



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

## HIGHLIGHTS

“It is a thrill to see former heart attack patients walking into rehabilitation groups.”

– Dr. Donald Beanlands,  
founding Chief of Cardiology, UOHI  
(from *A Living Legend Leaves  
for Retirement*, pages 1–3)

Both micro-array technology and genomics, which are increasingly being used in submissions for novel drug applications, are so new that uniform standards and quality measures don't exist.

(from *UOHI Helps Set  
Regulatory Standards for  
U.S. Genetic Research*, page 3)

“Unless prevention is stepped up, the demands of this generation on the cardiovascular health care system may prove overwhelming.”

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UOHI Minto Prevention and  
Rehabilitation Centre  
(from *All in the Family: Heart Institute  
Screens Siblings and Offspring for  
Coronary Risk*, page 4)

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(from *Canada's Sole Atrial Fibrillation  
Program Partners with Leading  
U.S. Cardiac Researchers*, page 6)



Cardiac surgeon Dr. Khanh Lam, Director, Heart Institute Valve Clinic, prepares a patient for a new procedure to permanently treat atrial fibrillation. The Heart Institute is Canada's only dedicated surgical and catheterization ablation centre.

## A Living Legend Leaves for Retirement

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### Dr. Donald Beanlands Trades His Lab Coat for a Fishing Rod

When fishing season ends later this year, Dr. Donald Beanlands will likely begin his first full winter in retirement by thinking about what to write. He's not quite set on a specific subject for a book, but for certain Dr. Beanlands has much to share about cardiac medicine since he first began practising in 1958.

As the founding Chief of Cardiology for the University of Ottawa Heart Institute, Dr. Beanlands first arrived in 1975 even while the building was still under construction. In taking on the position formally in 1977 after the Heart Institute opened its front doors, Dr. Beanlands presided over a golden age of growth in clinical care and training as the Institute itself grew in size and stature. “I wanted to make the Heart Institute one of the top institutions in the country. I think we have succeeded.”



Dr. Donald S. Beanlands, founding Chief of Cardiology of the Heart Institute, leaves an impressive legacy for Canadian medicine founded on leadership, mentoring and an extraordinary devotion to patient care. He is hanging up his lab coat after 50 years in practice.

(continued on page 2)

*(A Living Legend Leaves for Retirement, continued)*

Modern cardiology was already part of the medical landscape by the 1950s, and beginning as Chief of Cardiology at Toronto Western Hospital, which he joined in 1962, Dr. Beanlands surveys the dramatic shift in both the survival of heart patients and advances in medical technology since the early days. He recounts the story of using brand new equipment, now known as a defibrillator, to apply a shock to the heart of a young woman who was dying in the Toronto emergency ward. “I remember the first time I used a cardioverter for atrial fibrillation. Before I gave her the first shock, I had to get the brand new equipment out of the box because it had just arrived.”

Today, the Heart Institute is known nationally for its comprehensive atrial fibrillation (AF) program, which includes genetic research into the causes of AF and Canada’s first advanced remote-control cardiac mapping and ablation centre for the treatment of cardiac arrhythmia.

“The treatment for AF is still a challenge, but it certainly has advanced and will continue to do so. That and genetics are where the advances are going to be in cardiology over the next 10 years,” says Dr. Beanlands.

