormous improvements in pre-op care, anesthesia and post-op care, especially when it comes to nursing. Over the years, St. Paul's has developed a culture of excellence, which has contributed enormously to our current reputation as one of the best heart centres in the world."

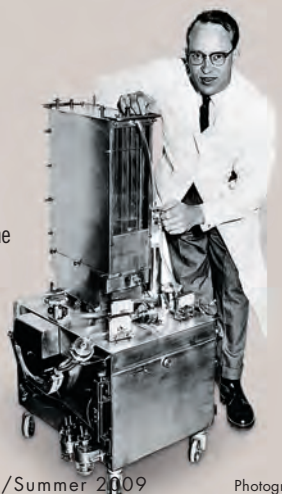
BREATH OF LIFE

That St. Paul's is also recognized worldwide for its lung research is thanks in large part to the leadership of two lung specialists recruited to St. Paul's more than three decades ago.

The Providence Heart + Lung Institute at St. Paul's Hospital is built upon a legacy of innovation and commitment to excellence. From the creation of the only Canadian-made heart-lung machine to the world's first minimally invasive aortic valve replacement surgery, our history is one of pioneering medical advances and new care solutions. Below are some key milestones in cardiopulmonary care and research:

1959

Dr. Harold Rice, (right) the director of the Clinical Investigation Unit at St. Paul's Hospital, designs and builds the only Canadian heart-lung bypass machine ever made. The machine is used for the first 1,000 open-heart surgeries performed at St. Paul's.



1960

In the first open-heart surgery at St. Paul's, an atrial septal defect (hole in the heart) is successfully closed.

1963 – 1964

Dr. Al Gerein performs the first successful valve replacement surgery in B.C. One year later he performs the first double valve replacement reported in Canadian medical literature and what is likely the first triple valve replacement in Canada.

Mid-1960s

St. Paul's Hospital opens its first Pulmonary Function Laboratory to test patients' lung function.

1973

St. Paul's Hospital's chapel is transformed into a new 15-bed Cardiac and Pulmonary Unit. The number of open-heart operations increases to five per week with the new facility.

Photographs: courtesy PHC Archives (Dr. Kavanagh-Gray and Dr. Rice); Brian Smith (Sahota family, Drs. Cheung and Bashir)

Above left: Dr. Denise Daley is studying the genetics of asthma; Dr. Peter Paré (above right) continues to research chronic obstructive pulmonary disease.

In 1977, Drs. James Hogg and Peter Paré from McGill University arrived at St. Paul's to establish its first Pulmonary Research Laboratory; it marked the hospital's first step into significant laboratory research. Twenty years after Rice and his colleagues had struggled for space, Hogg and Paré's first challenge was finding a home for the lab's new electron microscope. They finally settled on an underused nurses' locker room in the hospital. With a rare combination of research and clinical skills, Hogg and Paré were charged with establishing a culture of scientific research within a busy hospital environment, something Paré believes is still a work-in-progress at St. Paul's – from hospital administrators affirming how policies and procedures affect patient care, and caregivers conducting clinical trials, to researchers discovering new tests for health problems.

Thanks to Hogg's, and later Paré's, leadership, combined with recent exciting breakthroughs in genetics and molecular biology, St. Paul's has witnessed an explosion of lung research through the years, especially in the areas of asthma and emphysema. Along the way, the team developed one of the world's largest lung tissue banks, providing an invaluable tool for researchers around the world studying lung diseases at the cellular and molecular levels. Having outgrown two facilities, the Pulmonary Research Lab is now a vital component of the interdisciplinary James Hogg iCAPTURE Centre for Cardiovascular and Pulmonary Research.

"So far it has been a very exciting and challenging journey," observes Paré, who after 32 years at St. Paul's is still conducting research into chronic obstructive pulmonary disease (COPD), particularly emphysema and asthma.

"We have witnessed some incredible, almost unimaginable advances in recent years," he says. "Back when we started we only looked at lung function and lung pathology. Now we are more concerned with molecular studies, right down to the DNA. It holds a lot of promise for our patients."

