



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

Medical transportation costs for First Nations and Inuit health amounted to \$225.5 million in the 2005-2006 fiscal year.

(from *Trek to Baffin: UOHI Practises Cardiology in the Far North*, pages 1-2)

"It is critically important that we work collaboratively with these communities to help prevent the development of westernized cardiovascular disease – which was unheard of in the past."

– Dr. Lyall Higginson,
UOHI cardiologist
(from *Special Strategies for Aboriginal Cardiovascular Health: CSS President Speaks about the Challenge for Medicine*, page 3)

"Canadian researchers conduct high-quality research but they are constrained by inadequate research funding, especially in relation to international competitors."

– George Wells, PhD, clinical epidemiologist and chief biostatistician at UOHI
(from *Distinguished Disease Detective Helps Reshape Medical Care*, page 4)

"Our research is uncovering the genetic predisposition to heart disease so that we might soon be able to develop individually tailored treatments."

– Dr. Robert Roberts,
UOHI President and CEO
(from *Finding the First Path to a Heart Attack: Heart Institute Scientists Make Genetic Discovery*, page 5)



Inuit life on Baffin Island is very different from the early exploration when John White, a British gentleman, drew this portrait. He is considered the first English artist to draw the Inuit of Baffin Island, around the 1580s.

(Source: British Museum www.bmimages.com)

Trek to Baffin: UOHI Practises Cardiology in the Far North

A gentleman who became the first colonial governor of Virginia, John White was also the first English artist to draw the Inuit of Baffin Island – sometime around the 1580s, apparently during his travels with Martin Frobisher.¹

His portraits of the Inuit remain in the British Museum, as reminders of the many European myths that shaped the treatment of the Inuit people beginning nearly 400 years ago.

Today, the romance of the Far North is blurred somewhat by a new reality for the Inuit on Baffin Island. The giant northern island has served as a secondary outpost for a cardiology team from the University of Ottawa Heart Institute for the last 10 years. Twice a year, a Heart Institute team flies more than 2,000 kilometres northward to Iqaluit to set up clinic for hundreds of patients.

Dr. Donald Beanlands was the first UOHI cardiologist to see patients on Baffin

Island. The Heart Institute's founding chief of cardiology, Dr. Beanlands is renowned both for his clinical skills and dedication to education. "We also use the Baffin trip as a teaching experience," says Dr. Beanlands, speaking from his office at the Heart Institute. The UOHI team always includes a senior medical resident – a physician in training. "This is a slightly different kind of medicine because we rely less on technology and more on medical skill," says Dr. Beanlands.

Health care and other services for the North belong to a long, complicated piece of Canadian history dating to the 1950s when the federal government was intent on securing Canada's sovereignty in the Arctic.² As part of medical services to the Far North, nursing stations are located in larger communities and these are visited regularly by physicians from town hospitals in the North. Specialist services such as cardiology are provided through university-based hospitals in 'southern' cities such as Montreal,

Ottawa, Winnipeg and Edmonton.³ In the Eastern Arctic, cardiac care is provided by the Heart Institute in Ottawa.

"We see patients who will need pacemakers, artificial valves or who need ongoing surveillance," says UOHI cardiologist Dr. Bill Williams. "Clinic starts within hours of our arrival. We travel with a senior medical resident and an echocardiography technician."

An echocardiogram is a diagnostic ultrasound of the heart that draws a 2D image, providing information about filling and pumping activity of the different chambers of the heart, as well as the state of the heart valves. The equipment is set up the day before arrival and echocardiograms are conducted on site.

Selected patients are flown to Ottawa to deal with more acute problems, for more sophisticated diagnostic procedures such as an angiogram or surgery at the Heart Institute.

(continued on page 2)

IN THIS ISSUE

P. 1-2 Trek to Baffin: UOHI Practises Cardiology in the Far North

P. 3 Special Strategies for Aboriginal Cardiovascular Health: CSS President Speaks about the Challenge for Medicine

P. 4 Distinguished Disease Detective Helps Reshape Medical Care

P. 5 Finding the First Path to a Heart Attack: Heart Institute Scientists Make Genetic Discovery

P. 6 New Best Practice Tool Helps Women Quit Smoking

The Beat is published by the University of Ottawa Heart Institute (UOHI). Comments or questions about *The Beat* should be directed to Jacques Guerette, Vice President, Communications at 613-761-4850 or jguerette@ottawaheart.ca. For more information about UOHI, please visit www.ottawaheart.ca.

