VOLUME 4 ISSUE 1

MUHC
MCGILL UNIVERSITY HEALTH CENTRE

HEALTH PERSPECTIVES

PUBLISHED BY THE MCGILL UNIVERSITY HEALTH CENTRE FOUNDATION NOVEMBER/DECEMBER 2004

Eye on the Future

Medical imaging has come a long way since November 8, 1895, when German physicist Wilhelm Conrad Rontgen became the first scientist to observe and record X-rays. This thrilling discovery soon became indispensable to the practice of medicine. More than 100 years later, patients benefit from a full spectrum of non-invasive imaging equipment that is able to pinpoint the exact location and extent of a fracture or the progress of diseases such as cancer, to name only two applications. Today's diagnostic technology has also become critically important in monitoring treatment.

At the forefront of developments in medical imaging is the McGill University Health Centre (MUHC), which in 1997 became one of Canada's first university teaching hospitals to introduce a Picture Archiving and Communication System (PACS), which stores images on computers, eliminating the need for X-ray film. The images can then be called up on a personal computer or workstation, allowing for rapid communication between specialists and members of the treating team, even as an examination is underway.

Up-to-the-minute consultations across all MUHC sites occur on a daily basis and will continue to be a vital part of patient care for specialists at the Glen campus who need to communicate easily and quickly with their colleagues at the Mountain (Montreal General) campus, and vice versa. This will be the case whether they are working in endocrinology, orthopaedics, neurology, emergency medicine or a host of other areas. At the hub of all this activity is the Department of Medical Imaging. "We provide doctors with the information they need to make an informed diagnosis and to manage their patients well," explains Dr. Robert Lisbona, MUHC Chief of Medical Imaging and Chairman of Radiology at McGill University since September 1998.

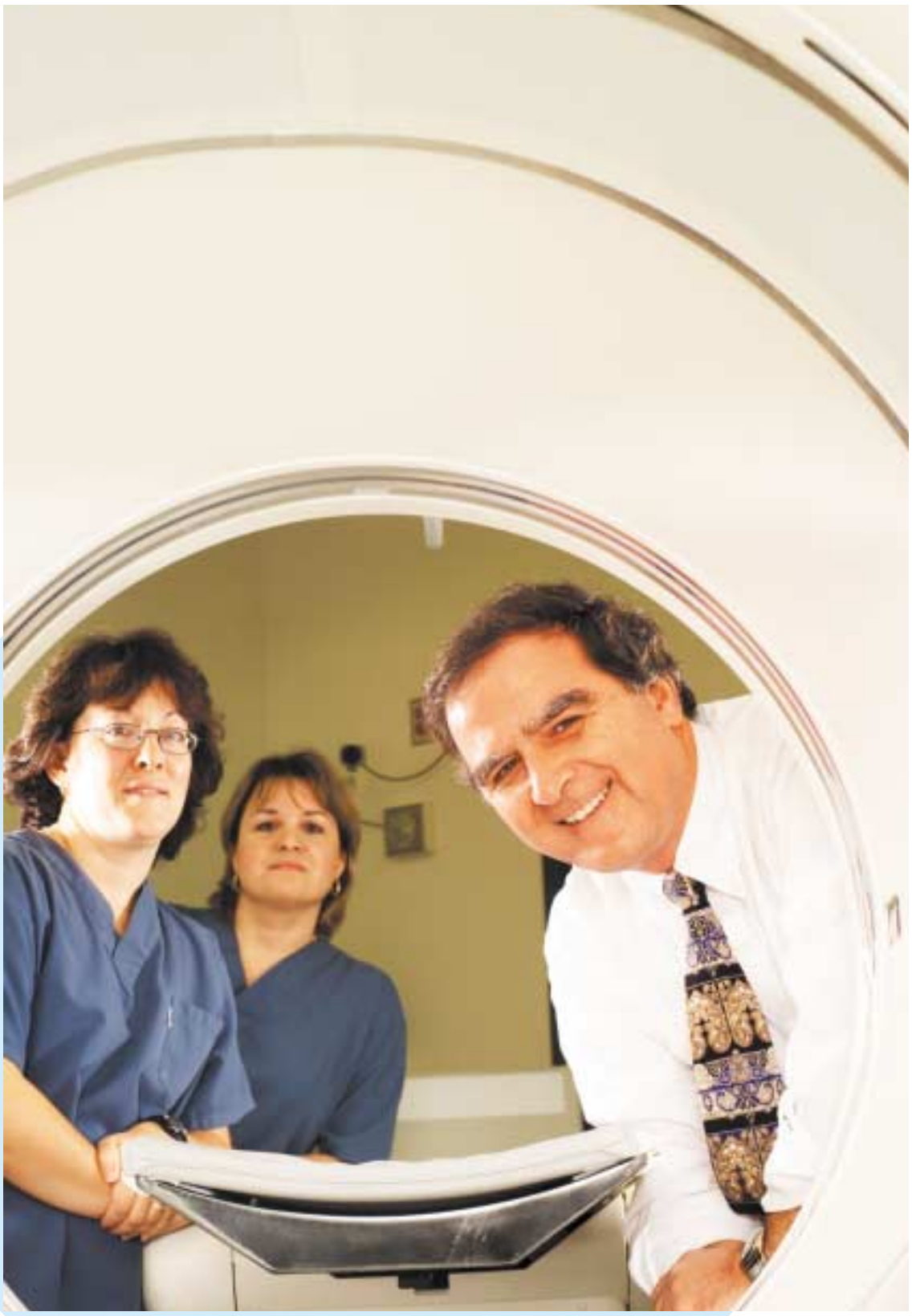
(continued on page 2)