INVESTIGATING ASTHMA

Helping to unlock the key to asthma to improve the outcomes for the more than three million Canadians with the disease is St. Paul's iCAPTURE scientist Dr. Denise Daley. Daley, 40, is one of the only researchers in Canada with a background in genetic epidemiology, a field which draws upon epidemiology (the study of how diseases often occur in different groups of people and why) and genetics (the study of how traits such as eye and hair colour or asthma can be passed from parent to child), and biostatistics (the interpretation of statistical data collected in studies related to human health). She is one of the world's premier young investigators of the genetics of asthma. She is also a Michael Smith Foundation Scholar and holds a Canada Research Chair in Genetic Epidemiology. Combining the skills of a classically trained epidemiologist and a geneticist, Daley brings unique expertise and perspective to the study of the genetic risk of heart and lung diseases.

Researchers have long known that asthma has both a genetic and environmental component. Taking this one step further, Daley is interested in how genetic predisposition and environmental factors interact: whether they cause asthma or protect against it. Her work is part of an important worldwide collaborative effort to isolate the causes of asthma, which is on the rise.

Like Bashir, Daley typifies the youth, enthusiasm and energy found in all corners of the Providence Heart + Lung Institute at St. Paul's Hospital. While she describes asthma as "a complex puzzle" (and one she does not expect to be solved in her lifetime), Daley is not discouraged. She simply works harder: "It gives me a great sense

St. Paul's Hospital Foundation is proud to facilitate support from generous donors for many initiatives in the Providence Heart + Lung Institute at St. Paul's Hospital. Current needs in the institute include funding for Western Canada's first high-definition CT scanner to diagnose heart and lung problems, research fellowships for physician fellows and nurses, a Chair in Women's Cardiovascular Health and a Professorship in Adult Congenital Heart Disease.

For more information about these and other needs to further St. Paul's excellence in heart and lung care, education and research or to donate, call 604-682-8206 or visit *www.helpstpauls.com.* □

1977

The addition of the Pulmonary Research Laboratory in 1977 brings Dr. James Hogg, a lung pathologist, Dr. Peter Paré, a respiratory physician (respirologist), and Lisa Baile, a respiratory research scientist, to St. Paul's and launches a new era of research and a further expansion of St. Paul's capabilities.

1980

Drs. Doris Kavanagh-Gray and Art Dodek perform the first angioplasty at St. Paul's.

St. Paul's is the first hospital in B.C. to treat AIDS patients. Often involving respiratory complications such as resistant pneumonias, AIDS quickly becomes a major part of respiratory care. >>

St. Paul's lung research pioneers Drs. James Hogg (top left) and Peter Paré (top middle) proudly pose with a pulmonary plethysmograph (used to measure lung capacity) in the late 1970s with then-chairman of St. Paul's Hospital's board Dr. Ron Longstaff (top right) and Dr. Pat McGeer, a UBC professor and then B.C.'s Minister of Advanced Education (bottom).

Photograph: courtesy PHC Archives

PROVIDENCE HEART + LUNG INSTITUTE AT ST. PAUL'S HOSPITAL

Today all Providence Health Care's heart and lung research, teaching and patient care programs operate under a single umbrella at St. Paul's – the Providence Heart + Lung Institute. Since its creation in 2007, the institute has improved collaboration between hundreds of researchers, educators, physicians and other health-care professionals working in laboratories, classrooms, operating rooms and at patients' bedsides to develop better care for British Columbians.

The institute continues to attract some of Canada's brightest medical and investigative minds. It is home to an unmatched cross-section of clinical and investigative efforts across four distinct but linked hospital enterprises: the St. Paul's Heart Centre; the Pacific Lung Health Centre; the James Hogg iCAPTURE Centre for Cardiovascular and Pulmonary Research; and the Centre for Health Evaluation and Outcome Sciences (CHÉOS). □

of satisfaction to know that I am working on problems that will help people now and in the future – that what I am doing matters."

Daley is very much aware that she, Bashir and their contemporaries are fulfilling the dreams of hundreds of heart and lung researchers at St. Paul's who paved the way for current and future advances.

"While every era has its breakthroughs, this is an especially exciting time because the field of genetics is moving at such an amazing pace," says Daley. "What I learned in grad school is now obsolete. Today we're mapping susceptibility genes and doing studies that 10 years ago were only theoretically plausible."

