



UNIVERSITY OF OTTAWA  
HEART INSTITUTE  
INSTITUT DE CARDIOLOGIE  
DE L'UNIVERSITÉ D'OTTAWA

# THE BEAT™

A COMPENDIUM OF INFORMATION ABOUT THE UNIVERSITY OF OTTAWA HEART INSTITUTE

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The University of Ottawa Heart Institute is Canada's largest and foremost cardiovascular health centre dedicated to understanding, treating and preventing heart disease. We serve the local, national and international community, and are pioneering a new era in heart health.

[www.ottawaheart.ca](http://www.ottawaheart.ca)



Recent visits to China and India by University of Ottawa Heart Institute staff represent their ongoing commitment to aid in modernizing cardiovascular medicine abroad. Dr. Thierry Mesana, Chief of Cardiac Surgery, (top left) and colleagues visited Qingdao, China, in the process of establishing a cooperative agreement with the Qingdao Municipal Hospital. Surgeon Dr. Marc Ruel (bottom right) traveled to the Indian cities of Indore, Nagpur and Hyderabad to train local surgeons in his minimally invasive technique for cardiac bypass grafting. (See "Collaboration in Fast-Growing Nations" on page 6.)

## Adapting the Ottawa Model for Smoking Cessation for the Solo Practitioner

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

**"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."**

– Sophia Papadakis,  
Program Director Primary Care, Smoking Cessation Program, UOHI

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

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*(Adapting the Ottawa Model for Smoking Cessation for the Solo Practitioner, continued)*

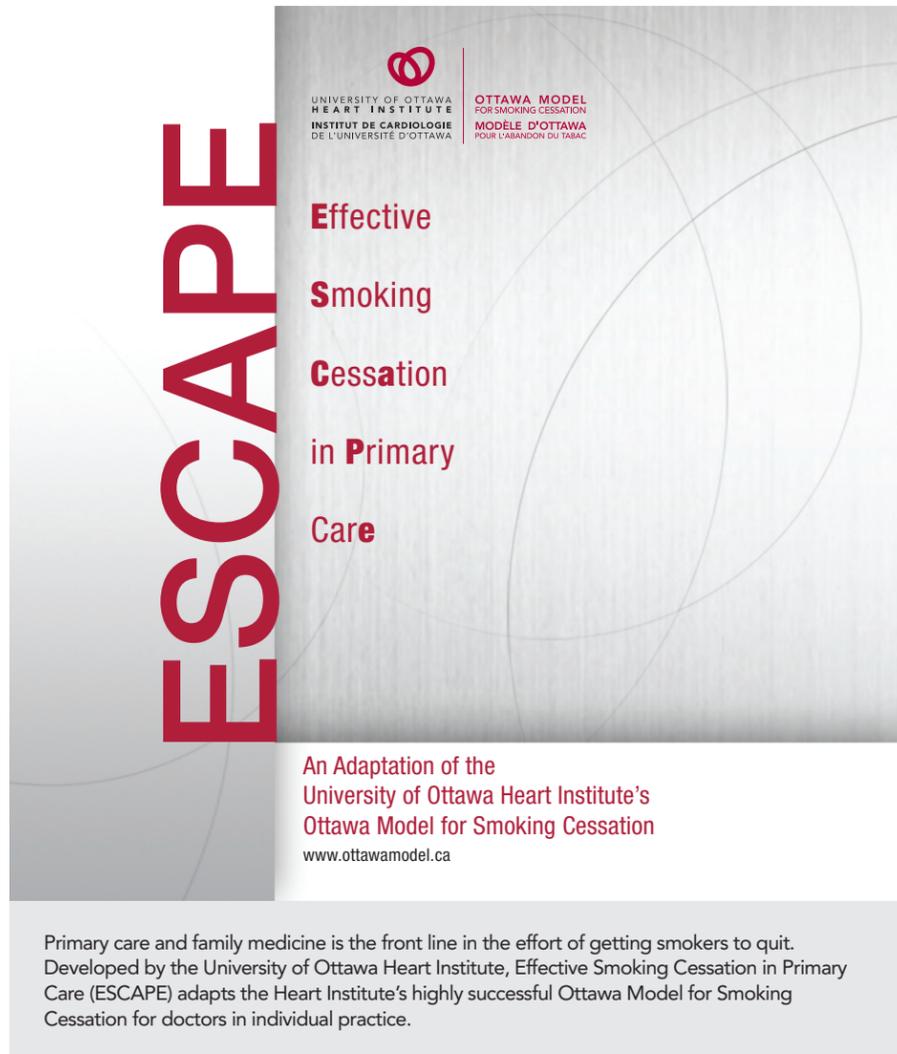
30 per cent. Since 2006, the Heart Institute has been involved in supporting the wider rollout of the model across Canada. To date, the Ottawa Model for Smoking Cessation Network has reached more than 50,000 smokers.