(**Eye on the Future** *continued from page 1)*

In most cases, doctors consult first with a radiologist or nuclear medicine physician to help confirm a diagnosis. At the MUHC, Lisbona heads a team of 38 such specialists, 34 in radiology and four in nuclear medicine. Exceptionally skilled and knowledgeable, these men and women, whether specializing in pediatric, chest, neurological, abdominal, musculoskeletal or interventional radiology, divide their time between instructing technologists on how to obtain the best-quality images, reading and interpreting images, consulting with treating physicians, preparing reports, teaching residents and conducting research. Interventional radiologists also perform therapeutic procedures such as biopsies, coiling of intra-cerebral aneurysms, fibroid embolization, and abscess drainage. A superb cadre of three managers, eight nurses, 275 technologists and eight biomedical engineers completes the team.

When Lisbona became chief six years ago, he quickly realized that the department's technological needs were not being met by government funding. He soon hit upon the idea of seeking out an alliance with GE, a leading manufacturer of medical technology. Given the department's expertise and the hospital's status as a first-rate university teaching hospital, GE readily agreed to showcase its most advanced equipment at the MUHC. In addition to standardizing the equipment at all sites and offering regular upgrades as soon as they become available, the company provides the hospital's biomedical engineers with training in equipment maintenance and repair. Visitors have come from as far away as British Columbia and Nova Scotia to get a firsthand look at the MUHC's state-of-the-art technology.

Now that technologists and radiologists throughout the MUHC are using, to a great extent, standardized and modernized equipment, the department has become more efficient, which, in turn, has had a profoundly positive impact on patient care. Multiple advantages for patients include improved access to faster equipment, shorter exams and high-quality images that result in a more accurate diagnosis.



Dr. Robert Lisbona, along with Chantal Beausoleil and Chantal Morin, nuclear medicine technologists, show off the MUHC's state-of-the-art PET scanner.

Lisbona expects that the process of renewing the department's equipment base will be completed by 2005-2006. Purchases have been prioritized according to greatest need, with funding from provincial and federal sources as well as generous private benefactors. He estimates that in the past decade, $36 million has been spent to acquire the sophisticated technology required for optimum patient care. Lisbona is particularly pleased with the MUHC's latest acquisition, a combined PET/CT unit funded by the Saku Koivu Foundation, the Cedars Cancer Institute and the MGH Foundation. The Quebec government recently released the operational budget for the program, which includes the cost of staff and radioactive materials. The MUHC is among a small number of hospitals in Canada to own this equipment, and while its price tag is huge — $8 million for the equipment itself as well as the necessary renovations — the benefits are tremendous.

