**HIGHLIGHTS**

The program has received $2.4 million from Health Canada to study how best to expand the model from use with in-patients to use in outpatient and primary care clinics.

*(from Smoking Cessation Program Expanding Beyond Hospitals, page 2)*

“The new site has been built literally from the ground up. There is no piece of information, no aspect of functionality, no element of design that we did not update in some way.”

— Jacques Guerette, Vice President, Communications *(from We’re Live!, page 1)*

“We get the constant stimulus of new trainees questioning us and pushing us to stay up to speed. They keep us on our toes.”

— Dr. Ben Sopher, Anesthesiologist, UOHI *(from Post-graduate Training Supports Excellence in the Operating Room, page 4)*

Audience members went out of their way during the question period to praise the studies presented as well the overall value and importance of the work being done in PET research at the Heart Institute.

*(from The Heart Institute at AHA 2009, page 5)*

Recommendations for Mitral Valve Repair from UOHI Expert

Most people wouldn’t know where to find the mitral valve let alone how it keeps the cardiovascular system pumping smoothly. But for roughly two per cent of the population, the flap separating the heart’s two chambers causes more than a few snags. A floppy mitral valve, called a prolapse, can cause blood to leak backwards and other complications, including heart infection, an enlarged heart and even heart failure.

Dr. Thierry Mesana, Chief of Cardiac Surgery, is the University of Ottawa Heart Institute’s top mitral valve expert. In fact, he is considered one of the world’s leading experts in mitral valve repair. A recent feature article in the New England Journal of Medicine was co-written by Dr. Mesana as an expert guide to update physicians around the world on surgical options in mitral valve repair.

An expert surgeon will see a situation where one is challenged but can still proceed with a successful repair. You need time to build experience and dedication. It is much easier to replace a valve rather than repair it. An experienced surgeon can still see a valve that is repairable and will take the time to perform the repair.”


The Heart Institute performs 150 cases each year, one of the largest volumes in North America of mitral valve repair annually. Until recently, valve replacement with biomaterial or a mechanical device was the preferred procedure. Now, larger cardiac surgery centres offer the superior skill necessary to smoothly perform this complex procedure.

“Cardiac surgery has undergone major transformation in recent years where skilled surgeons are increasingly engaged in reconstructive techniques that reduce the likelihood of coagulation problems, stroke and heart attack. Mitral valve repair in the hands of a skilled, experienced surgeon results in significant survival for patients, especially those with serious valve leakage,” said Dr. Mesana.

Successful mitral valve repair might also enable the heart muscle to pump...

*(continued on page 2)*

— Dr. Thierry Mesana, Chief of Cardiac Surgery, UOHI
Dr. Thierry Mesana

“Once you ensure the procedure is safe for the patient, you can increase your level of skill and become more expert. You talk to other experts, share experiences and your expertise gradually builds as you pioneer the field as it grows.”

- Chief, Division of Cardiac Surgery, University of Ottawa Heart Institute
- Chair, Transplant and Devices Committee, University of Ottawa Heart Institute
- Professor and Chair, Cardiac Surgery, University of Ottawa
- Specialty interests: adult cardiac surgery, valve disease, mitral valve repair, surgery of thoracic aorta and aortic dissection, and surgery of heart failure including heart transplantation, ventricular assist devices, and cardiomyopathy

Smoking Cessation Program Expanding Beyond Hospitals

The successful smoking cessation program developed by the University of Ottawa Heart Institute is being adopted by hospitals across the country and generating interest internationally. Now, it is moving out of hospitals and into outpatient and primary care clinics. The secret to the program’s success, said Robert Reid, is that it doesn’t actually focus on smokers.

“It’s not about changing smokers’ behaviours,” said the Associate Director of Prevention and Rehabilitation at the Heart Institute. “It’s about changing clinician and organizational behaviours. We’re doing what we already know works, but doing it systematically, with detailed workplans to help assess what is being done and how to put in place better practices.”

The Ottawa Model for Smoking Cessation program evolved over the past 15 years from research and experience in the Quit Smoking Program at the Institute. It consists of a system of consultation, intervention, monitoring and follow-up. Smokers admitted to hospital are identified and treated with support from a designated nurse counsellor and stop-smoking aids. Patients receive assistance to develop a quit plan and, at discharge, are provided with guidance on relapse prevention.

Patients are contacted at home eight times over six months by a unique call system that tracks their progress. At any indication of trouble, a nurse counsellor helps get the patient back on track. More than 44 per cent of participants were still smoke-free six months after hospitalization, according to a 2007 study.