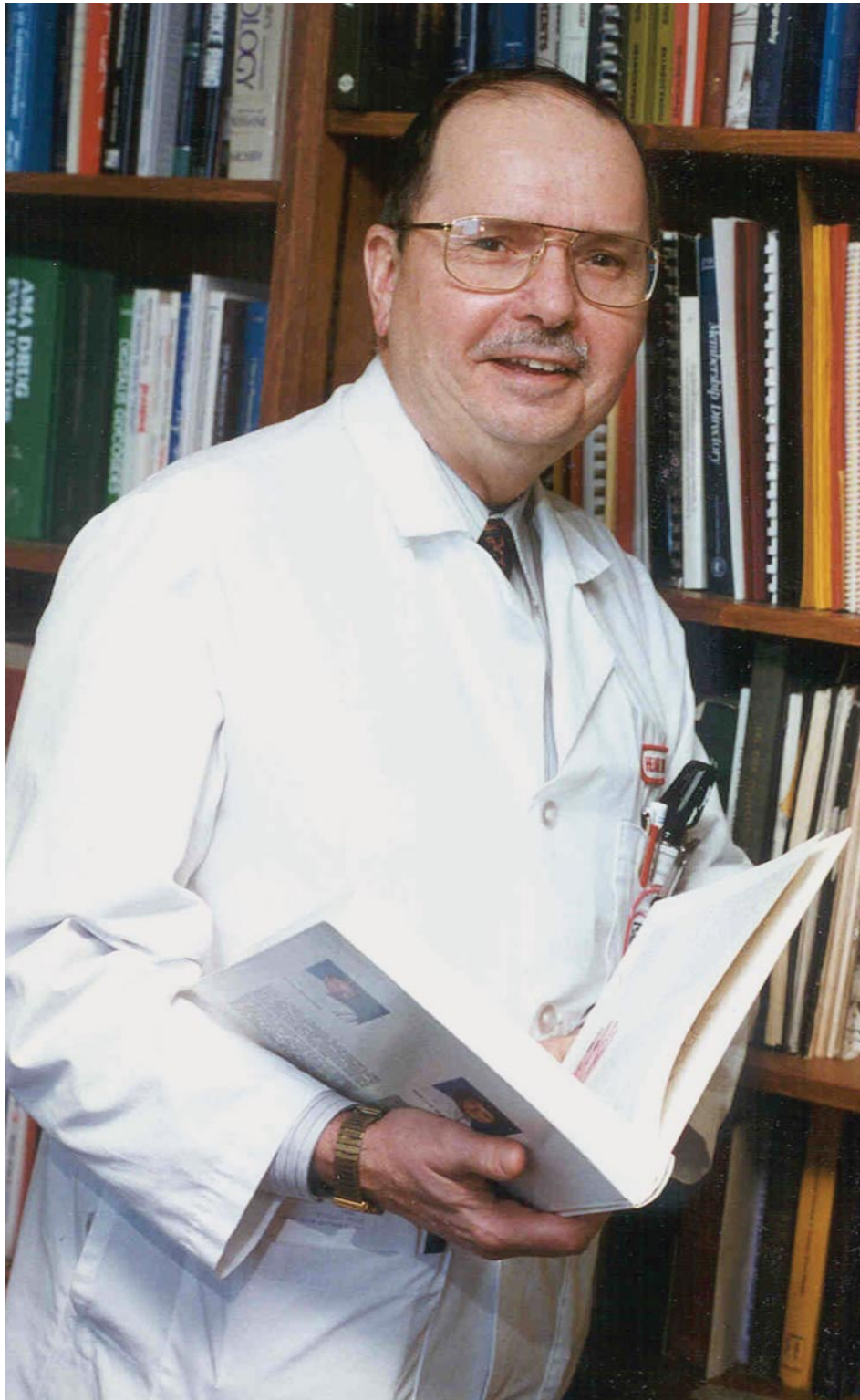
Throughout his career, Dr. Beanlands led national and international training programs at the Heart Institute. He is the past Director of what is regarded as one of the best postgraduate training programs in the country for young cardiologists. Physicians from across Canada and many from around the world are trained in all aspects of cardiology at the Heart Institute. Known for his devotion to patients, his hallmark method of clinical care has been a quiet but firm bedside manner that connotes a very special kind of physician and teacher. His former cardiology students populate cardiac facilities across the country today as leaders and mentors in their own right.

“Simply put, Don Beanlands is the greatest leader I’ve ever encountered,” says Dr. Lyall Higginson, President of the Canadian Cardiovascular Society and a former Chief of Cardiology at the Heart Institute. “Don built cardiology at the University of Ottawa Heart Institute from a small community practice-oriented group to the best teaching division in the country. He did this by example.”

“Everyone has at least one hero and I’ve had several, but Don Beanlands is definitely in the top three or four on my list. Many times in my leadership career, I’ve considered various options but have gone with the one that seems most likely to answer to: what would Don S. Beanlands do? I feel very fortunate to have spent almost all of my career working with Don as a leader, teacher and friend.”

Dr. Beanlands has been an investigator in more than 50 research studies and published more than 100 articles. His work has included treatment of heart attack, the use of thrombolytics – known as clot-busting drugs to open blood vessels to the heart – and the successful effect of coronary bypass surgery following a heart attack. His efforts from the 1980s paved the way to a strong research focus at the Heart Institute towards reducing mortality among heart attack patients.

Today, the Heart Institute employs an advanced emergency protocol that has



Dr. Donald S. Beanlands, former Chief of Cardiology for 19 years at the Heart Institute, in the early years. He arrived while the Institute was still under construction and soon began building the top cardiology and teaching division, attracting top students from across Canada and around the world.

In October 2004, Dr. Beanlands was honoured in the Ontario Legislative Assembly by John R. Baird, a former Conservative MPP for Nepean-Carleton who later joined the House of Commons as an MP and cabinet minister in the government of Prime Minister Stephen Harper. These were his comments:

“It is a great pleasure for me to rise and congratulate Dr. Don Beanlands of Ottawa. The University of Ottawa Heart Institute recently named a new centre in honour of Dr. Don Beanlands. On September 29, the Heart Institute officially opened the Donald S. Beanlands Ambulatory Care Centre, a modern centre that receives more than 20,000 patients each year and where Dr. Beanlands spends much of his time.

“Dr. Beanlands has been with the Heart Institute since the beginning. The exemplary care for which the Institute is known is due in no small part to his remarkable leadership. His commitment to his patients is always well above and beyond the call of duty. His role as a teacher and a mentor is indeed unmatched.

“Dr. Beanlands is someone who is loved and respected and admired by patients, by colleagues and by students. He is regarded as the soul of the Heart Institute, and his extraordinary legacy after 29 years will remain and be celebrated by the Donald S. Beanlands Ambulatory Care Centre.