PET (positron emission tomography) is a modality for imaging metabolic activity in humans. While CT scans and MRIs deal with anatomy, PET scans look at function or physiology. Since physiological changes occur before anatomical ones, PET enables doctors to detect cancer earlier than ever before. The technology is also sophisticated enough to differentiate benign from malignant tumours.

Across the MUHC, CT and MRI scanners have also been upgraded. CT (computed tomography) scanning uses special X-ray equipment to obtain

MUHC HEALTH PERSPECTIVES

MUHC Health Perspectives is published by
the McGill University Health Centre Foundation,
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images from different angles, while a computer processes the information to show detailed, cross-sectional views of body tissue and organs. The images enable the physician to confirm the presence of a tumour, measure its size and location, and determine the extent of its involvement with nearby tissue. In addition to diagnosing many different types of cancer, CT is used to diagnose and treat spinal problems and injuries to the hands, feet and other skeletal structures. In cases of trauma, CT scanning identifies injuries to vital internal organs such as the liver, spleen and kidneys. As a government designated "level one" trauma centre, the MUHC has a CT scanner right in the Emergency Department. "Since time is a critical factor in stabilizing trauma patients, rapid screening is essential," says Lisbona.

MRI (magnetic resonance imaging) is a non-invasive procedure that uses magnets and radio waves to construct pictures of the body. During this procedure, a very powerful magnet generates a magnetic field, with which a small percentage of hydrogen atoms within the body align themselves. Radio wave pulses are then broadcast toward the hydrogen atoms in the tissue under study, returning signals that are translated into detailed and highly precise images. This modality is particularly useful for examining the brain as well as skeletal structures.

While Lisbona is proud of having updated the MUHC's medical imaging equipment, he cautions that remaining technologically current is an ongoing challenge. "This is a rapidly evolving specialty," he says. "If we want to maintain our status, it demands a willingness to continually invest in new technology." For example, two CT scanners, one at the Mountain (MGH) site and the other at the Royal Vic site, urgently need to be replaced.

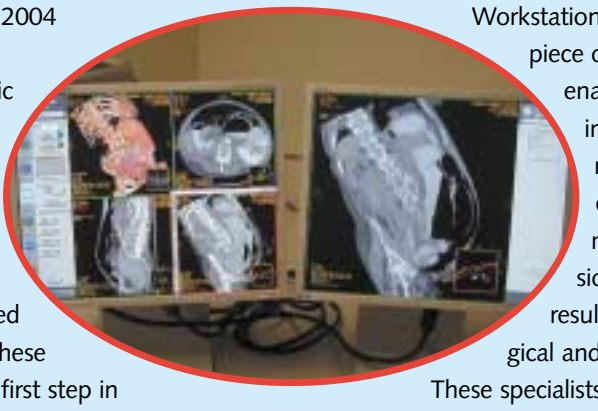
Recruitment is another priority for Lisbona. Despite a chronic North American wide manpower shortage, he is determined to recruit five specialists in the areas of pediatric, neurological, chest and abdominal radiology. "This will allow us to provide better care," he says. More specifically, with a full complement of staff, the department will be able to conduct exams more quickly and complete reports earlier, giving doctors the answers they need to map out care plans for their patients.

According to Lisbona, the ability to lure specialists to the MUHC depends in large measure on our capacity to offer the latest technology, modern information systems and an appealing work environment. Complicating matters is the fierce competition for radiologists and nuclear medicine physicians that exists both in Canada and in the United States, where Canadian training is highly valued. His strategy involves attracting the best residents and sending them elsewhere for additional specialized training so they can bring their expertise back to the MUHC. The department's reputation for excellence in patient care, research and teaching is a definite plus. "We're on the map internationally," he says.

Lisbona believes the MUHC's redevelopment plan augurs well for medical imaging staff and patients alike. He anticipates establishing two major medical imaging departments, one each at the Glen campus and the Mountain campus. The exact split in terms of personnel and equipment will ultimately depend on which surgical and medical specialties will operate out of each campus. "The redevelopment will allow us to regroup and maintain a critical mass of imaging specialists and equipment. With the right infrastructure in place, we'll be able to enhance our excellent teaching and research programs and provide better care to patients." ❇

Equipping Excellence

Although the medical imaging specialists at the McGill University Health Centre (MUHC) work behind the scenes for the most part, they take centre stage when it comes to accurately diagnosing a wide variety of diseases. In 2003-2004 alone, close to 400,000 diagnostic exams were performed by the Department of Medical Imaging (adult sites). A precise and detailed interpretation of these exams is a crucial first step in treatment planning.