© 2007 University of Ottawa Heart Institute

¹ A New World: England's First View of America, British Museum, March-June 2007 Exhibition on the Work of John White, News Release, available online at http://www.thebritishmuseum.ac.uk/the_museum/news_and_debate/press_releases/2007/a_new_world.aspx.

² Robert McGhee, *The Last Imaginary Place: A Human History of the Arctic World* (Key Porter, Toronto, 2004), p. 102-121.

³ Palakkamanil Thomas, "Ambulatory Care North of 60 degrees North Latitude", *Journal of Ambulatory Care Management*, July 1993; Vol. 16; 3, p. 56-60.

(Trek to Baffin: UOHI Practises Cardiology in the Far North, continued)

Transportation costs are enormous and represent the single largest chunk of medicare spending for northern health care.⁴ “Nothing is cheap in the North,” says Dr. Williams, who has been part of UOHI’s northern cardiology crew for eight years. Medical transportation costs for First Nations and Inuit health amounted to \$225.5 million in the 2005-2006 fiscal year.⁵ Dr. Beanlands recalls first moving the echocardiograph equipment to the North. “We took the echo machine on our flight as a passenger because it was cheaper than flying it as freight,” he says.

Another northern UOHI cardiologist is Dr. Lyall Higginson, who is also currently serving as President of the Canadian Cardiovascular Society.

For a cardiologist, the annual Baffin trek provides an emotional and intellectual mixture of exhilaration, adventure, inspiration and frustration, combined with the skill of practising superb medical teamwork. The visits are generally spaced six months apart, usually in July or early August and again in January, which is clearly the most difficult. Dr. Williams prefers January. “You get a real sense of the North at that time. You must have every bit of skin covered when you go to some locations, it is so very cold.”

The medical side presents another set of challenges. In Ottawa, cardiologists tend to see patients with coronary artery disease. “There, we are seeing ‘white man’s’ illnesses resulting from economic development of the North. Patients there have multiple problems. You are more inclined to see a patient who has vascular disease, hypertension, Type 2 diabetes, a tremendous amount of chronic lung disease and scarring from tuberculosis.”

These are far and away from the starvation, trauma and frostbite, which would have been more common enemies of the Inuit, Dr. Williams says. “In the past, their lives were cold, dark, short and brutal. We tend to idealize the noble Inuit living on the land, but starvation was an ever immediate threat. They depended on the predictability of the caribou migration to get their caribou, seal and walrus meat. If the caribou herd took a different route that year and they missed it, or the pack ice went a different way and they couldn’t get their seals, they starved.”

In some areas, Inuit lived in very small communities of 30 or 40 people and could easily be decimated by the forces of nature. Dr. Williams remembers meeting one elderly patient who as a young child about 60 years ago became the sole

survivor of her community because everyone else had starved to death.

Among his patients, Dr. Williams sees that many older Inuit appear to have less severe health problems, owing in part to their more traditional lifestyle. “Older generational relatives who live out on the land more, who hunt and fish more and who use ‘country food’ live a much healthier lifestyle and have less Type 2 diabetes than younger people in settled communities,” he adds. As well, older patients have fewer problems complying with a prescribed treatment.

With such a small population spread over a vast land mass, physicians are often left to consider alternatives to the current setup of medical services. “I sometimes question the necessity of bringing so many patients from the outlying hamlets to Iqaluit,” Dr. Williams says. “Within the context of what we’re doing, we do what we can but perhaps not as much as we should. Another way might be to set up satellite clinics with cardiologists going out to the outlying districts and seeing patients there. It might be more economical for one cardiologist and maybe a technician to travel rather than have a dozen patients from that hamlet come down to Iqaluit.” Because of the cost, the weather and the distance,

logistics involved in any alternative service would not be easy to resolve.

“We see a nucleus of committed and gifted Inuit who have educated themselves about the needs of their community, who have insight into the issues related to the welfare of the community,” says Dr. Williams. They serve in the legislature, run social services in their communities and look after community resource centres. “These people have been able to get in step in their own fashion and have been able to bring enormous benefit to their communities.”

Many changes are needed to help reconcile the disparities between the North and southern cities, but Nunavut is still a young government. The territory was formally established in 1999. “There is a different dimension to health care in the North,” he adds. “The interface between social challenges and health issues exists in both places. But it is far more intense in the North.”