The adaptation of the program to outpatient and primary care clinics will involve nine specialty clinics and 12 primary care clinics spread out among the 21 outpatient clinics around Canada. The Ottawa Model has spread to more than 70 hospitals across Canada, creating a network of participating hospitals whose clinicians can share their experiences and assist in the dissemination of best practices. This national network is maintained by a staff of 12 health professionals at the Heart Institute. Now, just coming off its second annual conference, the program has received $2.4 million from Health Canada to study how best to expand the model from use with in-patients to use in outpatient and primary care clinics.

“The settings are very different,” said Reid. “Patients are in hospital several days. That gives us time to intervene, to introduce pharmacotherapies, see how they work, and adjust them if necessary. Outpatients have less time with their physician and they’re there to focus on other issues. We have to be very efficient with the time devoted to smoking cessation.”

The Ottawa Model, and they have been to South America, India, Europe and China.

On January 18, 2010, The Honourable Leona Aglukkaq, Minister of Health, came to the University of Ottawa Heart Institute to announce $2.4 million in funding for smoking cessation. The funds will go to extending the Heart Institute’s Ottawa Model from the hospital setting to 21 outpatient clinics around Canada.

More than half of males in China smoke, they are exploring how our model might be translated into their environment.”

- Robert Reid, Associate Director of Cardiac Prevention and Rehabilitation, UOHI

Centres of Excellence in the Ottawa area, New Brunswick and British Columbia, providing data both on differences between specialty care and primary care and across geographic regions. As part of the program, physicians will offer incentives to participants, such as a discount on the cost of pharmacotherapy. This cost has been identified as a barrier to participation in smoking cessation programs, said Reid.

Funding for the expanded activities extends to the end of March 2011. Reid hopes that the evidence accrued during the trial will help in rolling out the program in different care settings across the country. And he is relying on the network formed so far to help ensure the findings are applied. Conferences like the one held in January play an important role. It’s the only smoking cessation conference held in Canada that focuses on the clinical aspects of cessation. There’s a clear interest—the first conference, in 2009, attracted 185 participants. This year’s conference attracted 250 participants, including clinicians from the United States, the United Kingdom, and even China.

“More than half of males in China smoke,” said Reid. “They are exploring how our model might be translated into their environment.”

In fact, Reid and his colleagues are contacted all the time about the Ottawa Model, and they have been to South America, India, Europe and China to help educate clinicians there about the program.

“It’s an exciting story,” he says. “Something we developed here at the Heart Institute has potential to be applied around the world.”
We’re Live! The New Web Site Is Here

In early February, the Heart Institute launched a new, completely revamped and updated web site to help address the cardiovascular information needs of patients and the public, clinicians and health experts, scientists and researchers, governments and agencies, the media and others across the country. The new site is the culmination of a year and a half of effort by a dedicated team of communicators, programmers, designers and others.

“The new site has been built literally from the ground up. There is no piece of information, no aspect of functionality, no element of design that we did not update in some way,” said Jacques Guerette, Vice President, Communications. “Our goal is to deliver more, and more varied, information to anyone who needs to explore any aspect of the Heart Institute or of cardiovascular disease.”

The launch represents the first phase of a multi-phase evolution of the Heart Institute’s web site. The principal objectives of this first phase were to:

- Re-develop the web platform to take full advantage of technical advancements in content management, information indexing, ease of use, dynamic content, user accessibility and more
- Completely overhaul and update the organization and presentation of Heart Institute’s communications in a way that considers the information needs of many types of stakeholders across the domains of care, education and research
- Incorporate more visual and multi-media information into the site, and cross-link with social networking communications initiatives
- Dramatically expand the nature and extent of information available via our web site
- Bring the web site in line with the Heart Institute’s communications and design standards

As a result, the new site is packed with new types of information tailored to specific needs. Here are just a few examples.

Those interested in research can conveniently obtain information about Heart Institute research programs, labs and supporting facilities, biographies of principal investigators, presentations of scientific sessions, and more. A five-year collection of peer-reviewed published scientific literature is available as is information about our research philosophies and funding, and even the nature and extent of the research environment in Ottawa!

People who are interested in advancing their cardiovascular knowledge can read about our training and education programs encompassing medical and nursing education, biomedical engineering, research and technical training, co-op placements and more, including best practices.

The photo bank includes a collection of general Heart Institute photos, medical illustrations, research and technology visuals, photos which illustrate scientific content, as well as the collection of photos and illustrations used to produce The Beat. All can be freely reproduced with credit to the Heart Institute.

There is more. Much more. Patient guides for key procedures. Descriptions of diagnostic tests we perform. A review of heart disease in its various forms. A sophisticated calendar of events, presentations and sessions that is controlled by the user. Professional information for clinicians and other medical staff. Heart Institute viewpoints on the cardiovascular issues of the day, such as the isotope crisis in Canada. A complete description of our clinical operations. Even online shopping for Heart Institute paraphernalia! The range of available information goes on and on. In summary, the new site now has some 400 pages of information that have been completely updated, expanded or created.