As St. Paul's looks forward to future growth and expansion, the history of these pioneering efforts in heart and lung care remind everyone involved of the commitment required to leave a legacy of excellence and to improve the care for hundreds of thousands of patients in B.C., Canada and beyond. From the world-renowned research into respiratory illnesses like COPD that is being advanced by younger generations of clinicians and scientists, to early innovations in cardiac procedures and surgeries that have inspired internationally recognized innovations in heart repair and treatment, the health-care advances of yesterday are influencing the solutions of tomorrow at St. Paul's.

This commitment continues at the Providence Heart + Lung Institute, evident in the high level of co-operation and collaboration that exists between physicians, nurses and researchers, between the hospital and the University of British Columbia and between everyone involved with the institute and their many grateful patients. ■

1987
The McDonald Research Laboratory opens, spurred by advancing lung research programs as well as deepening efforts in critical-care research and heart failure studies.

1993
Dr. Bruce McManus and his cardiovascular research team are recruited to Vancouver and join the McDonald Research Laboratory, leading investigations of heart- transplant rejection and virus infection of heart muscle.

1994
St. Paul's celebrates its 100th birthday and launches the flagship Heart Centre. Over the next few years many of the province's highly specialized cardiac programs and services are transferred to St. Paul's from Shaughnessy Hospital and Vancouver General Hospital.

1999
B.C.'s first percutaneous atrial septal defect (hole-in- heart) and ventricular septal defect closures are performed at St. Paul's Hospital.

St. Paul's Hospital becomes one of the first in the world to perform chemical (alcohol) ablation for hypertrophic obstructive cardiomyopathy. This technique is then shared with interventional cardiologists from Calgary, Edmonton, Winnipeg and Toronto.

2000 – 2001
Investigators of the iCAPTURE Centre laboratories (formerly the McDonald Research Laboratory) twice attract major national infrastructure funding, and reopen with leading-edge technologies, establishing St. Paul's as one of the leading centres for cardiovascular and pulmonary research in North America.

2002
The B.C. Acute Heart Failure Program opens at St. Paul's Hospital and the first successful ventricular assist device (mechanical heart pump) implant in Western Canada is performed.

2004
The Pacific Lung Health Centre opens at St. Paul's Hospital to provide excellent care and patient education programs for common lung diseases like asthma for people throughout B.C.

2005
A team of specialists at St. Paul's Hospital perform the world's first minimally invasive "beating heart" apical aortic valve replacement surgery.

2006
St. Paul's Hospital performs Canada's first implant of a wireless defibrillator cardiac device.

St. Paul's Hospital launches Canada's first Metabolic Syndrome Program, a prevention program for people at risk of cardiovascular disease, stroke, and Type 2 diabetes.

2007
The Providence Heart + Lung Institute at St. Paul's Hospital is established to integrate all areas in the hospital devoted to heart and lung care and research for greater value and impact.

The Heart Centre's interventional cardiology program performs St. Paul's 100th percutaneous heart valve replacement.

A Pacific Lung Health Centre team wins an international award for PRIISME, an integrated chronic disease management program for patients with chronic obstructive lung disease (COPD) for use in both hospital and community settings.

2008
Cardiac surgeons perform British Columbia's 300th heart transplant.

British Columbia's first-ever Advanced Cardiac Imaging Operating Room opens at St. Paul's Hospital.

Four Providence Heart + Lung Institute scientists take the lead on the genetics component of the landmark, six-year, multi-site Canadian Healthy Infant Longitudinal Development (CHILD) Study to determine how genetic and environmental factors influence the development of asthma and allergies in children.

To learn more about the history of pulmonary and cardiac care and research, or for more information about the Providence Heart + Lung Institute at St. Paul's Hospital, visit www.heartandlung.ca

↘ BY HELENA BRYAN

new beginnings

Immediate reconstruction options reduce the physical and mental impact of mastectomy, helping breast cancer patients achieve a much-needed return to normalcy

When 38-year-old Michaelanne Buckley was told she had breast cancer, it was a knee-buckling moment; the kind that can rend a life in two – a "before" and an "after." >>

Michaelanne Buckley and her son, Jesse.

Photographs: Ron Sangha; istockphoto (pink ribbon)

The former Vancouver model knew in that instant that life as she'd known it was about to change. How exactly, she wasn't sure, but she knew she was in for the fight of a lifetime. If she'd been told then that, in time, she'd be healthy and happy again, even after rounds of chemotherapy and a double mastectomy, she wouldn't have believed it.

