Family medicine is an important setting for managing cardiovascular risk factors and preventing the onset of heart disease, as well as managing risk factors following a cardiac event. If a patient is a smoker, explained Dr. Andrew Pipe, Chief of Prevention and Rehabilitation at the University of Ottawa Heart Institute, helping that patient quit smoking should be a priority.

“Helping a patient quit smoking is in fact the most important thing we can do to prevent heart disease and reduce risk of a future cardiac event in those with heart disease,” said Sophia Papadakis, PhD, MHA, Program Director of the Primary Care Smoking Cessation Program at the Heart Institute. Quitting smoking is more powerful in reducing risk than lowering blood pressure or managing cholesterol, but it is not always addressed in the same way in family medicine settings as are other risk factors, she added.

To support positive changes in the way smoking cessation is managed in the community, the Heart Institute has adapted its Ottawa Model for Smoking Cessation, a comprehensive smoking cessation program originally developed for patients who have been hospitalized, for use by primary care physicians.

Originally developed for patients who have been hospitalized, for use by primary care physicians.

Since 2002, the Ottawa Model for Smoking Cessation has specifically targeted smokers admitted as inpatients (for any medical condition, not only heart disease). The program's success in getting participants to quit has led to its adoption in more than 120 hospitals across Canada. The model ensures all patients who smoke are identified and offered evidence-based counseling and smoking cessation medications. Those who attempt to quit also receive automated follow-up support for two to six months or a referral to a community-based support program. The results have proven impressive: In an evaluation of the Ottawa Model in hospitals within the Champlain Local Health Integration Network, quit rates rose from less than 19 per cent to almost...
Introducing the New Chief of Cardiology

In March, Dr. Rob Beanlands was appointed Chief of Cardiology at the University of Ottawa Heart Institute. He brings extensive career experience in cardiovascular imaging and a passion for patient-centred care and education to his new position.

Dr. Beanlands takes over from Dr. Terrence Ruddy, Chief since 2006, who stepped down to focus on research and clinical duties. As division chief, Dr. Beanlands plans to emphasize what he calls "the Ottawa Model for Smoking Cessation in Primary Care." Following the success of that pilot, the primary care program, led by Papadakis, is now being tested in 39 group practices in Ontario.

But targeting group practices cannot reach all primary care doctors. Some 200,000 family physicians in Canada work as solo practitioners, without the resources available to larger practices, said Papadakis. To bring the Ottawa Model's proven techniques to these doctors, the Heart Institute has developed the Effective Smoking Cessation in Primary Care (ESCAPE) program. Funded by an educational grant from Pfizer Canada Inc., ESCAPE is a continuing medical education program. The DVD-based training will be available to solo practitioners across Canada beginning in June 2012.

While the challenges and opportunities of treating smokers vary across solo practice, group primary practice and hospitals, the principles of the Ottawa Model remain the same. "What we want to introduce," explained Dr. Pipe, "is a very integrated, systematic approach to the identification and documentation of smokers and provide the appropriate interventions in terms of advising about cessation and acting to help smokers with cessation."

Papadakis refers to ESCAPE as "Ottawa Model in a box." Unlike the implementation of the Model in hospitals and clinics that involves on-site coaching and training from Heart Institute staff over three to six months, ESCAPE is designed to be an "implement-on-your-own" version. "Resources don't allow us to work directly with solo practitioners all over Canada. We had to figure out what the most important parts of what we did were and streamline them so the program could be delivered in this alternative format, as opposed to the being there and providing that training ourselves," she explained.

The ESCAPE program includes a 40-minute overview of how to deliver a state-of-the-art smoking cessation intervention in a solo primary care setting. Six additional modules provide more detailed skills training and protocols to family physicians, such as how to work with a patient who is not ready to quit and an overview of the latest information on smoking cessation medications. The program also includes patient scenarios performed by doctors and actors playing patients. "These scenarios model what best practice really looks like, what best practice sounds like," said Papadakis.

Much of the material aims to correct outdated beliefs about tobacco use and smoking cessation still found in the medical community. "Many clinicians bring outdated concepts and outdated attitudes to addressing smoking," said Dr. Pipe.

One of the most common, and counterproductive, of these is an undermining of available drug therapies to aid quitting.

"The idea that you 'just need to use a patch or chew gum for this many weeks and then it should all be over' has been shown to be completely outdated," he explained. The same principles used to manage other risk factors for heart disease, such as high blood pressure and high cholesterol, should be used for smoking cessation, including continuing medication for as long as needed, he elaborated.