At the MUHC, the interpretation of results is made easier thanks to the **Advantage Window (AW) Workstation**, which is the modern equivalent of a viewbox, but much more sophisticated. Offering state-of-the-art image processing and display capabilities, the workstation supports a variety of images, including magnetic resonance (MR), computed tomography (CT), vascular X-ray, nuclear medicine and positron emission tomography (PET). It also contains analysis tools that help streamline data-intensive procedures.

Advanced features include 3D visualization of tissues, enhanced analysis of vascular structures and detailed analysis of cerebral blood flow and volume. At a cost of approximately $50,000 each, the AW Workstation is an invaluable piece of equipment, enabling medical imaging specialists to diagnose the stage and extent of disease with much greater precision than ever before, resulting in improved surgical and treatment planning.

These specialists also prize it for being a powerful educational tool, an important consideration for a department that is acclaimed for its exceptional teaching programs.

The MUHC currently has only five of the most advanced AW workstations; the other ten are becoming obsolete and, ideally, need to be replaced. ❇

This series is intended to be informative; the McGill University Health Centre Foundation does not endorse any particular manufacturer or model of the equipment shown and described here.

In Good Hands

"I've always liked to work with my hands," says Jean A. Ouellet, pediatric and orthopaedic spine surgeon at the McGill University Health Centre (MUHC) and acting chief of McGill's Scoliosis and Spine Group. "When something is broken, I like to take it apart, look at what's wrong and solve the puzzle of how to put it back together again."

Of course, when what needs fixing is one of the body's most complex and sensitive structures — the spine — repairing the problem requires more than just a handyman's sensibility. Extensive postgraduate training, the stamina to perform surgeries that can take up to 12 hours and a willingness to take on challenging and unique cases are also necessary skills for a surgeon specializing in spinal procedures. "You might call what we do extreme surgery," Ouellet says, "and I think you have to have a certain temperament to feel comfortable with it. I've never been fazed by complex or even risky procedures and I love the fact that no two cases are ever exactly the same."

Ouellet's appreciation for challenge and variety is well satisfied at the MUHC, particularly at the Montreal Children's Hospital. In large part because of its association with the Shriners Hospital, the Children's is a national centre of excellence in pediatric orthopaedics. Children from across the country and even from around the world who suffer from rare and complex orthopaedic conditions are brought to Montreal through the Shriners' extensive international referral network. "The Canadian Shriners Hospital has a reputation worldwide for treating children with spinal diseases and deformities," Ouellet says. "We recently had two children, one from Germany and one from Peru, referred to us who suffer from Osteogenesis Imperfecta, or brittle bone disease, whom we may operate on in the future. In cases such as these, we can perform a specialized surgical procedure, where metal rods are inserted to strengthen the bones."

As Ouellet explains, the benefits of these kinds of cases are reciprocal, enriching both patients and surgeons. "Knowing that we're helping kids in need no matter where they live is incredibly gratifying.

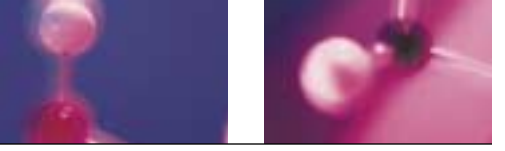
"Having a critical mass of patients and a dynamic group of specialists working closely together in one place will stimulate some really creative and exciting ideas for treatment."

The second benefit is that the more difficult and unusual cases we see, the more our skill and experience as surgeons increase. At another medical centre, you might see one or two cases of a particularly rare spinal condition in a lifetime. Here, thanks to the Shriners, we often see six to ten such cases a year, giving us the confidence to really expand the boundaries of what's possible."