“I have had the pleasure of working with Dr. Beanlands on a number of issues with respect to cardiac care in Eastern Ontario, and I can think of no greater honour for him than to have this ambulatory care centre named in his honour. This is a man who is a great humanitarian, someone who could have earned great dollars south of the border, but someone who chose, with Dr. Wilbert Keon, to help build one of the most world-class cardiac care facilities in North America, and we are very lucky to have him as a dedicated member of our community.”

significantly reduced the death rate of heart attack patients. People in the Ottawa region who call 911 with chest pain are diagnosed by advanced care paramedics trained to identify ST-Elevation Myocardial Infarction (STEMI), a major form of heart attack. The advanced care paramedics then route patients directly to the Heart Institute, bypassing local emergency departments, and into the hands of an emergency STEMI team, available 24/7.

“It is a thrill to see former heart attack patients walking into rehabilitation groups,” says Dr. Beanlands. “When I started in 1958, mortality from a heart attack was 45 per cent and we had no treatment. A surviving patient stayed in hospital for six weeks. It is now 3 or 4 per cent at the Heart Institute and a patient is out of hospital in a couple of days.”

Dr. Beanlands was also the first Heart Institute cardiologist to begin seeing patients on Baffin Island, where he used the regular trips to the Far North as a training ground for senior medical residents. “This is a slightly different kind of medicine because we rely less on technology and more on medical skill,” he once explained. Twice a year, a Heart Institute team flies more than 2,000 kilometres north to Iqaluit to set up a clinic for hundreds of patients. Dr. Beanlands recalls first moving the echocardiograph machine to the North. “We took the echo machine on our flight as a passenger because it was cheaper than flying it as freight.”

Throughout his career, Dr. Beanlands has received numerous awards, including the title of Living Legend in 2006 by the World Society of Cardio-Thoracic Surgeons, and also in 2006, the Lifetime Achievement in Cardiovascular Sciences from the International Academy of Cardiovascular Sciences.

Dr. Robert Roberts, President and CEO, UOHI, has his own personal description of a physician who helped carve the path that allows the Heart Institute today to continue building on the mentorship and leadership demonstrated by Dr. Beanlands. “His pioneering spirit brought us to the doorstep of a new era in cardiac care. By establishing a gold standard at the Heart Institute in clinical care and education, Dr. Beanlands has given us the best possible tools so that we can move forward and to find the cures that will someday defeat heart disease.”

Dr. Beanlands surveys the field of cardiac medicine and talks about some of the greatest advances. Among them are the three major classes of drugs: thrombolytics for heart attack patients, ACE inhibitors for heart failure, and the cholesterol-lowering statins.

“Technology is advancing rapidly in surgery – now valves can be replaced without cutting the sternum wide open. As the population ages, aortic valve disease is becoming a major problem. More people in their 80s who are otherwise healthy will need aortic valve replacements.”

As for the Heart Institute, Dr. Beanlands notes the new initiatives underway under the direction of Dr. Roberts. “We had to develop a strong clinical program and a strong training program early on, but Dr. Roberts has improved our research capacity dramatically and now our

**"His pioneering spirit brought us to the doorstep of a new era in cardiac care."**

– Dr. Robert Roberts, President and CEO, UOHI

medical researchers are successful in obtaining grants that go beyond the national average."

The Heart Institute has nearly 200 new and ongoing research projects underway by physicians, nurses and scientists who are investigating the implications, causes and influences of heart disease. Some 175 staff are currently involved in 13 separate research groups. The Heart Institute has 62,000 square feet of laboratory space dedicated to research. This includes the Ruddy Canadian Cardiovascular Genetics Centre, where researchers are conducting a range of high-profile studies to unravel the causes of heart disease.

"Heart disease doesn't have the same impact as many other chronic diseases," says Dr. Beanlands. "A lot of people who have heart disease die suddenly. For many people, it simply kills them without an apparent warning, and we don't altogether understand the causes yet."

Research, care and education will continue for the foreseeable future at the Heart Institute, guided by the spirit and dedication of a man whose energy and passion defined the very nature of cardiovascular care in Canada. ❧

## City of Ottawa Proclaims Dr. Donald S. Beanlands Day

*Whereas*, great leadership inspires great leaders, and the City of Ottawa has been graced by the presence of a remarkable physician and teacher in Dr. Donald Beanlands; and

*Whereas*, for 30 years Dr. Beanlands has served as the soul of the University of Ottawa Heart Institute, the man who helped found the Heart Institute and built the practice of cardiology, influencing many cardiologists from across Canada and around the world; and

*Whereas*, Dr. Beanlands is admired and respected by his patients, colleagues, students and peers, and that the entire community celebrate his legacy on his retirement from the Heart Institute;

*Therefore*, I Larry O'Brien, Mayor of the City of Ottawa, do hereby proclaim May 1, 2008, as Dr. Donald S. Beanlands Day in the City of Ottawa. ❧

## UOHI Helps Set Regulatory Standards for U.S. Genetic Research

The University of Ottawa Heart Institute has joined an influential circle of research organizations established to help set regulatory standards and guidelines that will govern how genomic information will be evaluated in the United States.