Some alternative models of diagnostic care, such as telemedicine, have proved to be too advanced for routine use in the Far North. ❄️

“Older generational relatives who live out on the land more, who hunt and fish more and who use ‘country food’ live a much healthier lifestyle and have less Type 2 diabetes than younger people in settled communities.”

– Dr. William Williams, UOHI cardiologist

Journey to the Capital: Iqaluit

Distance from Ottawa:	2090 kilometres
Nunavut land mass:	2 million square kilometres
Which equals:	352 Prince Edward Islands
Size of Nunavut:	Expands across 4 time zones
Population of Nunavut:	27,700 people
Number of communities:	27
Caribou:	One caribou for every person in Nunavut
Most northern tip:	Grise Fiord

Food Costs: Food shipment and the high cost of quality food in the Far North is a major concern, particularly in relation to health issues. Compare these prices from Iqaluit.

Two litres of milk	\$5.61
Loaf of bread	\$2.99
Head of lettuce	\$3.49
One dozen eggs	\$2.95
One kg. hamburger	\$7.59
One kg. oranges	\$4.63
Weekly cost for family of four	\$282.00

Source: Canadian Geographic Magazine



Cardiologist Dr. William Williams, whose team is pictured in the photograph behind, has flown to Baffin Island for eight years as part of UOHI’s service to the Far North.

⁴ Health Canada: First Nations and Inuit Health, Non-Insured/Insured Health Benefits, Medical Transportation 2005-2006; available online at /www.hc-sc.gc.ca/fnih-spni/nihb-ssna/benefit-prestation/medtransport/index_e.html.

⁵ Ibid.

Special Strategies for Aboriginal Cardiovascular Health: CSS President Speaks about the Challenge for Medicine

Aboriginal cardiovascular health is like a major blaze with a large crew of firefighters but an inadequate fire prevention strategy, says UOHI cardiologist Dr. Lyall Higginson, who is also president of the Canadian Cardiovascular Society. As such, heart disease among Aboriginal Peoples is perhaps the most complex, urgent issue facing the medical community, he adds.

It is also a main theme for the federal Heart Health Strategy now being designed by a large team of leading cardiac experts. Dr. Higginson is a member of the steering committee that is developing the Heart Health Strategy to fight heart disease in Canada. The committee is to report to the federal health minister in November 2008 with options for a comprehensive Canadian approach to prevent and manage heart disease.

“The population in most need is our Aboriginal and Indigenous Peoples – and that is federal purview,” says Dr. Higginson, who as former chief of cardiology at the Heart Institute set a course for new advances in clinical care

and education practices for new cardiologists. “You need special approaches for people who are marginalized because of socio-economic status. We need special strategies. It’s not just money that will help but strategies for how we can more effectively serve this population.” Aboriginal health has been the subject of several high profile studies, including the United Nations quality of life index, which in 2002 described reserve conditions in Canada as deplorable. Life expectancy has been lower for First Nations men and women than the general population.¹ Rates for diabetes, smoking and obesity are higher. These are all contributing factors to heart disease and as a consequence, reported rates of heart disease are substantially higher than other Canadians.

A national strategy will provide an opportunity to take stock of problems related to heart disease, says Dr. Higginson. “This will allow us to improve prevention, access, lifestyle, risk factors, delivery of care to aboriginal Canadians both on and off the reserve, and in areas in the Far North, including Nunavut.”



Dr. Lyall Higginson, President of the Canadian Cardiovascular Society, sees aboriginal cardiovascular health as a complex, urgent issue facing the medical community.

“Traditional Aboriginal beliefs regarding health include the concepts of balance and harmony. Ill health cannot be treated solely through physical means. Treatments must include a social, emotional and spiritual component.”

Source: Health Research Needs North of 60: Northern Town Hall Meetings, September 2001
Canadian Institutes of Health Research
Institute of Aboriginal Peoples' Health and the Institute of Nutrition, Metabolism and Diabetes
January 25, 2002

Facts of Life and Death

Death and disease differ for Aboriginal Canadians compared with the general population. Some facts:

- In 2000, life expectancy for Canadians was 76.3 years for men and 81.8 years for women. For Aboriginal Canadians, the life expectancies were 7.4 and 5.2 years shorter, respectively.
- Aboriginal Peoples living on reserves have reported rates of heart diseases that are 16% higher than the Canadian population overall.
- Aboriginal Peoples living off-reserve have lower levels of education and income and higher rates of smoking, drinking and obesity compared to the Canadian population.
- Type 2 diabetes affects Aboriginal Peoples and Métis people three to five times more than the general Canadian population. There is less Type 2 diabetes among Inuit, although they are beginning to acquire the disease in greater numbers.¹

¹ Government of Canada's Role in Aboriginal Health Care; Federal/Provincial/Territorial Collaboration; First Ministers Meeting: Ten Year Plan (2004).