Doctors participating in ESCAPE will also learn to address patients' common reluctance to use medication to help them quit.

"There's been a lot of work documenting that patients would prefer to quit on their own—‘cold turkey’—rather than with medication," said Papadakis. "But one of the standards of care for smoking cessation is that every patient ready to quit would be prescribed pharmacotherapy. It’s considered an essential ingredient for success."

While several other smoking cessation education programs are available today for physicians, they are not as specifically tailored to the realities of a family doctor in Canada, explained Papadakis. "We’ve worked very closely with family physicians over the last few years, to really understand what’s most relevant to them, what’s most applicable, and we’ve put that all into the ESCAPE program."

"This program is a good example of a way in which the Heart Institute is working in an integrated fashion with our primary care colleagues," said Dr. Pipe. "Our approach in putting this program together emphasizes cooperation and coordination—learning from each other."

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An education director will join a clinical director, research director, and associates and collaborators at The Ottawa Hospital as part of a new leadership team that will help manage priorities for the division. In an effort to enhance the patient experience, one priority will be a greater focus on quality improvement.

“I want each section of cardiology, whether it be electrophysiology, interventional cardiology, imaging, clinical care or heart failure, to identify some quality parameters to target for improvement, determine the outcomes linked to those parameters, and develop measures for those to see how we can improve. We already have a strong culture of delivering quality care at the Heart Institute, and I want to see that continue and grow,” Dr. Beanlands explained.

Even before Dr. Beanlands joined the Heart Institute in 1992, he had a close personal connection to the place. His father, Dr. Donald Beanlands, was the founding Chief of Cardiology at the Heart Institute and continued in that role for 19 years. “I’m very proud of that legacy, and I still consult with him on difficult cases and difficult decisions,” said Dr. Beanlands. “He was a good leader as well as a great clinician. My focus for the division has been different, but I think the values are the same,” he added.

As to what success for the division will look like for the younger Dr. Beanlands, he imagined: “If in five years’ time, if everybody, everywhere you go in the division, says, ‘Patients are first here,’ that would be a success. If members of the division are doing significant scholarly work and translating that knowledge in our region and across the country and internationally—if our staff are leaders in the community in the country, and internationally—that would be a success.”

“If, through our partnerships, we’re strengthened to where it’s clear that we are the place in the world for the things that we’re good at, whether it be for patient care or education or research, that would be a success. That’s my big audacious goal, and that’s where we want to be heading,” he concluded.

MORE INFORMATION ONLINE
Links in the electronic edition at www.ottawaheart.ca/thebeat
• Learn more about Dr. Rob Beanlands
• Learn more about cardiology at the Heart Institute

“Introducing the New Chief of Cardiology, continued”

Dr. Rob Beanlands

“I already have a strong culture of delivering quality care at the Heart Institute, and I want to see that continue and grow.”

Dr. Jean-Yves Dupuis

Introducing the New Chief of Cardiology

To new cardiac anesthesia residents, Dr. Jean-Yves Dupuis explains that it may be hard for them to predict the twists and turns their careers might take. “I tell them that the day I finished my internship back in 1979, I swore I would never go back to a university hospital—I wanted to travel the world for my career—but here I am,” said the recently appointed division chief. Dr. Dupuis assumed leadership of Cardiac Anesthesiology at the University of Ottawa Heart Institute in March of this year.

Far from never setting foot in a university hospital again, Dr. Dupuis is marking his 20th anniversary this year at the Heart Institute. The team he now leads is well-respected. “We have a very good group of anesthesiologists who are really performing at a high level, clinically,” he said. Heart Institute anesthesiologists provide anesthesia and patient monitoring in both the operating rooms and catheter laboratories. The division’s intensivists also monitor and coordinate care for patients in the Cardiac Surgical Intensive Care Unit (CSICU), a specialty commonly referred to as critical care medicine.

The major challenge he sees on the horizon is an aging patient population that suffers from multiple chronic conditions. Earlier improvements in practice have paid off. However, such patients are now sicker and older, our resources have remained consistent in terms of outcomes and mortality,” he said. But caring for these patients has been resource intensive, and he doubts that resources will increase at the same pace as the demand for cardiac care.

In the near future, he speculated, “Anesthesiologists and intensivists will have to learn to work a little bit outside the box.” He predicts a larger number of older patients will be rapidly transferred to the ward from the CSICU to increase capacity. Intensivists would serve as active consultants to the medical-student training into improving care at the patient’s doorstep,” he added.