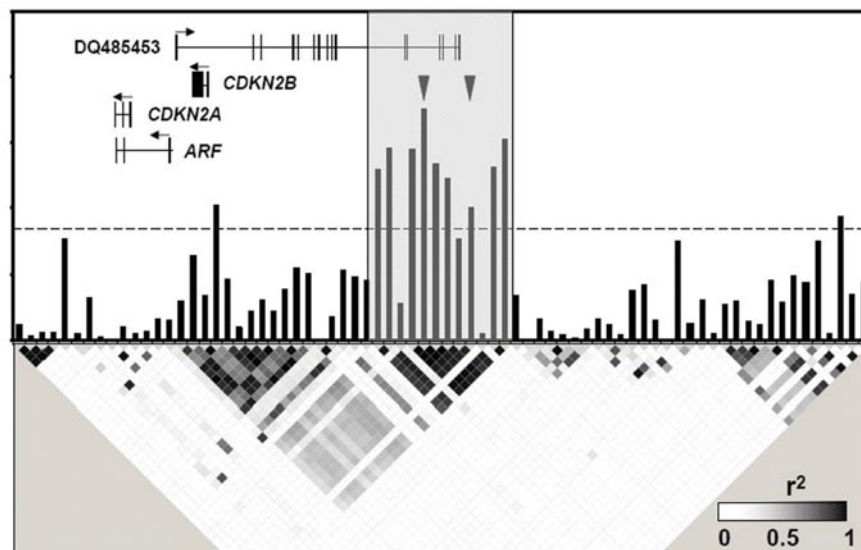
Genes influence a person's susceptibility to disease. Understanding genetic factors has become essential to understanding the development, progression and outcome of many diseases.

In genomic research, computer chip technology is so advanced that it can measure data on 1.8 million DNA markers simultaneously. This micro-array technology is important because scientists can compare massive amounts of information in different cell types such as healthy and diseased tissues.

Heart Institute scientists are applying these advanced tools to scan the 30 billion letters of genetic code in search of the causes of heart disease. Researchers are comparing the genetic information from people with heart disease with data from people who have no symptoms of heart disease. "This a diagnostic and predictive tool that will revolutionize medicine," says Alexandre Stewart, PhD, Principal Investigator, at the Heart Institute's Ruddy Canadian Cardiovascular Genetics Centre.

In May 2007, Heart Institute researchers identified a stretch of DNA code that is associated with increased risk for heart disease. Their results, published in *Science* (2007: 316, 1488), found that people who carry two copies of a genetic variant – about 25 per cent of the population – were twice as likely to get heart disease.

The study of gene sequences – being able to read and interpret them – is called genomics and is the basis of a revolution in medicine, particularly cardiac medicine. Both micro-array technology and genomics, which are increasingly being used in submissions for novel drug



The enlarged area at the top shows data from a stretch of DNA that stands out as part of detailed genetic information on a computer chip. Micro-array technology is important because scientists can compare massive amounts of information in different cell types such as healthy and diseased tissues.

applications, are so new that uniform standards and quality measures don't exist.

The United States Food and Drug Administration, where drug applications must be approved before they are allowed on the consumer market, has established a MicroArray Quality Consortium (MAQC). Comprising researchers from government, industry and academia, this elite group will assess key factors that may cause discrepancies in micro-array data. Ultimately, this group will define a set of standards and guidelines that govern how genomic information can be evaluated as it is included in drug submissions.

The Heart Institute's Genetics Centre is the only one of its kind in Canada dedicated to heart disease, and one of only a handful in the world. "As a result of research initiatives at the Heart Institute, scientists will soon have the capacity to isolate, interpret and target the precise genetic activity that causes coronary artery disease. We were asked to join MAQC because of our unique abilities and the quality of our research," says Dr. Robert Roberts, President and CEO of

the Heart Institute, and Director of the Ruddy Genetics Centre.

Before 2004, genomic information was generally absent from drug applications. But advanced technology has opened the door to large-scale DNA scanning, such as the work conducted by the Heart Institute.

Genomic data is the foundation of another new branch of medicine: pharmacogenomics, which will enable physicians to prescribe personalized treatment for complex diseases before any symptoms ever appear. Genetic screening will reveal whether people will respond to specific drugs, which will be targeted specifically to offset a genetic variation.

"Genomic screening is a developing field, so the methods and technologies are developing with it," says Stewart. "Even data from three years ago isn't as good as what we have today. We're involved in MAQC to make sure that our results meet the standard we're setting for genome-wide association studies and quality data reporting." ❧

### Members of the MAQC include:

- National Cancer Institute
- Ohio Medical University
- University of Alabama
- University of Texas Southwestern Medical Centre
- University of Texas at Dallas
- University of Massachusetts
- University of Ottawa Heart Institute
- M.D. Anderson Cancer Center
- The Hamner Institutes for Health Research
- Affymetrix
- Eppendorf Technology
- Applied Biosystems
- GenUs BioSystems
- GE Healthcare
- Biogen Idec.
- Luminex

# All in the Family: Heart Institute Screens Siblings and Offspring for Coronary Risk

Siblings, children and spouses of former patients at the University of Ottawa Heart Institute are being screened for new research to reduce coronary risk among family members.