But here she is, two years later; thick, dark curls framing a ready smile, carriage straight and tall, looking impossibly fit and full of energy. She's carrying on with life, the same person she was before cancer only wiser, she says: "More than anything, I didn't want the disease to define me."

Easier said than done, but Buckley is convinced a big part of what made it possible was a routine procedure that used to be out of reach for many women: breast reconstruction. The surgery involves replacing the breast or breasts removed during mastectomy with either implants or tissues from another part of the body (see *Breast Reconstruction Options*). The techniques have been refined over the years and treatment protocols have changed, making same-day reconstruction a more viable option. In the past, the reconstruction was delayed as a matter of course because it was believed that women needed to recover both emotionally and physically after mastectomy surgery.

Today, immediate reconstruction has proven to have several advantages and, increasingly, general and plastic surgeons are co-ordinating their schedules to ensure the two surgeries take place the same day. For many women, it means a much-needed return to normalcy, both in appearance and lifestyle. For Buckley, who chose to go with implants to avoid the longer downtime of tissue replacement, it meant no scars or external prosthesis to remind her of the cancer. It also meant feeling feminine and confident again. In fact, she found that it was only after reconstruction that she was ready to shift her focus from fighting the disease to healing, recovery and living life fully again.

Right photo: Plastic surgeon Dr. Nancy Van Laeken (left) and breast surgeon Dr. Urve Kuusk, who performs mastectomies, embody a co-ordinated approach to breast cancer removal and breast reconstruction. Above: Dr. Kuusk (left foreground, facing camera) and Dr. Van Laeken (right foreground) work in tandem during a recent breast surgery.

VITAL STATS AND FAST FACTS

In Canada, breast cancer is the second-leading cause of cancer death after lung cancer. It is also the most common cancer among women and the most common cancer cause of death for women under 50:

- The number of women diagnosed across Canada with breast cancer every week: on average 431.
- The estimated number of Canadian women who've been diagnosed with breast cancer at some time in the past 15 years: 1 in 100.
- The chances of a woman developing breast cancer in her lifetime: 1 in 9.
- The chances of a woman dying from the disease: 1 in 27.
- In Canada, the age group in which both the incidence of breast cancer and the death rates have declined since 1969: 20 to 39 years.
- The province with the lowest breast cancer incidence and mortality rates: British Columbia.
- As of 2005, the percentage of breast cancer patients undergoing mastectomy who had breast reconstruction surgery at the same time: less than 10 per cent. □

Thanks to St. Paul's plastic surgeon and head of Providence Health Care's Department of Surgery Dr. Nancy Van Laeken, in collaboration with the general surgeons, same-day breast reconstructions have been performed at St. Paul's Hospital and Mount Saint Joseph Hospital (another Providence Health Care site) for several years. And as awareness of the same-day option has risen, so have requests to have the two surgeries together. Presently, of the approximately 2,000 women who undergo a mastectomy every year, about one in five have breast reconstruction surgery at the same time. The goal at St. Paul's, says Van Laeken, is to make same-day reconstruction accessible to all women who want it.

Photographs: Brian Smith

But first, they have to be diagnosed. And right now, that can take time. Not only can the waiting period be emotionally draining, says Van Laeken, but "statistics show the earlier the detection, the longer the survival. And if caught early enough, other interventions such as chemotherapy and radiation therapy can be avoided."

Buckley stumbled across the 2.1-centimetre lump in her right breast while watching TV with her then-two-year-old son Jesse. She would have waited four months for the ultrasound that would show the lump to be "suspicious" enough to expedite further tests but for the little voice inside her head that told her to insist on an earlier date.

Even with the earlier ultrasound, it would be eight months before Buckley would have her reconstruction surgery. She had a lumpectomy, six rounds of chemotherapy and radiation treatment before being told that, given her age (cancers in younger women tend to be more aggressive), the best way to put the disease behind her was to have her right breast removed. In the end, she opted to have both breasts removed to avoid the constant fear of finding another lump in her left breast.

REDUCING WAIT TIMES

Preventing delays has become a mission for Van Laeken, who is leading an initiative at St. Paul's to create a one-stop Breast Clinic, scheduled to open by May 2009. Based at Mount Saint Joseph Hospital in Vancouver, it will provide diagnostic and consultation services all under one roof.