At McGill's Spine Lab, Thomas Steffen, Ouellet and his colleagues translate their clinical experience into new surgical techniques and instruments that are revolutionizing the field. "We've recently helped develop a synthetic bone plug that eliminates the need to perform painful bone harvesting procedures for some spinal surgery," Ouellet says. "This was conceived and designed with the help of the lab. We're incredibly proud of this kind of development, which has really helped put McGill's spine surgeons on the map." As evidence of the department's high profile, Ouellet notes that the Scoliosis Research Society, the most prestigious peer review society in the field of spine surgery, recently chose McGill as the site to be visited by its 2004 travelling fellows – an honour reserved for the top six academic sites across North America.

The MUHC's close relationship with the Shriners is just one reason why Ouellet, who did his orthopaedic residency at McGill, decided to return to his alma mater in 2001 after pursuing postgraduate fellowships in the United States and the United Kingdom. Another was the chance to profit from what is a rare opportunity for an orthopaedic surgeon: to perform surgery on people of all ages, from newborns to geriatric patients. "This is something that started at the MUHC about three years ago as the brainchild of previous department chair Dr. Max Aebi," Ouellet says.

In orthopaedics, as in most other specialties, divi-



sions between pediatric and adult medicine have traditionally run deep. While recognizing the need to maintain the special atmosphere of a children's hospital, Aebi realized that training orthopaedic surgeons to operate on both children and adults would offer distinct clinical advantages. "This approach is hardly seen in North America," Ouellet says, "but it's worked excellently at the MUHC. The anatomy of the spine is the same in children and adults, so the difference is really only one of scale. Because the margin for error is so small when operating on the tiny structures in a child's spine, I've been able to develop a precision that makes me a better adult surgeon." Ouellet notes that surgeons from around the world come to train at the MUHC to benefit from this innovative approach, which also offers some personal rewards. "Often, pediatric surgeons develop a close relationship with their patients, only to lose track of them when they turn 18. They way we do it here, we're able to do follow-up even when our patients are adults."

Despite the MUHC's international reputation and the renown of its surgical staff, Ouellet, ever the hands-on problem-solver, wants to make things even better. In his new role as acting chief of McGill's Scoliosis and Spine Group, he has developed a vision for how the treatment of spinal conditions can be made more efficient across the health care network. "Although we have excellent surgeons, well-trained personnel and a strong research and teaching base, our framework for referral and treatment of spinal pathologies isn't always the most efficient," Ouellet says. "Often, patients with non-surgical back pain are referred to spine surgeons, increasing waiting lists and delaying treatment for both surgical and non-surgical cases. At the same time, some patients with urgent spinal pathologies are not immediately referred to the appropriate surgeon or are only seen at the eleventh hour, when we have no choice but to operate immediately."

According to Ouellet, many of these inefficiencies are the result of having the MUHC's spine specialists spread over multiple sites, with no centralized location to which CLSCs and family doctors can refer patients with back problems. To address these issues, Ouellet and his colleagues in the Group have proposed that the MUHC create a single multidisciplinary spine unit that would bring all its doctors, nurses and technicians together in one state-of-the-art clinic. As Ouellet points out, a spine unit would not only ensure that patients are assessed and treated as efficiently as possible, it would mesh perfectly with the MUHC's redevelopment plans. "Both logistically and conceptually, it's a perfect fit. Certainly, the MUHC's redevelopment provides an exciting opportunity for us to reorganize our department and develop facilities that will really suit our needs. But even more than that, it represents the same ideas about patient care that we see in our discipline. In the same way that the MUHC as a whole will gain strength by consolidating its resources on two sites, a single spine unit will allow diverse specialists with an interest in the spine to work together in the best possible fashion for our patients."

As Ouellet envisions it, the spine unit would consist of a multidisciplinary team of spine surgeons with orthopaedic and neurosurgical backgrounds, anaesthesiologists, interventional radiologists, specialized OR nurses, sports physicians with an interest in the spine, physiatrists (non-surgical spine specialists treating patients with back pain), neurophysiologists (specialists in the nervous system), physical therapists, occupational therapists and research fellows. Patients visiting the unit would be assessed and referred to the specialists best suited to treating their particular disease in all of its aspects, from diagnostic imaging and surgical interventions to pain management and rehabilitation.