Word of the Ottawa Model's effectiveness soon spread to practitioners outside the hospital setting. "Around 2008, we began receiving calls from primary care and family doctors asking why we weren't working in the primary care setting," recounted Papadakis.

In response to this unmet need, the Heart Institute's Division of Prevention and Rehabilitation rolled out a pilot program called 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."



Primary care and family medicine is the front line in the effort of getting smokers to quit. Developed by the University of Ottawa Heart Institute, Effective Smoking Cessation in Primary Care (ESCAPE) adapts the Heart Institute's highly successful Ottawa Model for Smoking Cessation for doctors in individual practice.

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 our 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 counter-productive, of these is an underuse 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."

## 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 three *ps*" in all aspects of cardiology at the Heart Institute. "The first *p* is 'patients': I want to re-emphasize and encourage a patient-first culture. Any time we make a decision, we should always think first about what's best for our patients," he explained.

This approach encompasses everything the division does, he elaborated—not just everyday patient care, but educating

trainee cardiologists and others to be the next generation of cardiovascular care providers and conducting research that leads to new ways of understanding heart disease and treating patients.

The second *p* is "people." "I mean this broadly," said Dr. Beanlands. "In terms of the people in the Division of Cardiology, by advancing their academic and scholarly work and advancing their roles as members of the division and as leaders in the cardiovascular community. And I also mean the people we work with across the region to deliver the best care possible," he added.

That last emphasis leads to the third *p*: "partnerships." "Our partners include our nurses, the other divisions in the Heart Institute, The Ottawa Hospital, The University of Ottawa and our partners in our region, as well as other cardiovascular institutions across the country and

internationally. We want to nurture and build our partnerships and collaborations. Coordinated effort and shared investments can help get us where we want to go," he said.

To do so, Dr. Beanlands can draw on his leadership roles with other organizations and networks that include past President of the Canadian Nuclear Cardiology Society, Annual Meeting Chair for the Canadian Cardiovascular Society, incoming Deputy Chair of the Heart and Stroke Foundation Scientific Review Committee, and founding member of the national research collaborations Canadian Atherosclerosis Imaging Network and IMAGE-HF.

"In terms of early priorities, we will identify critical gaps to enhance our delivery of care," he explained. One goal will be to expand capabilities in treating heart failure,

## THE BEAT

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Dr. Rob Beanlands

*(Introducing the New Chief of Cardiology, continued)*

a condition expected to only increase in incidence as the Canadian population ages (see “Using the Right Tools to Manage Heart Failure” on page 4).

Doing so will potentially include recruiting additional physicians and encouraging heart failure research, an area that has been underdeveloped, in his opinion. Other areas for possible recruitment include imaging, echocardiography, electrophysiology interventional cardiology, vascular biology, and health economics.