"It's a multidisciplinary clinic that will navigate the patient through the diagnostic process in a way that reduces wait times," says Van Laeken. "In fact, we've promised to shorten the wait time to diagnosis to three weeks or under, and the time between diagnosis and surgery to within two weeks by fall 2009."

All of this is good news for Buckley, who doesn't dwell on what might have happened if she'd ignored her inner voice and waited for the later ultrasound. Thanks to her reconstruction, she's too busy living life to dwell on anything. In fact, she recently did something she wouldn't have thought possible two years ago. On a family trip to Hawaii just before Christmas, she hit the beach in a bathing suit. "I wore that bikini for two weeks straight," she says.

Next up? Well, now that Buckley has done the beach, only the sky's the limit. ■

HELP US MAKE IT HAPPEN

St. Paul's Hospital Foundation is currently raising $500,000 towards the establishment of the Dr. Patty Clugston Chair in Breast Reconstruction Surgery. The goal of the new $5-million chair (created in partnership with VGH & UBC Hospital Foundation, BC Cancer Foundation and Canadian Breast Cancer Foundation BC/Yukon Region) is to establish a provincially focused strategy for breast cancer management. The new chair seeks to ensure that all women throughout B.C. have equal access to enhanced breast cancer treatment, care and surgical options (such as same-day breast reconstruction at the time of mastectomy).

For more information about this initiative and how you can contribute, please call St. Paul's Hospital Foundation at 604-682-8206. □

BREAST RECONSTRUCTION OPTIONS

At Providence Health Care women have two basic options when considering breast reconstruction. The first, tissue expander reconstruction – nonautologous – requires three procedures (1. mastectomy and tissue expander implant; 2. insertion of permanent implant; 3. nipple reconstruction). The second, tissue replacement reconstruction – autologous – requires two different procedures.

1. Tissue Expander/Implant Reconstruction

This two-phase method is the simplest and least invasive of the two options, involving a temporary implant placed under the chest muscle to gradually stretch the muscle and surrounding skin.

The temporary implant is inflated in six to eight stages with saline solution (this is done at the plastic surgeon's office) to gradually expand the chest muscle and skin. Once the tissue is adequately stretched, the temporary implant is replaced with a permanent saline or silicone gel implant.

As new and improved implants come onto the market, women can look forward to even better results, says plastic surgeon Dr. Nancy Van Laeken.

Women who might still have to undergo radiation therapy face a higher risk of infection or extrusion of the implant with tissue expander reconstruction, and are often advised to opt for autologous tissue replacement reconstruction instead. Women who've had radical mastectomies where the entire chest muscle is removed are not candidates for implant reconstruction.

Pros:

- Less downtime: a one- or two-night stay in hospital, two weeks at home and a return to normal routines, including exercising, in about four weeks.
- Minimal scarring.

Cons:

- A delay between the temporary and permanent implant.
- For women who've had one breast removed, matching the implanted breast with the natural breast can be problematic.
- A higher incidence of complications requiring further surgery (as compared to the tissue replacement approach), if radiation therapy is needed.

2. Autologous or Tissue Replacement Reconstruction

This reconstruction method uses a woman's own tissue, usually from the lower abdomen or back, to reconstruct the breast.

Pros:

- Immediate benefits: Women wake up from the surgery with a new and more natural-looking breast.
- Lower risk of complications requiring further surgery.
- Compatible with other treatments such as radiation therapy, once the wounds have healed.

Cons:

- Longer recovery time: five days in hospital, three months off work and at least one month taking it easy at home.
- Scarring (at the site from where the replacement tissue is taken).

Van Laeken says her profession is currently refining this method to reduce recovery times. Surgeons are starting to do what's called a DIEP flap, in which the tissue is harvested with less muscle removed from the abdominal wall. This latest technique is in the early stages and involves eight to 12 hours on the operating table. □

Photograph: istockphoto (pink ribbon)

Freedom from Pain

St. Paul's Pain Centre provides hope, relief and improved quality of life for people across B.C. and the Yukon whose lives have been ravaged by chronic pain

For most of us pain is an irritating but infrequent visitor – one that's quickly dispatched using over-the-counter medications. However, for many, pain is a constant, debilitating and life-consuming presence that affects every aspect of their lives. It is for these people that St. Paul's Hospital's Pain Centre has become a welcome resource in the pursuit of effective pain management for a fuller and happier life.