Heart Institute cardiologists, including Dr. Higginson, fly twice a year to Nunavut to provide services to patients in the Far North. Patients are transferred to UOHI if more advanced cardiac care is necessary. It is a worthy effort but doesn't address the heart of the matter, Dr. Higginson says.

“We have been involved with putting out fires,” he adds. “That is what the Heart Institute has been involved in – putting out major fires by bringing people down (to the south) who are sick and sending people up to help them when they are already sick. So we have adequate fire stations and firefighters but there is totally inadequate prevention for the fires being started.”

The first two priorities have already been identified and met, says Dr. Higginson. No. 1 is to recognize the problem and second, to take the issue seriously because it is a very real threat in all disadvantaged communities. The Canadian Cardiovascular Society (CCS) is a national organization representing about 1,600 cardiovascular physicians and scientists whose mission is to promote cardiovascular health and care by knowledge translation, professional development and leadership in health policy. A major priority of this health care community is to reduce wait times for cardiovascular care. While the CCS does not measure good medical care by shorter lineups, it is clear that improved access to the ‘continuum of care’ – from prevention, consultation and diagnosis through to treatment and rehabilitation – is an important step to improving health care.

Prevention of disease and equitable access to excellent cardiovascular care is equally important for our aboriginal community.

In these communities however, the complexity of the situation can easily detract from the solution. “The complexities include deeply rooted social disparities, which suggest that no amount of health recommendations will reduce the burden of disease without a parallel program for social change. The Heart Health Strategy gives us an opportunity to make changes for disadvantaged people who are in need of improved cardiovascular health. Cardiovascular disease is still at the top of the list across the entire country, killing more than other diseases. We know it is in part related to this epidemic of obesity and diabetes and we know that these risk factors are significantly more prevalent in our indigenous and aboriginal communities.”

Among disadvantaged communities, key questions are: how do residents get equitable access to excellent cardiovascular care, and how do we improve communities and lifestyles to decrease the burden of cardiovascular disease. For example, inadequate playgrounds, recreational facilities and gymnasiums are an issue. Yet, 2.5 to 3 hours a day of television watching is the norm for many children in marginalized communities.

“It is critically important that we work collaboratively with these communities to help prevent the development of westernized cardiovascular disease – which was unheard of in the past,” says Dr. Higginson. “Unless we work with the culture and the sensitivities of the community, there will be no success. We need these communities to understand and accept the fact that this initiative is not a ‘we-and-they’ initiative, but an opportunity to improve cardiovascular health for all Canadians.”

Distinguished Disease Detective Helps Reshape Medical Care

A landmark Ottawa study in the 1990s changed the practice of blood transfusions for critically ill patients. Co-designed by George Wells, PhD, clinical epidemiologist and chief biostatistician at UOHI, the trial nearly didn't happen. Federal funding cuts to reduce the deficit and public debt in the early to mid-1990s crippled most research across the country. Budgets for research grants were slashed everywhere. When funds for this project were trimmed, completion of the study was put in jeopardy. "The trial had a large impact, but it nearly went under," Wells recalls. But it survived. Study results were widely published, appearing in both the *New England Journal of Medicine* and the *American Journal of Respiratory and Critical Care Medicine*.

The research, which began in the mid-1990s, involved trials conducted on patients in 22 Canadian centres. It concluded that routine use of blood transfusion was not necessary among the critically ill at risk of anemia – except for certain cardiac patients who suffer heart attacks, for example. The study, known as Transfusion Requirements in Critical Care (TRICC), led to improved blood conservation practices among critically ill patients with anemia. The work also illustrates the importance of research in improving patient care – a classic example of the evolution of scientific knowledge becoming bedside care.