In general, Dr. Beanlands believes the division needs to sharpen its focus on the translational potential of the research under way. “In the research realm, the move is toward patient-oriented research. That’s happening everywhere,” he said. “New ideas are great, but let’s get them applied. Where does what we’re doing actually fit into understanding disease in humans, and how do we use that to

enable new treatments that can improve care and outcomes? How can we do that more efficiently?”

Dr. Beanlands also wants to leverage the division’s outstanding residency and medical-student training into improving continuing medical education for its own physicians and physicians in the community. “The idea is to expand the education portfolio to be across the board, to take the excellence we have in the residency training program and the undergraduate training and expand that to be a continuum of education and lifelong learning,” he explained.

“We have good outreach, but we’re talking about reaching out even further; for example, we want to get family doctors educated to a certain level to manage heart failure and atrial fibrillation in the community. That’s the way care is moving, and the province is investing in improving care at the patient’s doorstep,” he added.

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

– Dr. Rob Beanlands,  
Chief of Cardiology, UOHI

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](http://www.ottawaheart.ca/thebeat)

- Learn more about Dr. Rob Beanlands
- Learn more about cardiology at the Heart Institute

## Introducing the New Chief of Cardiac Anesthesiology

To new cardiac anesthesiology 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.



Dr. Jean-Yves Dupuis

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.

“What’s interesting is that, despite the fact that patients are now sicker and older, our results have remained consistent in terms of outcomes and mortality,” he said. But

cares 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 nurses and physicians on the ward, to help them avoid patients “bouncing back” to intensive care.

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 improved documentation of critical and “near-miss” incidents in both the anesthesia and critical care medicine domains.

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# Using the Right Tools to Manage Heart Failure

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 of these can lead 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 behavioural 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 58 and 56 per cent, respectively. Patient education, critical for helping patients understand the medical rationale



Advanced practice nurse Christine Struthers (left) and cardiologist Dr. Lisa Marie Mielniczuk work daily with heart failure patients at the University of Ottawa Heart Institute. The Heart Institute has a comprehensive range of treatments available, including standard medications, implantable devices, patient education and lifestyle counseling, and telehome monitoring.

for their sometimes grueling medication regimens and lifestyle changes, reduces the risk of death by 27 per cent.

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

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(Introducing the New Chief of Cardiac Anesthesiology, continued)

Dr. Dupuis stressed that *incidents* should not be confused with *errors*. "Incidents are not always a result of mistakes—a patient can have major complications when nothing was done wrong. It can happen when we follow state-of-the-art practice, but it may be that state-of-the-art practice needs to be improved," he explained. "And we can't improve practice unless we have thorough knowledge of our outcomes." He plans a yearly quality improvement project for both anesthesia and critical care that will focus on internal documentation, reducing post-operative infection rates and shortening stays in the CSICU.

Interesting new challenges are also being posed by the development of minimally invasive cardiac procedures that require adaptation of traditional anesthesia protocols. Percutaneous valve replacements taking place in the catheterization lab are bridging the worlds of cardiac surgery and interventional cardiology.

The division's wide experience in anesthesia has even led other specialties to seek out its support. For example, a group of neurosurgeons from The Ottawa Hospital requested the division's help with an experimental procedure to clip a giant brain aneurism. The procedure required a complex combination of anesthesia, life support and monitoring called deep hypothermic circulatory arrest, which the division's staff has performed for complex cardiac procedures.

"We may have to expand our role and go to other sites to help people do this, because we are the only group [in Ottawa] with

experience in cardiopulmonary bypass and complex heart monitoring," explained Dr. Dupuis.

Another major objective for Dr. Dupuis is to revive Cardiac Anesthesiology's research productivity. The research program was impacted by the recent retirement of its longtime lead, Dr. Howard Nathan, and by

She will be joined by Dr. Christopher Hudson, who is also completing a master's degree in epidemiology and will focus his future research on epidemiological outcome studies related to the division's practice.

Like all research at the Heart Institute, these efforts are tied to improving pa-

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 thought 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." 