Chronic pain is classified as severe pain that lingers long after an injury has healed, or as pain caused by disease that does not respond to traditional analgesic drug regimens. Incredibly, it's estimated that approximately 20 per cent of the population is affected by chronic pain.

While its causes are not always easily understood, the devastating consequences of chronic pain are plain to see says psychiatrist Dr. Roger Shick, director of St. Paul's Hospital's Pain Centre: "I've seen people who've lost their marriage, their family, their friends and their job. They're on social assistance and they're living in a single room because they are suffering from chronic pain.

"The pain doesn't directly kill people," says Shick, "but it does cause depression and a significant number of people commit suicide. It is a life-and-death and a quality-of-life issue."

Chronic pain has numerous causes, affects young and old and takes dedication and persistence to treat. Arthritis, migraines, car accidents and sporting injuries, bad backs, heart disease, cancer, nerve damage, fibromyalgia and diabetes are just a few of the health conditions that can trigger the chronic pain response.

THE PAIN CENTRE

For people living with chronic pain across British Columbia and the Yukon, St. Paul's Pain Centre provides a welcome respite from the suffering. By the time they arrive at the centre, many of these patients have been on the waiting list for the program for a year. Further, many have been dealing with their pain problem for at least eight years. More than 80 per cent of the people who come to the Pain Centre are depressed or anxious and many survive day to day on antidepressants and sleeping pills.

When the Pain Centre was first opened in 1986 by Shick and Dr. May Ong, it offered a weekly, half-day outpatient service. Today it is a leading centre that delivers inpatient and outpatient care, runs teaching programs to improve the level of chronic pain management throughout the Lower Mainland, and conducts leading-edge research to better understand and manage chronic pain. Current research projects include: using imaging technology to identify how diabetic pain presents in the brain; managing severe cardiac pain through neuromodulation; and measuring emotional changes such as anxiety and depression in patients of the centre's Day Program.

Treating pain is not just about sourcing the right painkillers. Providing practical and emotional support and developing individual pain-management programs are as important as any pharmacological or high-tech intervention.

"We do say to folks, 'if you're looking for a cure, you're probably not going to find one' but what we're giving is hope to our patients. They have to wake up every day and deal with chronic pain and still run their lives, which is why I quite unabashedly call them heroes and why it is an honour for us to help them."

– Dr. Roger Shick, Director, St. Paul's Hospital's Pain Centre

The Pain Centre's multidisciplinary team includes anesthesiologists, psychiatrists, physiatrists (rehabilitation physicians), social workers, nurses, radiologists, pharmacists, physiotherapists and occupational therapists, and an internist. Shick says that the team doesn't just focus on the biological factors involved with pain. They also pay close attention to social and psychological factors to ensure their patients are better able to meet their health challenges.

"We try to optimize their medication as well as optimize their coping abilities," says Shick. "It is not necessarily a cure but it diminishes their pain significantly."

The Chronic Pain Day Program is one of several services offered by the centre. Referred patients meet with different members of the team, who help them to develop their pain-coping abilities. By improving their sleeping patterns and habits, pacing themselves and developing fitness routines, regaining their social life and learning to be assertive and even using humour, patients can take more control of the pain and feel more confident in their dealings with health professionals outside the centre.

Photograph: Brian Smith

HEALING A LIFE INTERRUPTED

How neuromodulation took away the pain and restored the dreams of a promising student

Jocelyn Tomkinson, 29, was an ambitious science student studying molecular biology at SFU when she was struck down by pain in spring 2004. Her studies were put on hold, and the next 10 months were spent visiting various specialists, all of whom predicted a grim future.

"Every new doctor I saw said, 'This is permanent and you shouldn't really expect it to get any better,' " recalls Tomkinson, who was born with a congenital spine disorder. "It was really, really hard because I wanted to be a doctor and to me this was just a loss of any potential I was going to have in my life."

A friend told Tomkinson about St. Paul's Pain Centre and after joining the waiting list, she eventually got an appointment. After trying different drug therapies without success it was decided Tomkinson would be a good candidate for neuromodulation.

Doctors trialed several intraspinal medications with Tomkinson – the first treatment that really tackled the pain with few side effects. Based on her good response to these medications, it was decided to implant a permanent pump to deliver these medications. After the surgery it took about a year and many followup visits to fine-tune the pump to ensure Tomkinson was alert for morning classes but received enough pain medication in the evening when she needed it.