An earlier study by the Heart Institute showed that nearly half of family members themselves were at moderate to high risk for developing heart disease. “Family members of patients with Coronary Artery Disease (CAD) may themselves be at increased risk for genetic, biochemical and behavioural reasons,” says Robert Reid, PhD, Associate Director, UOHI Minto Prevention and Rehabilitation Centre.

“The people at most direct risk are siblings of patients because they are generally of the same age group. Surprisingly, we found in our pilot study that across siblings, offspring and spouses, the risks are very, very similar.”

Spouses, for example, would share similar lifestyles. Smoking, nutrition, exercise and levels of obesity would be very similar between two people living together in the same household, says Reid.

Researchers at the Heart Institute found in an earlier study that family members were at risk for future CAD. Research also found that close family showed a willingness to change habits and lifestyle in areas such as smoking and physical activity.

Canadian guidelines for the prevention of cardiovascular disease recommend screening for people with a family history of heart disease. Yet there have been few reported efforts in Canada to systematically screen and counsel family members of patients with CAD. Success in prevention and early screening is especially important, says Reid. “Unless prevention is stepped up, the demands of this generation on the cardiovascular health care system may prove overwhelming. Hospitalization of patients with heart disease may provide an opportunity to identify and intervene to

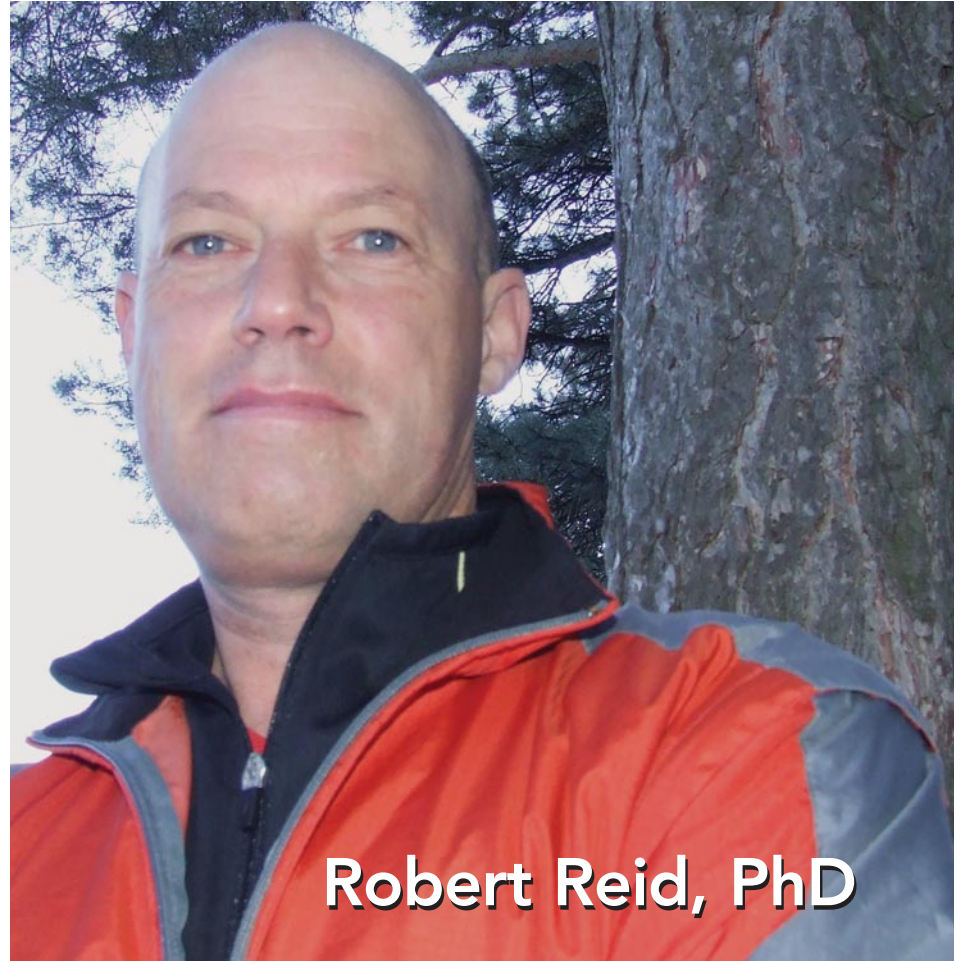
rescue cardiovascular risk among family members of these patients.”

The Heart Institute’s Family Heart Health Study is recruiting 450 family members to screen by creating a heart health profile. Participants are randomly assigned to one of two groups at the Heart Institute: a Family Heart Health group, or a Usual Care group. For the Family Heart Health group, an adviser will construct a 12-week personalized plan that could include weight reduction, improved nutrition, smoking cessation, an exercise routine, and, if necessary, a drug regimen in collaboration with the family physician.