**"The quality of the care provided here is quite exceptional, and we have truly exceptional people working here. The Heart Institute is unique because we all have the same goals and we work as a family."**

— Dr. Jean-Yves Dupuis,  
Chief of Cardiac Anesthesiology, UOHI

a general time crunch that has kept staff members—all of whom actively participate in research—busy in the clinic.

The division has responded by expanding its personnel, recruiting Dr. Diem Tran, a former cardiac anesthesia resident at the Heart Institute who has been pursuing a master's in clinical epidemiology with Dr. George Wells, in the Research Methods Centre, to co-lead future research efforts.

patient care and advancing cardiovascular medicine. For example, Dr. Hudson has begun a study of more than 15,000 cardiac patients, looking at how certain aspects of the practice of anesthesiology may be associated with poorer outcomes and how the Heart Institute can modify its current practice to get better results. The division will also continue existing research efforts in the areas of transesophageal echocardiography and

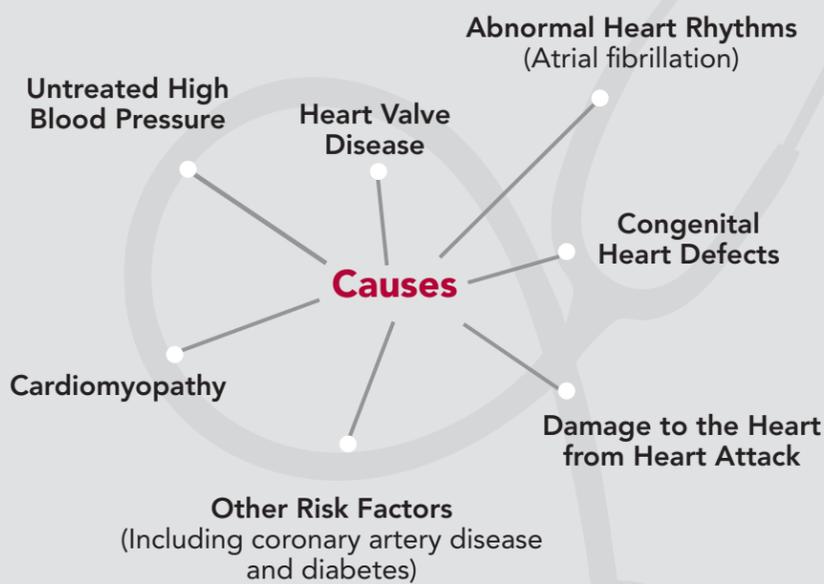
## MORE INFORMATION ONLINE

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- Learn more about Dr. Jean-Yves Dupuis
- Learn more about cardiac anesthesiology at the Heart Institute