"Canadian researchers conduct high-quality research but they are constrained by inadequate research funding, especially in relation to international competitors," says Wells, who has devoted his career to advancing medical research. As co-author of 170 funded medical research studies in the last five years alone, Wells is a senior scientist of serious repute with a long list of titles to match. Earlier this year, he was named as 2007 Distinguished Scientist by the Canadian Society for Clinical Investigation. He was recently appointed Director of the Heart Institute's Cardiovascular Research Methods Centre.

He is also Principal Scientist and Chair of the College of Principal Investigators at

the Institute of Population Health at the University of Ottawa.

Wells believes that clinical researchers need strong incentives and support – morally and financially. It is a view shared by Heart Institute President and CEO Dr. Robert Roberts, who is overseeing a rapidly growing research program at the Heart Institute to complement UOHI's excellence in care and education.

Scientists overall have expressed concern that Canada's principal vehicles for research funds may face a cash crunch and provide less than generous increases in annual grants. "The best thing about

money, leading scientists fear there will not be enough to close the funding gap relative to other countries.

Wells doesn't don a white coat. Wells doesn't haunt laboratories, except to confer with colleagues on research design, mission and focus. His work governs how medicine is practised in emergency rooms, operating theatres and clinics throughout the country and around the world.


"My job is to design and conduct randomized control trials," Wells says. "We look at assessing health technologies and look at economic evaluations to see whether certain devices or certain drugs are cost effective."

logistically difficult trial, where the accompanying methods and design issues for the study are intricate and, in many instances, novel," says Wells. "This study, which is funded by CIHR, university and industry, is going to have an impact around the world."

Wells has research interests as diverse as the field of epidemiology. His new efforts are aimed at genetics, which is a major thrust at the Heart Institute particularly with the opening in mid-2005 of the Ruddy Canadian Cardiovascular Genetics Centre. A number of research projects are underway at the Centre, as scientists at the Heart Institute search for the genetic clues to the causes and improved treatment of heart disease.

In fact, Wells is essentially hunting for his own cure. Lean and constantly on the move, Wells would hardly be described as the archetypal heart disease patient, let alone one who was a candidate for a heart attack. Yet he was admitted to the Heart Institute nearly three years ago for a coronary artery bypass, which traditionally involves open heart surgery to bypass clogged arteries and speed the flow of blood and oxygen to the heart. Wells calls himself a walking poster boy for genetic research. Some genetic pattern involving heart disease may have been handed down and might explain his illness, Wells says.

"We are a teaching hospital. We are supposed to do research as well as teach residents, and the research is a very important part of the process," says Wells. "If you want leading medical care, you have to be a leader in research."

Physicians require the time and the resources to conduct research. "The benefits that trickle down to the patients are enormous," says Wells. "We have leading programs here at the Heart Institute because we have leading scientists in those areas. And if you take a look at where we've got leading-edge treatments and procedures, that's where we have the innovative scientists. It works hand in hand." 

"We look at assessing health technologies and look at economic evaluations to see whether certain devices or certain drugs are cost effective."

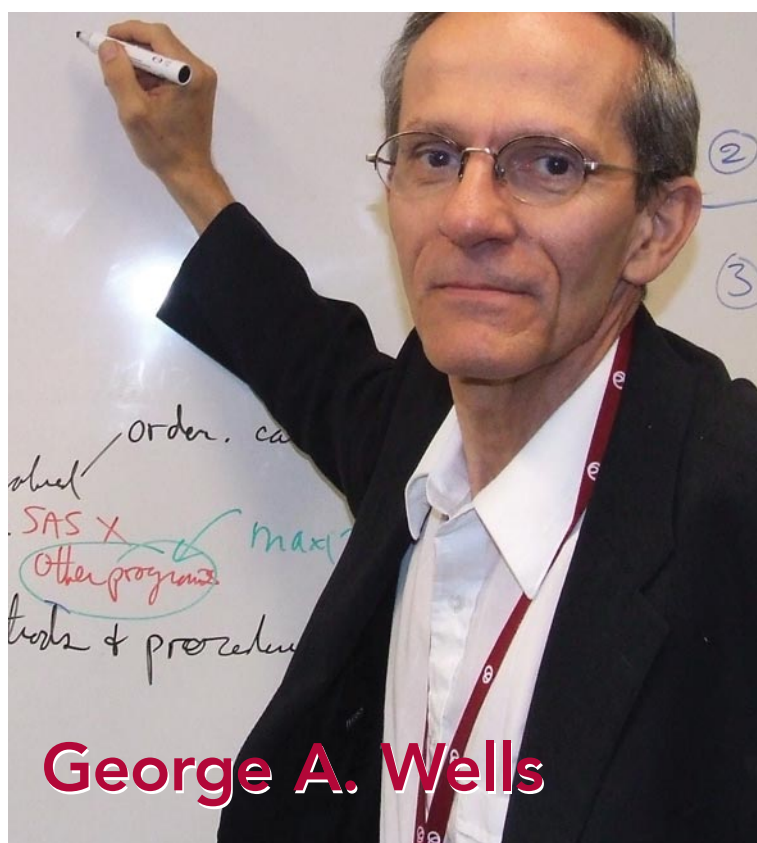
– George Wells, PhD, clinical epidemiologist and chief biostatistician at UOHI