A new objective that will help address the changing nature of cardiac care is the development of a comprehensive quality improvement program encompassing all clinical areas covered by Cardiac Anesthesiology. An important aspect of this program will be the need for documentation of critical and “near-miss” incidents in both the anesthesia and critical care medicine domains.

(continued on page 4)
Heart failure is a disease that challenges the patient and the health care system alike. An often progressive condition with many potential causes and no cure, it can be effectively managed. Doing so is a complex effort that requires diligence and careful monitoring, but a recent study evaluating the effectiveness of guideline-recommended therapies for heart failure highlights the importance of putting these therapies to work.

Heart attack, untreated high blood pressure, abnormal heart rhythms, heart valve disease, cardiomyopathy, and congenital heart defects all contribute to heart failure. All of these conditions contribute to heart failure by weakening or damaging the heart so that it’s unable to pump as strongly as necessary to supply blood and oxygen to the rest of the body.

With the prevalence of the risk factors and direct causes of heart failure on the rise, the number of patients with the condition is projected to skyrocket in the coming decades. One analysis predicts a threefold increase in hospitalizations for heart failure by the year 2050.

While many paths lead to heart failure, all who suffer from it must face the necessity of becoming actively engaged in managing their conditions. “I tell my patients that managing heart failure is really a cooperative effort between the doctor and the patient,” explained cardiologist Dr. Lisa Marie Mielniczuk. Dr. Mielniczuk is a physician with the Heart Institute’s Heart Function Clinic as well as Medical Director of the Pulmonary Hypertension Clinic and the TeleHealth Home Monitoring Program.

### The Effectiveness of Guideline-Based Care

A range of medical, surgical, and behavioral interventions are recommended in heart failure care guidelines. The IMPROVE-HF study, released earlier this year in the *Journal of the American Heart Association*, looked at six of these standard treatments and showed that all substantially reduce the risk of death for patients with heart failure, measured two years after initiation of treatment. These six treatments include three classes of drugs (beta blockers, ACE inhibitors/angiotensin receptor blockers, and anticoagulation drugs for atrial fibrillation), implantable devices, and patient education (see Heart Failure Facts on page 5).

The benefits of each successful treatment assessed in IMPROVE-HF were substantial. The largest came from the use of beta blockers and cardiac resynchronization therapy, which reduce the risk of death by 36 and 36 percent, respectively. Patient education, critical for helping patients understand the medical rationale for their sometimes grueling medication regimens and lifestyle changes, reduces the risk of death by 27 percent.

The effects of these treatments appear to be cumulative, where implementing up to four or five of the treatments with a patient adds incremental benefits. The most beneficial combination examined—a beta blocker, an ACE inhibitor or angiotensin receptor blocker, an implantable cardioverter defibrillator, anticoagulation, and patient-physician communication in intensive care settings.

During his own residency, Dr. Dupuis met Dr. Earl Wynands, the first Chief of Cardiac Anesthesiology at the Heart Institute. Under Dr. Wynands’ tutelage, he became the first cardiac anesthesia fellow at the Heart Institute. What started as a detour from his intent to practice medicine in the developing world became his life’s work. “There was a door in front of me that was open, and I went through it and explored, and I liked it and stayed,” Dr. Dupuis recounted.

After 20 years at the Heart Institute, Dr. Dupuis remains excited about the research and opportunities for outstanding patient care. “The quality of the care provided here is quite exceptional, and we have truly exceptional people working here,” he said. “The Heart Institute is unique because we all have the same goals and we work as a family. I think this comes from the people who founded the place—Dr. Wilbert Keon and Dr. Donald Beanlands—they prepared the ground for a fantastic culture here.”

[Links in the electronic edition at www.ottawahc.ca/thebeat]

More Information Online

- Learn more about cardiac anesthesiology at the Heart Institute
- Learn more about Dr. Jean-Yves Dupuis
education—reduced the risk of death by an astounding 83 per cent.

All of these treatments are standard at the Heart Institute, said Dr. Mielniczuk. “Our Heart Function Clinic offers patients the full spectrum of best-practice-based care, from aggressive medical therapy to pacemakers and devices, to mechanical support and transplants, even palliative care for patients who have reached that point,” she added. Education for patients—about dietary restrictions, fluid intake, physical activity, weight and blood pressure, medications—and subsequent telehome monitoring help keep patients on track.