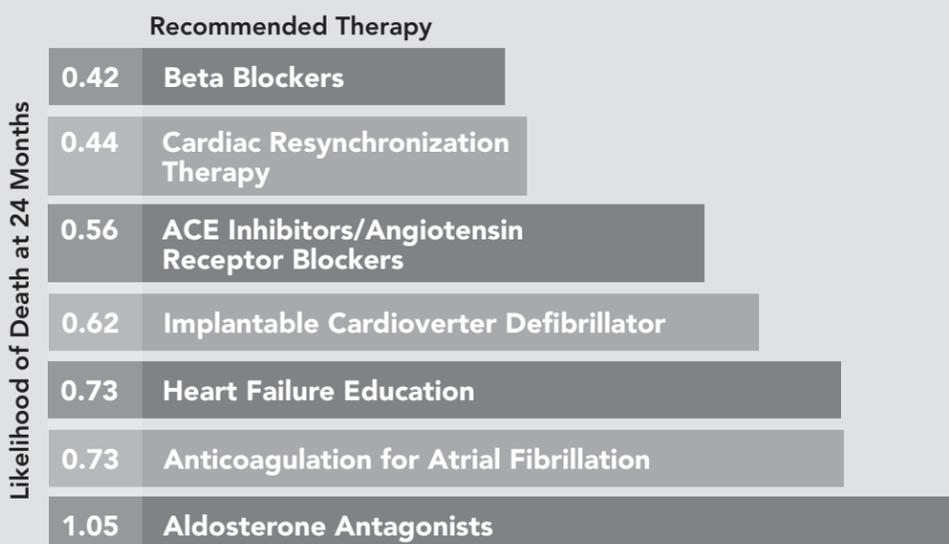
## Heart Failure Facts

Heart failure is a progressive condition in which the heart does not pump as strongly as necessary to supply blood and oxygen to the rest of the body.



### Impact of Guideline Recommended Therapies

Combinations of these therapies showed additional benefits



(Findings from the IMPROVE-HF Trial)

### Common Medications

#### ACE Inhibitors/Angiotensin Receptor Blockers

- Relax and widen blood vessels
- Reduce the work of the heart
- Block stress hormones that cause the heart to change shape and become weak

#### Beta Blockers

- Block stress hormones (as above)
- Relax the heart and slow the heart rate

#### Aldosterone Antagonists

- Block stress hormones (as above)

#### Anticoagulation for Atrial Fibrillation

- Helps prevent the formation of blood clots in the arteries

#### Diuretics

- Increase removal of water and sodium (salt) from the body

#### Digitalis

- Improves the symptoms of heart failure

### Implantable Devices

#### Cardiac Resynchronization Therapy

- Uses electronic impulses to stimulate and coordinate the heart to beat in sync

#### Implantable Cardioverter Defibrillator

- Continuously monitors the heartbeat and delivers an electrical shock to restore normal rhythms

### Managing Heart Failure

In most cases, there is no cure for heart failure and the condition can become progressively worse. This makes careful management all the more important, including:

- Developing a collaborative approach between the doctor and the patient and caregivers
- Taking all prescribed medications regularly
- Sticking to lifestyle changes, such as dietary restrictions and physical activity plans

(Using the Right Tools to Manage Heart Failure, continued)

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 point to the importance of disease management programs, like our Heart Function Clinic and Telehome Monitoring, for patient survival. These are

“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

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.

“Community physicians should take away from this study that evidence-based therapy works in the real world, and their patients

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*(Using the Right Tools to Manage Heart Failure, continued)*

should be on those therapies. They should also be aware that referring advanced heart failure patients to monitoring programs such as those at the Heart Institute, can help them not just with their morbidity but their mortality as well,” said Dr. Mielniczuk.

Some misunderstandings about best practices for heart failure still exist in the community, added Christine Struthers, the advanced practice nurse for the Cardiac Telehealth program. “In the last 10 to 15 years, the big changes in managing heart failure have to do with finally having medications that are now known to work. We never had these before. So the need for education that’s related to those medications is huge. Beta blockers are now known to be the medication that really improves heart function and survival, but in the past, people thought that beta blockers couldn’t be given to heart failure patients. We still have to reassure some people that it’s OK,” she said.

### Empowering the Patient

Also, heart failure patients need to be taught how to be their own advocates and caretakers to prevent the unnecessary worsening of their conditions and expensive hospital readmissions. “It’s very important to empower patients so they understand why they’re taking their drugs, in a way that relates to their heart function—what actions those drugs have on the heart,” explained Struthers. “I think that’s the only way to ensure safety and ensure that patients participate in their care—to really empower them to know what medications they’re taking and why.”

A lot of misunderstanding exists about how heart failure medication works, she added. For example, patients often think that any increase in dosage means their condition is getting worse. But beta blockers have to be started at a low dose and slowly increased over time. “During that period, it’s normal for patients to feel worse than they will in the long run,” explained Struthers. “They have to be educated to expect that, or they’ll stop taking the drugs.”