Each participant receives a basic assessment that includes a complete medical history; an evaluation about nutrition, exercise and smoking, for example; and a health profile involving components such as blood pressure and waist circumference. The study will track all participants for a one-year period, from their time of enrolment. Both groups will be reassessed at 12 weeks and 52 weeks.

Participants in the Family Heart Health group get a personalized plan with weekly coaching sessions and counselling. Smoking, dietary changes, exercise and medication use, for instance, will be measured and monitored throughout the study. The Usual Care group will receive heart health information but not any further intervention. If any risk factors such as high blood pressure or elevated cholesterol levels are found, participants will receive the results in a letter for their family physician.

Coronary Artery Disease, a leading cause of death in Canada, is related to the presence of several well-known risk factors including family history. Changes in lifestyle and other risks have helped lower death rates from heart disease over the last few decades. 🌀



Robert Reid, PhD

*“There is a lot of work in research and it is certainly not all glamorous. Most behavioural studies take several years to complete, but at the same time they give you a chance to be very creative, to work directly with people, and to create real change in the way we deliver health services.”*

- Associate Director, Minto Prevention and Rehabilitation Centre, University of Ottawa Heart Institute
- Associate Professor, Faculty of Medicine, University of Ottawa
- Past recipient, Heart and Stroke Foundation of Canada’s New Investigator Award
- 2006 winner, James Hogg Award, Canadian Institutes of Health Research Institute for Circulatory and Respiratory Health, in honour of his contributions to clinical and population health research
- BSc (Kinesiology), MSc (Exercise Physiology), MBA (Social Marketing), PhD (Health Studies)
- Research interests: health behaviour change, particularly smoking cessation, physical activity promotion and cardiovascular rehabilitation 🌀

**“The people at most direct risk are siblings of patients because they are generally of the same age group.”**

– Robert Reid, PhD, Associate Director,  
UOHI Minto Prevention and Rehabilitation Centre

## Coronary Risk Runs Up and Down the Family Tree

Research by the Heart Institute shows 43 per cent of family members are themselves at moderate to high risk for developing heart disease over the next 10 years.

A study completed in 2007 of 300 family members of patients recently hospitalized at the Heart Institute formed the basis of the Family Heart Health research program. The study looked at medical information and lifestyle choices of siblings, offspring and spouses of former patients of the Heart Institute. It also provided an hour-long counselling session to direct participants to medical follow-up and community resources as appropriate. Among the results:

- Overall, 26 per cent of participants had blood lipid or blood pressure measures that were above normal values and should be treated by lifestyle change and or medication.
- Siblings (38 per cent) were more likely to have untreated risk factors than spouses (23 per cent) or children of patients (17 per cent).

- 8 per cent of participants did not have a family doctor.
- In the three months following the initial screening and counselling session, 32 per cent of participants saw their physicians for follow-up; however, new medical treatments were started in less than 2 per cent of the sample.
- At follow-up, participants had significantly increased their consumption of fruits and vegetables, as well as fish. Exercise and smoking habits were largely unchanged.

“One of the things we know in terms of long-term prevention is that lifestyle change needs to be linked to engagement with medical care and, in some cases, treatment. A program designed specifically for family members of patients can be a cost-effective way to identify people with treatable risk factors and link to effective risk factor modification,” says Robert Reid, PhD, principal investigator of the study. 🌿

## Personalized Exercise Goes Online for Heart Patients

Rehabilitation and fitness go hand in hand with medication when patients are discharged from the Heart Institute. But Institute researchers have found that less than half of former patients return for formal coaching and exercise therapy.

Some discharged patients live too far away and others would prefer to carry on exercising at home. So the Heart Institute created a web-based program for former patients to fill their exercise prescriptions closer to home. The online CardioFit program is an expert system that prescribes and tracks exercise for heart patients, creating a personalized exercise regime that is individually updated every two weeks.

“We wanted to look at new ways of reaching people that did not require them to come in but where they could get the same expert advice, follow-up and coaching using a different technique,” says Robert Reid, PhD, Associate Director, Minto Prevention and Rehabilitation Centre, UOHI.

The Rehab Centre gathers information about patients while in hospital, including their clinical background, past physical activity and motivation to be physically active. “All of those factors go into the creation of a personalized exercise plan,” explains Reid. Convalescence might be slightly longer for a patient who has had surgery or for someone who has experienced complications afterwards. A person who has been physically active in the past might progress more quickly.

Early research showed that 20 to 25 per cent of former patients turned out for formal cardiac rehabilitation, says Reid. “That number has improved over the years, up to 45 per cent over the last three or four years, because we have added some automatic referral processes for certain patients. Our staff is also active on

**“It is important to offer an alternative best suited to the individual and to work beyond that, integrating people back into the community as quickly as possible.”**

– Robert Reid, PhD, Associate Director, Minto Prevention and Rehabilitation Centre, UOHI

the floors, discussing rehabilitation with our patients and about various options for them.”