In summary, the new site now has some 400 pages of information that have been completely updated, expanded or created.
In Conversation

Dr. Terrence Ruddy:
A Healthy Breakfast Fights Heart Disease

Dozens of clichés advise us to eat a healthy breakfast. Heart Institute researchers in cardiac imaging took a good look at why a healthy breakfast is so important and the results have proved more than a little surprising for the average consumer.

Breakfast presents a significant opportunity for researchers to study heart function when a fasting period is broken by a solid meal. Does the cardiovascular system actually respond when food is introduced to the body’s system? And if so, what happens? The answer, in fact, depends entirely upon what you eat for breakfast.

A landmark Heart Institute study examining myocardial perfusion, or blood flow to the heart muscle, using positron emission tomography (PET) technology found a remarkable difference in the rate of blood flow between two types of breakfast eaters.

The Beat: Why were these breakfast meals chosen?
Dr. Ruddy: The calorie content in both meals was nearly identical. One meal—with the fast-food sandwich—was much higher in fat. We know that fast food has become part of our daily lives and that many families eat this kind of breakfast probably once a week or so. We have an interest in the activities of daily living and how that can affect blood flow and endothelial function.

The Beat: What is endothelial function?
Dr. Ruddy: The endothelium is the lining of the blood vessels. Endothelial cells can detect changes in blood flow and send a message to the smooth muscle cells to relax. The artery diameter increases, so the sheer stress is decreased. That's the response of a healthy endothelium.

The Beat: What happens if there is a problem?
Dr. Ruddy: People who smoke or suffer high blood pressure have unhealthy endothelium, so the message about the increase of sheer force is not handled appropriately. Instead, the smooth muscle cells constrict, so the artery diameter decreases. There is more sheer force and this leads to atherosclerosis. The endothelium is a crucial for control of vasomotor tone and regulating blood flow to the heart muscle.

The Beat: How does breakfast fit into this puzzle?
Dr. Ruddy: With our fatty breakfast meal, the fat in the meal actually altered endothelial function creating an adverse response. So instead of more dilation, there was vasoconstriction or less vasodilation leading to reduced blood flow.

For our volunteers, this was a temporary situation because they had fasted. But we don't live in a fasting day when we eat continuously. We eat three or four meals a day.

The Beat: How does this relate to eating habits in general?
Dr. Ruddy: If we eat high fat meals and high fat snacks, then we have some endothelial dysfunction. But we recover. Then we have another high fat meal, and there is again more endothelial dysfunction. Recurrent endothelial dysfunction may be an important stimulus for the development of atherosclerosis (narrowing of the arteries). Atherosclerosis is the cause of coronary artery disease and can lead to heart attacks.

We are finding more evidence of why it is important to follow a heart healthy diet . . . high in fruits and vegetables, and low in fat. That too starts with breakfast.

Post-graduate Training Supports Excellence in the Operating Room

They come to the University of Ottawa Heart Institute for advanced training in the cardiac operating room—and, thanks to the Institute’s residency and fellowship programs, these physicians carry the Institute’s reputation for excellence far and wide when they leave.

“Our reputation is disseminated throughout the world,” said Dr. Ben Sohmer, who runs the Anesthesiology Fellowship Program. “People know that we’re good. One of my goals is to make sure the quality of our fellows is as high as it can be, so that we are viewed as being arguably the best at what we do.”

The Anesthesiology Fellowship Program provides fellows with the unique opportunity to focus exclusively on cardiac anesthesiology. “We just do heart here. There’s nothing else you can be distracted by,” he said. “There are very few hospitals who have that.”

The Anesthesiology Fellowship Program accepts a maximum of three fellows each year, more usually just two. While at the Heart Institute, fellows who are already specialists in general anesthesiology, receive specialized training in cardiac anesthesia. The program provides competence in adult cardiac operating room skills.

Dr. Ben Sohmer runs the Anesthesiology Fellowship Program. He is dedicated to continuing the Heart Institute’s long history of excellence in anesthesiology training.
Dr. Benjamin Sohmer
- Anesthesiologist, Division of Cardiac Anesthesiology, University of Ottawa Heart Institute
- Fellowship Coordinator, University of Ottawa Heart Institute
- Assistant Professor, Anesthesiology, University of Ottawa
- Specialty interests: perioperative echocardiography and the development of cardiacl anesthesiology educational programs

The decision to focus on education is deliberate, Dr. Sohmer explained. Other programs focus on service, he says, putting anesthesiologists to work seeing the greatest number of cases possible—the "learning by doing" approach.

"The focus on learning is immense here," he said. "Jean-Yves Dupuis designed that way when he started the program, and I want to keep that focus, so we can continue to get the very best applicants." Dr. Dupuis, an active and respected educator at both the Heart Institute and the University of Ottawa, joined the Institute as an anesthesiologist in 1992.