research in institutes such as ours," says Wells, "is that the researcher determines whether something is worthwhile to investigate and the money comes from peer-reviewed sources. Anything that gets in the way of this stops innovative, investigator-driven research."

The Canadian Institutes of Health Research (CIHR) replaced the Medical Research Council in 1997-98, providing sustained increases above five percent until the current year. Grant funds rose by three percent. Many researchers easily recall the early 1990s, when funding was drastically reduced while research costs were rising. By the late 1990s, the federal government began to reinvest in research through several new mechanisms such as CIHR and Canada Foundation for Innovation. While the federal government is committed to increasing research

Epidemiologists are regarded as true disease detectives. They collect data on and analyze the patterns, causes and all aspects of disease. Combine that with a background in biostatistics – the development and application of statistical techniques for scientific research in all health related fields – and Wells is a veritable Sherlock Holmes. Digging for answers is only part of his job. Asking the right question – that is, designing the study – is just as important.

His latest project is a major international study led by the Heart Institute to assess the treatment of abnormal heart rates. This is the Resynchronization/ Defibrillation for Advanced Heart Failure (RAFT) study led by Dr. Anthony Tang and Wells. The study is an international randomized controlled trial involving more than 30 centres on three continents. "RAFT is a complex and



George A. Wells

"We are a teaching hospital. We are supposed to do research as well as teach residents, and the research is a very important part of the process. If you want leading medical care, you have to be a leader in research."

- Founding director, Cardiovascular Research Methods Centre, UOHI
- Co-founder, Institute of Population Health (IPH), University of Ottawa
- Chair, College of Principal Investigators, IPH
- Professor and Former Chair, Department of Epidemiology and Community Medicine, University of Ottawa
- 2007 Distinguished Scientist Award, Canadian Society for Clinical Investigation
- Special Interests: Development and application of clinical trial methodology, application of advanced biostatistical and mathematical methods, development of methods for general application.

The Heart Institute's Chief Biostatistician George Wells, PhD, is also a clinical epidemiologist who sets the guidelines and rules on how good medical research is conducted.

Finding the First Path to a Heart Attack: Heart Institute Scientists Make Genetic Discovery

UOHI researchers have identified a stretch in the DNA sequence that increases risk of heart disease by up to 40 percent regardless of other established risks such as cholesterol, blood pressure and diabetes. The discovery could help identify people at high future risk for heart disease, enabling early preventive therapies, including lifestyle changes and medication, to reduce their risk. This finding may also lead to a better understanding of the biological pathways that lead to heart attacks.

A study led by Dr. Ruth McPherson, Director of UOHI's Lipid Clinic and Lipid Research Laboratory, in collaboration with Dr. Jonathan Cohen at the University of Texas Southwestern Medical School, examined the DNA of heart patients and healthy 'controls' from Ottawa. The participants were part of the Ottawa Heart Study in which the DNA of 1,300 patients and 1,500 healthy 'controls' were scanned for genetic variants. Heart Institute researchers then collaborated with scientists directing several other large-scale heart disease studies in the United States and Denmark to verify their findings.

The results, published in *Science Express* (Vol.316, Issue 5825, May 4, 2007), showed

the variant is estimated to account for approximately one-fifth of the incidence of heart attack in populations of European origin, and nearly one-third of early onset cases. The research findings point to one of the most significant genetic risk factors found to date for heart attacks and pave the way for tests to show who is at risk and for possibly new treatments.

The findings were made by two independent groups of researchers and may help scientists understand why people have heart disease even in the absence of other risk factors more commonly associated with heart disease.