UOHI offers one of the most comprehensive Canadian hospital programs and conducts extensive research related to rehabilitation and prevention.

CardioFit was also created as a resource tool to share with other hospitals that are not equipped with cardiac rehabilitation programs. “They could install this and it would allow them to create customized plans for their patients as well,” Reid says.

Patients are given a secure log-in and password to the UOHI-based site where they can access CardioFit. On entry, patients are linked to their exercise plan and a coach, whom they can contact by email. Planned tutorials are completed as patients move from a generic exercise program to a more specific plan. They will also have access to a database of facilities based on their postal code, which will search all the activities nearest to their location with opportunities to remain active. These include community fitness facilities offering programs for patients with heart disease.

Patients also receive a customized report based on the exercise level advised by their physician at the Heart Institute. “So, rather than provide generic information, we can provide very personalized information that is unique to each individual,” says Reid.

As part of assessing CardioFit, Reid and his team have completed a randomized clinical study on the effectiveness of the web-based program. The Heart Institute recruited a total of 260 men and women who had been treated for heart disease but who were not planning to return for formal rehabilitation. Each was randomly assigned to either usual care – advice from his or her cardiologist – or use of the CardioFit program. The results are being analyzed.

“We’ve had to focus on efficiency by employing a variety of different ways to deliver rehabilitation and secondary prevention services,” says Reid. “It is important to offer an alternative best suited to the individual and to work beyond that, integrating people back into the community as quickly as possible.

“The value in providing alternative resources for patients is that the

treatment of heart disease continues to change. An example of something which has really changed our world in the last few years is angioplasty versus surgery. Angioplasty is a much less traumatic experience for a lot of patients, and that has had effects on the motivation our patients have to make the substantial life changes required. We are trying new ways to create motivation in patients and to assist them to improve their confidence and link them to facilities where they can stay physically active.”

Evidence of improved treatment is seen in the survivability of heart attack patients as a result of the Heart Institute’s successful STEMI program. People in the Ottawa region who call 911 with chest pain are 50 per cent less likely to die from a heart attack as a result of an advanced emergency protocol developed by the Heart Institute. The Heart Institute model trains advanced care paramedics to diagnose ST-Elevation Myocardial Infarction (STEMI), a major form of heart attack, and route patients directly to the Heart Institute, bypassing local emergency departments. An emergency STEMI team is available 24/7 to treat patients quickly – usually by performing an angioplasty and inserting a stent to open blood flow to the heart.

“Programs like STEMI have done a good job of preserving left ventricular function so patients regain their fitness more quickly than in the past. We can focus more attention then on lifestyle change and reducing other risk factors to prevent recurrence of heart attack,” says Reid.

“We are working to help people get back to what they were doing before. We want them back in the various roles they played in their life, whether it’s getting back to work, being a parent or a grandparent.” 🌿

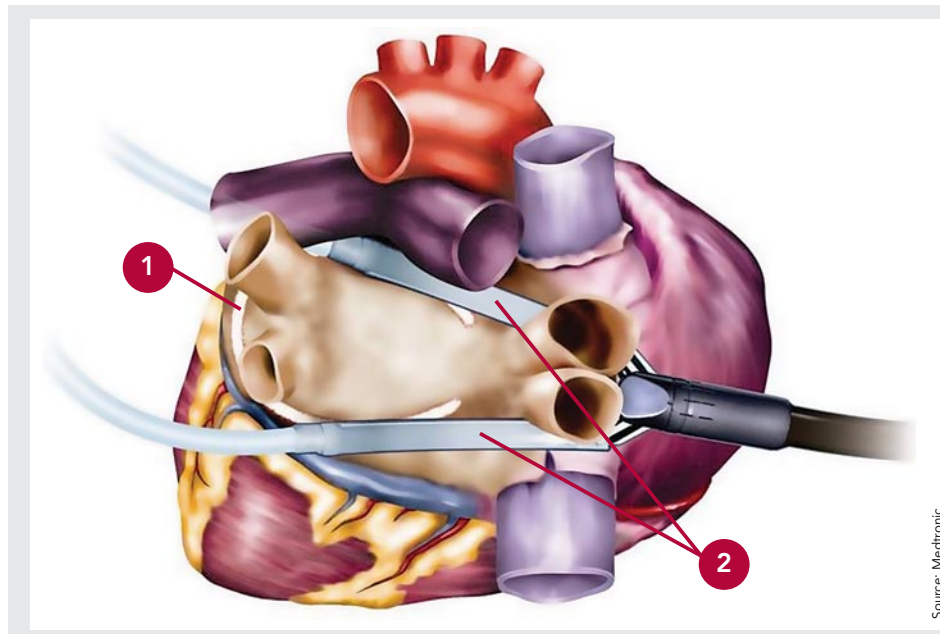
# Canada's Sole Atrial Fibrillation Program Partners with Leading U.S. Cardiac Researchers

Surgeons at the University of Ottawa Heart Institute (UOHI) have developed a highly successful minimally invasive procedure to permanently treat atrial fibrillation. The program, initiated in 2005 by Drs. Khanh Lam, Director, Valve Clinic, UOHI, and Thierry Mesana, Chief of Cardiac Surgery, employs bipolar radiofrequency ablation in which twin miniature fibre-optic cameras inserted on either side of the chest cavity guide the surgeon through the intricate procedure.