Tomkinson is not only grateful for the medical expertise but also the compassion she received from team members the moment she walked through the doors: "When I go to the Pain Centre it is like talking to friends. They are so human and so approachable and they deal with patients with such humanity and grace."

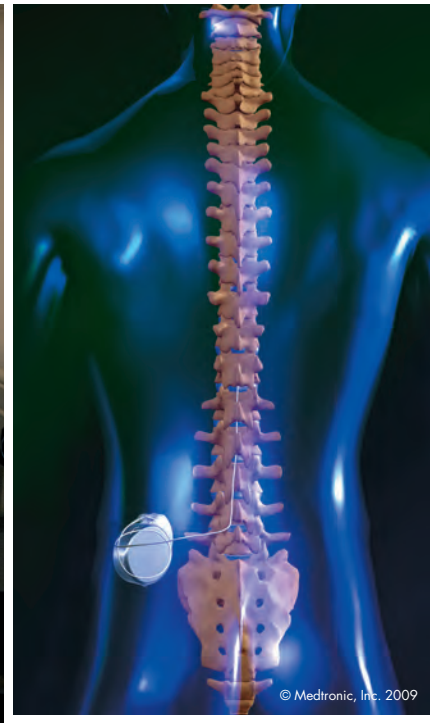
Like many Pain Centre patients, Tomkinson was able to get back to her normal life – she returned to her studies the same semester the pump was fitted. She is now working on her master's in public health and also works as a research co-ordinator for a study into maternity care at BC Children's Hospital. Tomkinson recently had an article accepted for publication in the renowned medical journal *The Lancet*.

Tomkinson's dream is to work on global health projects for an organization like UNICEF. It's a dream that would not have been possible without the expertise of the team at St. Paul's Pain Centre.

"I thought I had lost my life," she says. "I tell people that I live in the bonus time because I never thought I would get back to being this well." □

Jocelyn Tomkinson is back to living a normal life thanks to ongoing treatment at St. Paul's Pain Centre.

Photograph: Ron Sangha



Far left: Pain Centre clinical nurse specialist Louise Malysh administers more medication to a patient's intrathecal medication pump, implanted in the abdomen. Pain pump patients like Jocelyn Tomkinson require regular follow-up visits (about every three months) at the Pain Centre to refill their pumps with pain meds and adjust their doses, if needed. Left: The intrathecal medication pump delivers pain medication to the spinal fluid via a thin, flexible tube called a catheter.

NEUROMODULATION PROGRAM

Some patients living with chronic pain need more drastic intervention before they find some level of relief. For these individuals, the Pain Centre's Neuromodulation Program, which has received funding from donors to St. Paul's Hospital Foundation, is at the forefront of chronic pain treatment. The program offers two options depending on the source of the pain: intrathecal medication pumps or spinal cord stimulators. Both are implanted permanently under the skin in the abdomen and are controlled using external touch-screen wireless controllers. The intrathecal pumps are about the size of a bicycle bell and deliver drugs via a catheter directly to the space around the spinal cord.

"The reason we put these pumps in rather than treat patients with pills or shots is that this pain is so bad that pills or shots don't work or the side effects they experience are so bad," explains Dr. William McDonald, an anesthesiologist for the Neuromodulation Program.

"The great thing about the pumps is that the drugs are between 100 and 300 times more potent when you give them into the spinal fluid, so we can use much lower doses than when taken orally."

Instead of delivering drugs, the stimulator delivers an electric current to a specific area of the spinal cord. It lessens pain by reducing the number of painful impulses that reach the brain. The stimulator, which is about the size of a compact cellphone, can be finely tuned to match the needs of each patient and (unlike with drugs) there are no side effects.

While this level of intervention may sound a little frightening, not to mention that patients who participate in the program must commit themselves to a lifelong relationship with the Pain Centre, it is a welcome resource for people who have not been able to find relief from pain through any other means says Louise Malysh, clinical nurse specialist for the pain team.

"By the time we see a lot of these folks they have been in pain for years, so they are totally de-conditioned physically and beaten down mentally," says Malysh. "We've had some really amazing stories and some of our patients have said it has been life-changing for them. If you can give people back some normalcy in their lives, it's absolutely wonderful."