Equally important to having patients understand why their medications will help is having them understand and undertake the lifestyle changes needed to manage their disease—restrictions on salt and fluid intake, increased daily activity, and an awareness of their symptoms, meaning what is normal and what is a sign of danger, said Dr. Mielniczuk.

“Medication education and self-care education both have to be done. One without the other doesn’t work very well,” agreed Struthers. And both together work very well, reflected in the nearly 30 per cent decrease in the risk of death with education alone seen in the IMPROVE-HF.

As Struthers recounted, the clinic recently counseled a heart failure patient by phone, and he managed to lose 7 pounds of retained fluid. “He now feels great. Before talking to us, he had no idea what salt did, had no idea that he couldn’t drink an unlimited amount of fluid. Education alone had a huge impact—he did really well because of self-care.”

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

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- Learn more about heart failure
- Read about the Heart Function Clinic

## 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.



### COLLABORATION IN FAST-GROWING NATIONS

## 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 within the technique. A technique 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, of Staten 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).

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

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.

While an earlier version of MICS CABG did not perfectly replicate the results of the standard surgery, improvements over the past seven years have produced a minimally invasive technique that allows

for blood-vessel grafting identical to that seen with more-invasive surgery.

Dr. Ruel is now helping build a community of practice for the new procedure. Currently, he said, only about a dozen

*(continued on page 7)*



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

surgeons worldwide, trained by himself or Dr. McGinn, perform the technique on a regular basis. (While safe and effective,

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.

## A Great Burden of Coronary Artery Disease

The surgeons of STAR Hospitals in India directly reached out to Dr. Ruel about the possibility of his travelling to India to perform a series of instructional seminars. The hope was to allow the maximum number of interested doctors to be trained at once instead of sending just a few to Canada for training.

"India has a great burden of coronary artery disease, largely due to genetic factors," explained Dr. Ruel. "It's estimated that the country could harbor up to one-third of the world's coronary disease. So cardiac surgeons there are very skilled, very innovative." For most Indian patients, he added, coronary artery bypass grafting is often a favoured alternative over stenting, because grafting is more durable—only 25 per cent of patients undergoing grafting eventually need another operation. While stenting is a standard approach in developed countries, it has a higher rate of reintervention and requires that patients take drugs daily to help keep their stents open. These ongoing patient management concerns are more difficult to deal with in the Indian setting.

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.

So 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.

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### COLLABORATION IN FAST-GROWING NATIONS

## 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 Méditerranée 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



**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

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 Ottawa 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 Labinaz, 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 year five, 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.

"This is the start of a very strong collaboration between a leading institution in Canada and a very promising centre in Qingdao," continued Dr. Mesana. "I think it magnifies the international aspect of the Heart Institute."

"We already have international collaborations—we exchange science with our U.S. colleagues, our European colleagues, but if we want to expand the reputation of the Heart Institute, to me, China is the first country to do that with because I think it's a new epicentre of the world," he concluded.

## A Quarter-Century of Recognizing Research Excellence



Participants at the University of Ottawa Heart Institute's 25th Annual Research Day attend a research presentation. The program included more than 75 presentations in the categories of basic science, clinical science, and allied and population health.

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 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

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).

### MORE INFORMATION ONLINE

Links in the electronic edition at [www.ottawaheart.ca/thebeat](http://www.ottawaheart.ca/thebeat)

- Learn more about Research Day
- Learn more about research at the Heart Institute

## 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 of the trial were published in *The Lancet* on May 5, 2012 (Volume 379, Issue 9827).

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.

### MORE INFORMATION ONLINE

Links in the electronic edition at [www.ottawaheart.ca/thebeat](http://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*

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

"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.

### Fast Learners

During his five-day tour, Dr. Ruel trained surgeons at five hospitals in three cities: Indore and Nagpur (where he taught at three hospitals), both in central India, 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 Mannam, 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 concentration 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. "[Traditional] 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'; this 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."