Atrial fibrillation (AF) is the most common form of irregular heartbeat, particularly in older patients, leading to hospital admission. Chronic AF is associated with heart failure and blood clots and increases the risk of stroke and death. With AF, many impulses begin and spread through the atria – the upper cavities of the heart. The resulting rhythm is disorganized, rapid and irregular, and the atria are not able to fully empty their contents into the ventricles. A person with AF will feel as though his or her heart is racing. Thousands of new AF cases in Canada are identified each year, and as the population continues to age, AF contributes to the growing cost of health care.

The thoroscopic surgical procedure is part of a much larger, comprehensive AF program at the Heart Institute that includes genetic research into the causes of AF and Canada's first advanced remote-control cardiac mapping and ablation centre for the treatment of cardiac arrhythmia.

Cardiac ablation uses an energy source such as radio frequency to destroy a small



Source: Medtronic

The illustration shows an ablation (in white) around part of the heart, with the two fibre-optic cameras (in light blue). The surgeon uses a radiofrequency energy source to prevent further heartbeat abnormalities.

1. The ablation, also known as a lesion, destroys a small area of the heart to prevent further irregular heartbeats.
2. Twin arms of the miniature fibre-optic cameras transmit real-time photos onto a video monitor.

area of the heart and prevent further arrhythmia. The procedure short-circuits troublesome nerve endings responsible

**“Right now there is no cure for patients who have had AF for a long time.”**

– Dr. Khanh Lam,  
Director, Valve Clinic, UOHI

for abnormalities in the heart's electrical impulses. The fibre-optic cameras used during a thoroscopic surgical procedure transmit real-time photos of the heart onto a video monitor, eliminating the need to carve open the breastbone to get a better view inside the chest cavity.

A Heart Institute study in collaboration with two cardiac care centres in the United States – Northwestern University and Texas-based Temple University – showed a better than 90 per cent success rate among patients who do not have permanent AF. With permanent AF, the rate is 70 to 75 per cent, still very high, says Dr. Lam. “We’ve been handling more challenging patients referred from cardiologists where success rates would be less than 50 per cent. We’ve been able to do this and achieve levels of 70 to 75 per cent, which is very good in this population of patients. From our standpoint, for patients who are only beginning early on with AF, we can successfully deal with this and with one surgical procedure.”

The study followed 100 patients operated on between February 2005 and

August 2007. The surgical procedure was performed on patients where other medical therapies, including drugs and catheter ablation, failed.

“AF has been a longstanding and increasing problem. Right now there is no cure for patients who have had AF for a long time,” says Dr. Lam. “The principle is the same as catheter ablation, but surgical ablation works from outside the heart while cardiologists perform ablation with a catheter inside.”

The surgical technique is both effective and efficient, he adds. “We wanted a strong atrial fibrillation focus group in the Heart Institute. That was three years ago, and it remains the only one in Canada.”

## UOHI GAP Tool Available on Demand as Education Tool

Details about a comprehensive and highly successful discharge checklist created for heart attack patients and patients with unstable angina at UOHI now is available on DVD for Canadian health care professionals.

The Heart Institute's Department of Clinical Services created the video, which explains how a formal discharge checklist works and how it benefits patients. The DVD is meant for physicians, nurses and other health care workers, especially those involved with heart patients suffering Acute Coronary Syndrome.

The formal checklist is a Heart Institute model adapted from the American Heart Association's Guidelines in Applied Practice (GAP). The goal in developing the discharge list was to fill the gap between best-practice guidelines for care and treatment of heart patients, and what patients actually get once they leave the Heart Institute.

Patients are sent home with a complete discharge list that includes appropriate prescriptions and medications. It also includes referrals and education about smoking cessation, exercise program and nutrition. The Heart Institute's modified GAP Tool essentially sends heart attack patients out the door with a specific directive for prescriptions, tests and counselling to ensure they can return to a higher quality of life sooner. Research shows that up to 20 per cent of patients do not follow guidelines, such as taking their medication.

The Heart Institute took an extra step, incorporating information from the patient's discharge into Canada's national Discharge Abstract Database (DAD). The data, which includes demographic, administrative and clinical information, is sent directly to the Canadian Institute for Health Information (CIHI). This is regarded as one of the health care system's most valuable devices to report hospital performance. CIHI's database serves many purposes, such as provision of provincial and national comparative summaries and analyses.

For more information about the Heart Institute's GAP Tool, contact Erika MacPhee (emacphee@ottawaheart.ca) or Sharon Ann Kearns (skearns@ottawaheart.ca) in the Department of Clinical Services.



Sharon Ann Kearns, Manager, Quality & Performance Measurement, holds the DVD that explains and demonstrates the benefits to patients, physicians, nurses and other health care workers of the comprehensive medical and lifestyle checklist for heart patients.