For the hundreds of people dealing with chronic pain who seek help from the Pain Centre every year, and the impact from the work done, the centre has been nothing short of life altering. Patients who had previously been physically debilitated by pain have been able to leave their wheelchairs behind, while for others effective pain management has allowed them to get back to work or get out of bed and return to doing the things they used to love to do. Many people have been able to regain their independence and return to playing an active role in family life – some even going on vacation for the first time in years. For others the expertise available at the Pain Centre simply means they are now able to get through the day without being drained of strength or the will to live.

"We do say to folks, 'if you're looking for a cure, you're probably not going to find one' but what we're giving is hope to our patients," says Shick. "They have to wake up every day and deal with chronic pain and still run their lives, which is why I quite unabashedly call them heroes and why it is an honour for us to help them." ■

For more information about St. Paul's Pain Centre go to www.paincentresph.com

Photographs: Brian Smith; (pain pump) courtesy of Medtronic

ON THE MOVE WITH ANNE LECLERC

Working with seniors, pursuing a master's degree and enjoying an active life

PHYSIOTHERAPIST ANNE LECLERC works with St. Paul's Hospital's GRACE (Goal Responsive Acute Care for Elders) clinical team. GRACE comprises a multidisciplinary group (including geriatric emergency nurses, geriatricians and other specialists) dedicated to evaluating and meeting the needs of elderly at-risk patients (aged 70 or older) admitted to the Emergency Department. Her role is to initiate early rehabilitation and effective discharge planning for these seniors.

An avid environmentalist and strong believer in maintaining an active lifestyle, Anne and her husband moved to Vancouver from Terrace in 2006. Since arriving here Anne has tried to enjoy every advantage of the urban community – balancing this with her work at St. Paul's Hospital and her pursuit of a master's degree.

What attracted you to a career in physiotherapy?
I knew I wanted to work in the health-sciences field. My mother, a physicist, suggested physiotherapy. I found studying the human body to be very interesting, and I knew I wanted to work with people. And one of my good friends was in the physiotherapy program. I could see what she was doing and it drew me.

Where did you take your physiotherapy training?
I trained at McGill University in Montreal. I graduated with a bachelor of science in physical therapy. I also have a diploma in rehabilitation management from SFU and I am presently completing a master's in rehabilitation science through UBC.

What brought you to St. Paul's Hospital?
I moved out West shortly after graduation and started working at Mills Memorial Hospital in Terrace, B.C. It was a great experience, working in a smaller community in northwestern B.C. When I moved from Terrace to Vancouver in 2006, I was fortunate enough to be hired to work as a physiotherapy consultant at St.Vincent's Langara residential home. I worked there for two years. I started a couple of new programs when I was there: a Balance Training class and "Get Moving Outdoors." When the GRACE physiotherapy position was posted, I applied as I was ready to take on a new challenge – in acute care this time but still working with seniors, which is my passion.

What do you most love about your chosen field?
I love helping people. Physiotherapy is a field that can give you lots of job satisfaction. And it's a very interesting job. It's always challenging.

How do you spend your free time?
Working on my master's takes up about 10 to 20 hours a week. I also try to get in some walking, cycling, skiing, travelling, visiting with friends and family, attending trade shows, concerts, dining out occasionally, facebooking, looking up real estate, volunteering and occasional fundraising activities.

Physiotherapist Anne Leclerc is a big supporter of an active lifestyle.

If you could wish for one great advancement in physiotherapy, what would it be?
I would like the profession of physiotherapy to have more involvement in health promotion and government policies regarding healthy living – from education in schools regarding lifestyle changes and obesity prevention to chronic disease management and seniors' health.

What do you feel is the key to a great physiotherapist/patient relationship?
The relationship has to be genuine, caring, confidential and non-judgmental. It needs to be client-centred. You want to understand their goals.

What have you learned from physiotherapy that you use in your everyday life?
Keep on moving! Participation! ■

The GRACE clinical team is just one of the cutting-edge initiatives introduced by St. Paul's award-winning Emergency Department that complement a $14.7-million redesign of the department currently underway. St. Paul's Hospital Foundation is raising $4.7-million for the Emergency Innovation Project at St. Paul's, which will be complete early next year. For information about the Emergency Innovation Project or to donate, call 604-682-8206.

Photograph: Ron Sangha

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