And, he added, while fellows benefit, so do their teachers, thanks to the obligation to "stay on top of our game" that teaching entails. In fact, he said, that's the hidden secret of fellowship programs—the people running them benefit as much as the fellows. "We get the constant stimulus of new trainees questioning us and pushing us to stay up to speed. They keep us on our toes."

Dr. Fraser Rubens would agree with Dr. Sohmer. Dr. Rubens coordinates programs for surgical residents and fellows. Residents are doctors right out of medical school doing their specialty training, while fellows already have their residency and are doing additional training. He notes bluntly that nobody is paid additional to teach. But the benefits make it worth it.

"Teaching keeps you on your toes, up to date, in an environment of constant learning, and innovation," he said. "Plus you get to meet extraordinary people and see them go out into the world and achieve phenomenal things."

The surgical residency program accepts one resident each year for a six-year program, meaning that, at any one time, there are six residents at various stages of the program. In addition, the fellowship program accepts three to four fellows for two-year fellowships. Dr. Rubens gets applications from around the world for his program. "The University of Ottawa Heart Institute has developed an international reputation as a centre of expertise in a lot of areas," he said.

"The purpose of the 1000 Genomes Project is to develop a gold standard set of genomes for the analysis of human variation. The effort is beginning with a series of pilot projects. GWAS in coronary artery disease (CAD) was an important focus for Heart Institute researchers. Alex Stewart, principal investigator in the Heart Institute’s Ruddy Canadian Cardiovascular Genetics Centre, discussed the identifications of SPG7 as a novel risk locus for CAD by genome-wide association. The study compared 1,542 patients with early onset CAD (mean age 49) to a control group of healthy elderly individuals (mean age 75). Researchers extended the analysis to examine SNPs that are not present on commercial microarrays and identified the common SNP of SPG7.

Cardiac PET Imaging

It was a big conference for research fellow Maria Cecilia Ziaidi, who works with the Cardiac Imaging group under Dr. Rob Beanlands. She delivered three presentations on the clinical use of positron emission tomography (PET). Two of these dealt with the predictive value of measuring flow reserve with rubidium-82 PET scans. These studies showed that reduced flow reserve is an independent predictor of three-vessel coronary artery disease and that, in patients with suspected myocardial ischemia, flow reserve is an
Vascular Biology
Dr. Ed O'Brien’s vascular biology group once again made several presentations. Three of these dealt with their ongoing research into the protective role played by heat shock protein 27 (HSP27) against atherosclerosis and for overall health of arterial walls. They reported that over-expression of HSP27 in the stem cells that form specialized blood cells reduces inflammation and the development of atherosclerotic plaques. They also found that over-expression of HSP27 accelerates arterial repair following injury.

Looking at the therapeutic use of recombinant HSP27, they found a 40 per cent reduction in blood cholesterol levels and reduced progression of atherosclerosis. These findings continue to indicate promise for HSP27-based therapy.

In a separate line of investigation, Dr. O’Brien’s group reported that use of statins in stent patients increased the mobilization of endothelial progenitor cells at the stent sites. These cells are part of the body’s own repair mechanism in response to injury in arterial walls. There is currently a great deal of interest in techniques to augment this innate mechanism for the repair of cardiovascular tissue.

Minimal Invasive Coronary Bypass Grafting
Several years ago, Dr. Marc Ruel pioneered a new program in Canada that involves multiple bypass grafts using a set of tools suited to a minimally invasive surgical technique. Dr. Ruel continues his work in collaboration with Dr. Joseph McGinn of the Staten Island University Hospital in New York.

Researchers investigated 111 CABG patients and found that Aspirin worked as well as Clopidogrel to prevent narrowing or closure of vein grafts one year after surgery. No significant difference in response times during evenings and weekends compared with normal working hours. A total of 1,062 patients were tracked over a three-year period beginning May 2005. The so-called “off-hours” time, when patients received stents, was longer during off-hours. Dr. Chong, a former cardiology fellow at the Heart Institute, provided a valuable examination of primary PCI at a high volume centre, which phépifies the Heart Institute’s strength in clinical research.

Highlights from Other Sessions
Apart from Heart Institute talks, plenary sessions by world experts offered good overviews of broader issues. Two of these, on the relationship of infection and vitamins to cardiovascular disease (CVD), drew large audiences. Inflammation is a key driver in coronary artery disease and arterial blockage. It impacts the formation of plaques in artery walls, the progression of plaques through the absorption of LDL cholesterol, and the likelihood of thrombosis through plaque rupture. Atherosclerosis is essentially vascular inflammation, and metabolic syndrome is a systemic inflammatory state. While there are no significant difference in response times during evenings and weekends compared with normal working hours. A total of 1,062 patients were tracked over a three-year period beginning May 2005. The so-called “off-hours” time, when patients received stents, was longer during off-hours.

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