Much of the care delivered today would have been considered too aggressive only a few years ago, but recent studies have shown that older patients can tolerate and benefit from intensive treatments and that some treatments thought to help only those at high risk of death benefit lower-risk patients as well. For example, the Heart Institute’s RAFT trial, published in 2010, showed that cardiac resynchronization therapy could reduce the risk of death for heart failure patients by 24 per cent compared with the use of a standard implantable cardioverter defibrillator, including patients with mild to moderate heart failure.

The Heart Institute’s Heart Function Clinic is one of the highest-volume heart failure clinics in Canada, seeing 2,500 to 3,000 patients a year. The findings of the IMPROVE-HF trial pointed to the importance of disease management programs, like our Heart Function Clinic and Telehome Monitoring, for patient survival. These are things that the Heart Institute already does and does well,” said Dr. Mielniczuk.

However, many heart failure patients do not have access to such specialty clinics and academic centres. About half of all heart failure patients in Canada have a general practitioner or family physician managing their care instead of a cardiac specialist.

“I tell my patients that managing heart failure is really a cooperative effort between the doctor and the patient”

– Dr. Lisa Marie Mielniczuk, Cardiologist, Heart Function Clinic, UOHI

(Using the Right Tools to Manage Heart Failure, continued)
Collaboration in Fast-Growing Nations

China and India have large and growing populations, bustling economies and, between them, they likely have close to half of the world’s cardiovascular disease burden. Two recent examples highlight ways that the University of Ottawa Heart Institute shares its expertise through international collaboration.

Building a Community for a Revolutionary Surgical Technique

For a groundbreaking new technique to gain traction within the global surgical community, it must have a community of practice—a community of surgeons,” explained Dr. Marc Ruel, ‘performing it regularly, who can give feedback to each other and develop new approaches and tricks that will only develop once a lot of people are doing it.”

Dr. Ruel, cardiac surgeon and Endowed Chair of cardiac surgery research at the University of Ottawa Heart Institute, and his colleague Dr. Joseph McGinn, Chair of cardiac surgery research at the Island University Hospital in Staten Island, N.Y., introduced one such innovative technique in 2005, called minimally invasive cardiac surgery coronary artery bypass grafting (MICS CABG).

In standard coronary artery bypass grafting, the surgeon must make a 25-centimetre incision in the chest—large enough to place a hand through—and crack several ribs. MICS CABG requires only a tiny 4-centimetre “window” incision between two ribs. The surgeon then uses special tools to gently mobilize the heart, bringing each artery requiring grafting into view.

Compared to standard coronary artery bypass grafting, Dr. Ruel’s minimally invasive technique has many advantages that make it appealing in the Indian setting.

Patients at the Heart Institute have the advantage of access not only to specialist physicians but also nurses with specialty training in heart failure and an entire multidisciplinary care team that participates in patient education.

“We have quite a few services and strategies for these patients, and altogether we’ve seen a decrease in readmissions. I think our challenge now is to do more educational initiatives out in the community so there’s more continuity of care,” Struthers concluded.

More Information Online

Links in the electronic edition at www.ottawaheart.ca/thebeat

• Learn more about heart failure
• Read about the Heart Function Clinic
Helping to Modernize Cardiac Care in China

Qingdao is a metropolis on the northeastern coast of China. Like many Chinese cities, it has seen explosive growth. In the past decade, Qingdao’s population has more than tripled to nearly 9 million people. Such growth has spurred the need to expand and modernize medical facilities and programs. In April, the Heart Institute and Qingdao Municipal Hospital entered a five-year cooperative agreement under which Heart Institute physicians will mentor the rapidly growing cardiac medicine program in the booming Asian city.

This new collaboration has its roots in a relationship that began 14 years ago, when a young cardiac surgeon from Qingdao named Dr. Yifan Chi contacted Dr. Thierry Mesana, then the Chair of Cardiac Surgery at the University of Mediterranee in Marseille, France, and now Chief of Cardiac Surgery at the Heart Institute. Dr. Chi hoped to do a cardiac surgery fellowship with Dr. Mesana to learn advanced surgical techniques not yet available in China.

Dr. Chi trained with Dr. Mesana until 2001, when he returned to Qingdao to lead a new cardiac surgery unit opening in one of the city’s oldest hospitals. “He started from scratch, with the knowledge he had acquired with me in Marseille,” said Dr. Mesana. At the time, no hospital in the Chinese city had ever done a cardiac bypass operation. At the unit’s opening, “Dr. Chi and I did the first bypass surgery in Qingdao in early 2001!” he remembered. It was his first visit to China.