"Perhaps first and foremost, this would diminish waiting times for patients to see specialists and allow us to streamline procedures like MRIs that currently have excessive waiting lists," Ouellet says. "In the long term, though, I think there are even greater advantages. Having a critical mass of patients and a dynamic group of specialists working closely together in one place will stimulate some really creative and exciting ideas for treatment. This will allow us to assess the efficacy of surgical and non-surgical clinical pathways that rely on evidence-based medicine. Furthermore, on complex surgical cases it will be easier for surgeons to consult with one another and even to assist one another in the OR, making some procedures feasible. These are only a few examples, but it's this kind of teamwork that will take the MUHC, already a centre for excellence in spine management, to a whole new level." ❊

"In the same way that the MUHC as a whole will gain strength by consolidating its resources on two sites, a single spine unit will allow diverse specialists with an interest in the spine to work together in the best possible fashion for our patients."

Portraits in Time

Thousands of individuals have helped advance the development of the McGill University Health Centre, and in every issue of *MUHC Health Perspectives*, we feature one or more of these significant contributors.

WALTER WILLIAM CHIPMAN (1866-1950)

Since it opened its doors in 1926, the Women's Pavilion of the MUHC's Royal Victoria Hospital has been the birthplace of thousands of Montrealers, who took their first breaths and let out their first howls within its venerable walls. The existence of this much-used institution has everything to do with the dedication of Walter William Chipman, whose advocacy was instrumental in modernizing the practice of women's health in Montreal.

Born in Nova Scotia and educated both in that province and at Edinburgh University in Scotland, Chipman joined the staff of the Royal Vic in 1900 as an assistant gynecologist. In that same year he also began teaching at the McGill University Faculty of Medicine. In 1912, he was appointed the inaugural head of the newly created Department of Obstetrics and Gynecology.

Chipman strongly believed that patient care, teaching and research in obstetrics and gynecology would be best served by the amalgamation of the Royal Victoria and Montreal Maternity hospitals. His work toward that goal finally led to the creation of the Royal Victoria Montreal Maternity Hospital in 1926 and to the construction of its new home, the Women's Pavilion. In recognition of his tireless efforts, Chipman was named the Pavilion's first director.

In 1929, Chipman retired from his hospital and teaching appointments to focus on administration. He served as a governor of both McGill University and the Royal Victoria Hospital, and was president of the Royal Vic until poor health forced his resignation in 1947. His affection for the Women's Pavilion and for the role he played in its creation made Chipman a frequent and welcome visitor until his death three years later. ❊

$230,000 Raised for MUHC Nurses

Nurses took centre stage at the McGill University Health Centre (MUHC) Foundation's Bid for Life auction gala. This spirited event, held on September 22 at the Montreal Science Centre in the Old Port, celebrated the work of nurses across the MUHC and raised $230,000 for the purchase of critical front-line nursing equipment.

A festive atmosphere prevailed throughout the evening as guests enjoyed the gorgeous view of Old Montreal lit up at night, savoured the elegant dinner and fine wines, and vied for the chance to bid on the tantalizing items in both the live and silent auctions. Ann Lynch, Director of Nursing, told the crowd of 300 guests that nurses play an invaluable role not only in patient care, but also in teaching and research, and are instrumental in reinforcing and enhancing the MUHC's reputation for excellence. A highlight of the evening, and one that brought home the importance of nursing, was a special video featuring seven nurses working in various specialties across the MUHC who spoke eloquently about the joys and challenges of their profession.

Patrizia Durante thanks the dedicated nurses who helped her through her life-threatening illness.

The most sustained applause was reserved for special guest speaker Patrizia Durante. Ms. Durante spoke movingly of her battle with leukemia which was diagnosed in the third trimester of her first pregnancy and of the encouragement she received from the nurses who cared for her. In what has been described as a medical first, it was her own baby daughter who ultimately saved her life.

Dr. Arthur Porter, CEO and Director General of the MUHC, praised the hospital's nurses for their commitment to excellence in patient care, as well as their increasingly important contributions to teaching and research. Referring to the progress of the MUHC's redevelopment plans, Dr. Porter said, "On every front, we are making enormous strides forward, and as the future of our institution continues to take shape, I look forward to being able to count on your enthusiasm and your support."