Dr. Chi’s new unit thrived and, in 2008, moved to the newly built Qingdao Municipal Hospital, into a dedicated heart centre providing both cardiology and cardiac surgery services. With the city growing so quickly, Qingdao Municipal Hospital is already planning an expansion campus, and Dr. Chi and his colleagues hope to establish a heart institute of their own there with the help of Dr. Mesana and the Heart Institute.

Although the Chinese team had offers from centres in the United States, they reached out to the Heart Institute for the quality of care it provides and the strength of its organizational model. A delegation of five doctors from Qingdao came to Canada in February to meet their potential new colleagues and sign a letter of intent. Then, in April, Dr. Mesana; Heather Sherrard, Vice President of Clinical Services; and Dr. Marino Labanaz, Director of Interventional Cardiology, travelled to Qingdao, where they finalized the agreement.

The five-year agreement has three components. Through a visiting professorship program, a Heart Institute cardiologist and cardiac surgeon will visit Qingdao twice a year to work with the doctors there and help them learn complex new procedures. Under a fellowship program, the Qingdao hospital will send six doctors to the Heart Institute for one- to two-year clinical fellowships. Finally, through an observership program, Qingdao will send twelve individuals—doctors, nurses, administrators and researchers—to observe Heart Institute processes and procedures. “Close to the end of the five years, probably year four or five year, we will start working very actively with them on the plan and the design of their new heart Institute. This is where our administration will become more involved,” explained Dr. Mesana.

“At the time, no hospital in the Chinese city had ever done a cardiac bypass operation. At the unit’s opening, “Dr. Chi and I did the first bypass surgery in Qingdao in early 2001!””

— Dr. Thierry Mesana
Chief of Cardiac Surgery, UOHI

Of course, the minimally invasive technique is still difficult to learn. But that number is likely to rise rapidly after Dr. Ruel’s recent trip to India, where he trained more than 250 experienced cardiac surgeons in the procedure during a whirlwind five days. Compared to standard coronary artery bypass grafting, MICS CABG has many advantages that make the technique appealing in the Indian setting. It has a shorter recovery time, allowing patients both to leave the hospital sooner and return to work faster—important in a country where many people lack health insurance and disability insurance. In addition, the rate of wound infection is much lower with the minimally invasive technique, and “deep infection of a wound has not been seen,” added Dr. Ruel.

While the minimally invasive procedure costs about 25 per cent more to perform, it is less expensive down the road. MICS CABG does cost more up front than standard bypass surgery, but it is much less expensive than robotic cardiac surgery, another minimally invasive option available today.

Another advantage over robotic surgery is that the robotic technique can be used to bypass only one or two blood vessels, whereas MICS CABG can accommodate as many as standard open bypass surgery. (continued on page 8)
May 7, 2012, marked the 25th Annual Research Day at the University of Ottawa Heart Institute. Started in 1988, the event offers trainees and junior staff the opportunity to present their research to their peers in a competitive setting. With more than 75 presentations in basic science, clinical science, and allied and population health, this year’s program was the largest to date.

“Research Day represents our commitment to excellence in care, research and education,” said Dr. Robert Roberts, Heart Institute President and CEO. “We are proud to be training the next generation of cardiovascular professionals. The research we do here helps make the outstanding care we provide possible and is shaping the way those young professionals will provide patient care in the future.”

The Heart Institute is recognized for the quality of its research. The recent SCIMAGO Institutions Rankings place the Heart Institute in the top 2 per cent of all research organizations worldwide for normalized research impact. “Our plans to grow the research endowment from $50 million to $100 million and expand the number of endowed fellowships from 13 to 25 will provide a solid foundation for our research program in years to come,” continued Dr. Roberts.

In recognition of the quarter-century milestone, a retrospective of research at the Heart Institute was presented by Research Day co-founder Dr. Terrence Ruddy and scientist Yves Marcel, recipient of the Royal Society of Canada’s McLaughlin Medal. The keynote address was given by Dr. Peter Backx, Chair of the Heart and Stroke Foundation of Canada’s Scientific Review Committee.

Heart Institute Investigator of the Year awards are part of the Research Day program. Yves Marcel received the Basic Science award. His lab discovered a cellular process that helps clear cholesterol from the body and offers a new target for preventing and treating coronary artery disease. This work was published in the journal Cell Metabolism. Dr. Derek So won the clinical science award. He led the RAPID GENE clinical trial that validated the first-ever bedside genetic test, which was used to personalize anti-platelet therapy for stent patients. Those findings were published recently in The Lancet (see below).