In his welcoming remarks, Chairman Stuart Webster thanked everyone for coming and reminded them that a similar auction held two years earlier netted $130,000 for nursing equipment. He urged guests to surpass this total, and they responded by digging deep into their pockets as auctioneer David Crack worked his magic.

The result was a most successful and enjoyable evening, thanks to the generosity of our table captains, our table, corporate and cash sponsors, and everyone who donated items for the silent and live auctions and who bid so enthusiastically on them. Many thanks as well to the dynamic committee, co-chaired by Stuart and Claire Webster, who worked tirelessly over a period of several months to organize this unique and memorable event. ❇

MUHC REDEVELOPMENT UPDATE

Equal to the Task

More than 100 leaders from across the McGill University Health Centre (MUHC) — in medicine, nursing, allied health and administration — along with representatives from patients' committees, foundations and other interested groups, spent the summer and early fall working diligently on the details of the MUHC's vision for the future. Organized into eight task forces, these representatives met regularly to determine the configuration of the facilities at the Mountain and Glen campuses and to address issues such as shared services, research, affiliation contracts and rehabilitation and long-term care services.

On October 30, the findings of the task forces were presented in a report to the Quebec government that detailed the hospital's plans for redevelopment. Although the precise distribution of clinical services between the two campuses will continue to evolve as the project moves forward, the report recommends that the missions at the 500-bed Glen campus include pediatrics (the MUHC's Montreal Children's Hospital and, hopefully, the Shriners Hospital), cancer care, cardiovascular care, transplantation, women's health, a new eye centre and most ambulatory services. The 332-bed Mountain campus will house trauma, the neurosciences, orthopaedics and respiratory care, among other services. The report emphasized that the two campuses will be equal in quality and prestige and that both will be highly committed to the provision of patient-centred care.

To keep up the momentum and follow through on the implementation of the report's recommendations, some of the original eight task forces will be maintained and redeveloped with a modified mandate while several additional groups will be created. These groups will address such issues as access logistics, in-house academic life, physician organization, environmental concerns, complementarity and community relations.

As the task forces continue their work, we'll provide regular updates on our website: www.muhcfoundation.com. You can also stay current on redevelopment and campaign news by visiting www.muhccampaign.com. ❇

The 26th Annual Cedars Golf Tournament is a $2-million success

In a remarkable display of community commitment and support, the 26th Annual Cedars Golf Tournament, held July 5 at the Elm Ridge Country Club, raised more than $2 million to support oncology at the MUHC through the Best Care for Life capital campaign.

"We're absolutely thrilled by the results," said Jim Hindley, co-chair of the event. "The generosity of the community in helping us reach this total is truly amazing, and this year we're particularly proud to be able to lead the way in supporting the Best Care For Life campaign."

The profits from this year's tournament are part of a larger $5-million commitment that the Cedars has made to the MUHC's $300-million fundraising effort, which will support both the current needs of the institution and its redevelopment at the Mountain and Glen campuses. Dr. Arthur T. Porter, Director General and CEO of the MUHC, expressed his gratitude to the Cedars for their vision and leadership in supporting The Best Care for Life campaign. "As we embark on this unprecedented and exciting phase in the history of the MUHC, the strong support of our friends in the community is more important than ever. With this fantastic effort, the Cedars has once again demonstrated why their involvement is so precious to us."

For participants in the tournament, a great day on the links added to the satisfaction of contributing to such a worthy cause. During two shotguns, one in the morning and one in the afternoon, golfers shared the course with celebrities such as goalie Patrick Roy, Montreal Canadiens General Manager Bob Gainey and LPGA golfers Julie Piers and Isabelle Bieseigel.

Regulars at the tournament have also come to expect a spectacular evening gala, and this year's festivities didn't disappoint. Under a soaring outdoor tent guests enjoyed a gourmet meal and a Vegas-style show that featured opera singers, circus acrobats and even dead-on impersonations of celebrities from Sinatra to the Supremes. Of course, the loudest applause of the night came with the presentation of the $2-million cheque to the MUHC Foundation, reminding everyone that whether they'd hit birdies or bogies on the course, every person at the tournament had made a winning contribution to cancer patients and their families. ❇