Update: RAPID GENE in The Lancet

RAPID GENE, the first-ever bedside genetic test, has received peer-reviewed validation in The Lancet, the world’s leading general medical journal. As first reported in The Beat (Volume 7, Issue 1), RAPID GENE is a point-of-care genetic test that uses a simple cheek swab to assess whether a patient will react poorly to the standard anti-platelet therapy Plavix (clopidogrel).

Developed by the University of Ottawa Heart Institute, in partnership with Spartan Bioscience, the test identifies patients with a genetic variant known as CYP2C19*2.

The RAPID GENE trial, led by cardiologist Dr. Derek So and resident Dr. Jason Roberts, demonstrated that tailored drug treatment therapy made possible by the genetic screening successfully protected all of the patients with the at-risk genetic variant from subsequent adverse events. Thirty per cent of patients treated with standard therapy did not receive adequate protection.

From a delivery-of-care standpoint, the RAPID GENE test reduced the turnaround time for obtaining patient genetic information from multiple days to one hour. Conducting the test required no specialized technical expertise. Results to one hour. Conducting the test required no specialized technical expertise. Results

Dr. So’s team is now recruiting patients for a new trial, RAPID STEMI, that will screen high-risk patients for three genetic variants associated with patient response to anti-platelet therapy.

Fast Learners

During his five-day tour, Dr. Ruel trained surgeons at five hospitals in three cities: Indore and Nagpur (where he taught at the universities of Indore and Hyderabad, closer to the east coast of the country). At each hospital, he demonstrated the MICS CABG procedure on actual patients, with a video camera and microphone strapped to his forehead. Doing so allowed Dr. Ruel to show and describe the procedure in real time to audiences of up to 125 surgeons, who asked questions throughout the demonstrations.

Some doctors did more than just ask questions. In Hyderabad, Dr. Gopichand Mammam, the chief surgeon, jumped in right away. “I had another procedure scheduled,” recounted Dr. Ruel, “and I asked him, ‘Do you want to do it?’ and he said, ‘Sure, I’d love to.’ So then he’s wearing the video camera in front of 125 of his colleagues, and he did the operation. And hands down, he did it perfectly—he remembered everything I did.”

“It took a level of attention and concentra-
tion that I have rarely seen,” he added. “The Indian surgeons are very skilled—they see coronary artery disease all the time, it’s a major part of their practice. MICS CABG isn’t an operation for every surgeon, but I think we had the right group of surgeons here who will adhere to it.”

“It’s very important that we have a greater community of surgeons to help develop this technique, and with this trip, I think we were able to achieve that,” said Ruel. “[Tradi-
tional] bypass surgery is a great operation. The problem is that it’s so invasive. It’s time now, 30 or 40 years down the road—with the foundations of bypass surgery being so well-established—it’s time to work on its invasiveness. This operation may not be the final answer, but it’s certainly a very significant step forward.”

Dr. Ruel already has plans to travel to Japan this summer for a similar type of on-site training to bring more surgeons into the growing community of MICS CABG. He and his new Indian colleagues also hope to plan a follow-up visit to delve into the technique more deeply: “The goal would be to follow up with a visit in a year or two and do what we call ‘minimally invasive CABG 201: last visit was more like ‘101. ‘The first level is safety and efficacy, and the second level is to make it easier and more routine.”

MORE INFORMATION ONLINE

Links in the electronic edition at www.ottawaheart.ca/thebeat
• Learn more about Research Day
• Learn more about research at the Heart Institute

MORE INFORMATION ONLINE

Links in the electronic edition at www.ottawaheart.ca/thebeat
• Read the article in The Lancet
• Read “New Tests Advance the Promise of Personalized Medicine” in Volume 7, Issue 1, of The Beat

“With our minimally invasive approach, the operation inside is the same as a regular bypass operation, but on the outside, the wound and the physical disability that comes with it is greatly reduced,” Dr. Ruel emphasized.

Rapid Surgical Technique, continued

“The research we do here helps make the outstanding care we provide possible and is shaping the way those young professionals will provide patient care in the future.”

– Dr. Robert Roberts
President and CEO, UOHI

•  Read the article in The Lancet
•  Read “New Tests Advance the Promise of Personalized Medicine” in Volume 7, Issue 1, of The Beat

(Building a Community for a Revolutionary Surgical Technique, continued)