The study results were based on samples from more than 23,000 people in Canada, the U.S. and Denmark. These included

2,765 in Ottawa, 10,578 Danish men and women who form the Copenhagen City Heart study, 11,478 men and women enrolled in the U.S.-based Atherosclerosis Risk in Communities (ARIC) project and the Dallas Heart Study. In all three 'validation' studies, this genetic variant was significantly associated with coronary heart disease.

Anna Helgadóttir of Iceland-based deCODE genetics in Reykjavik and U.S. colleagues at Emory University in Atlanta, the University of Pennsylvania in Philadelphia and Duke University in Durham, North Carolina tested 17,000 people.

Both groups found the same results.

"This is an important finding for several reasons," said Dr. McPherson. "This is a common genetic variant that has a very strong effect on heart disease risk, which isn't related to other factors that we already know about. Heart disease is a major cause of death in western countries and the lifetime risk of developing heart disease is about one in two for men and one in three for women. If we can identify genetic factors that influence heart disease risk over and above known risk factors, we can do a better job of identifying those people who will benefit most from early intervention to reduce their risk."

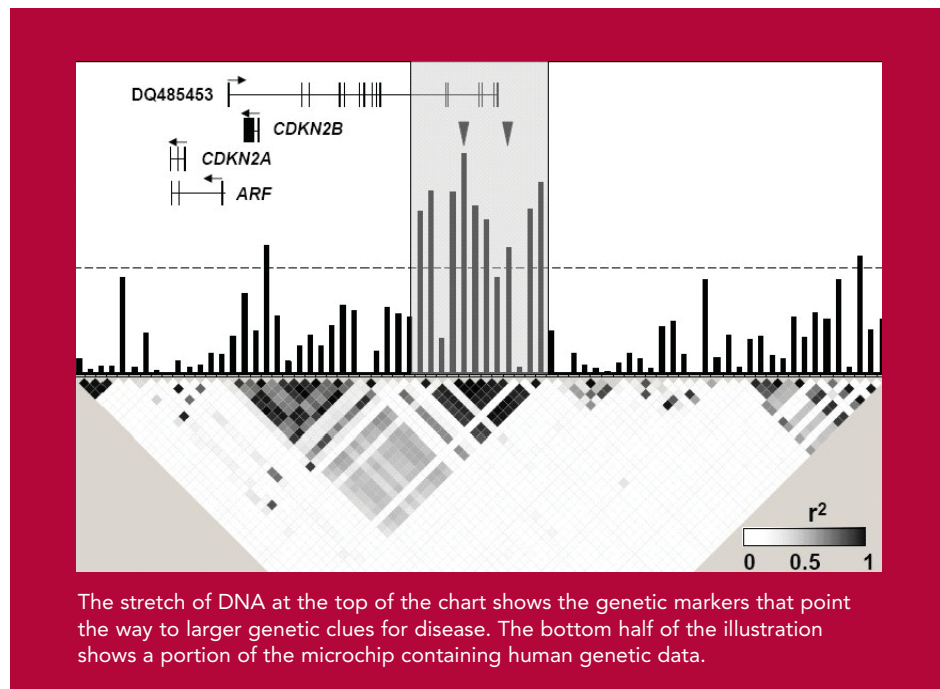
The Heart Institute scientific team included Dr. McPherson, an endocrinologist and molecular biologist, Dr. Robert Roberts, UOHI President and CEO, who is both a cardiologist and a geneticist, and Alexandre Stewart, PhD, Principal Investigator, Ruddy Canadian Cardiovascular Genetics Centre.

"Our research is uncovering the genetic predisposition to heart disease so that we might soon be able to develop individually tailored treatments," said Dr. Roberts. "Science has excellent insight as to how to cope with environmental factors such as obesity, but genetic influence on heart disease is less clear. The Heart Institute is targeting these questions."

The Heart Institute employs a state-of-the-art Affymetrix GeneChip®, which processes massive amounts of miniature arrays, identifies genes and allows researchers to determine patterns of genetic activity. The Ottawa Heart Study is considered to be the first genome-wide scan to search for coronary heart disease genes using an even larger number (500,000) of genetic markers and is likely to reveal still more about the genetic causes of heart disease.

In the Ottawa study, men older than 65 years and women older than 70 years who had no symptoms or history of coronary heart disease (CHD) were recruited. The patients selected for the study had severe premature CHD. People with diabetes and very high cholesterol were excluded. ❧

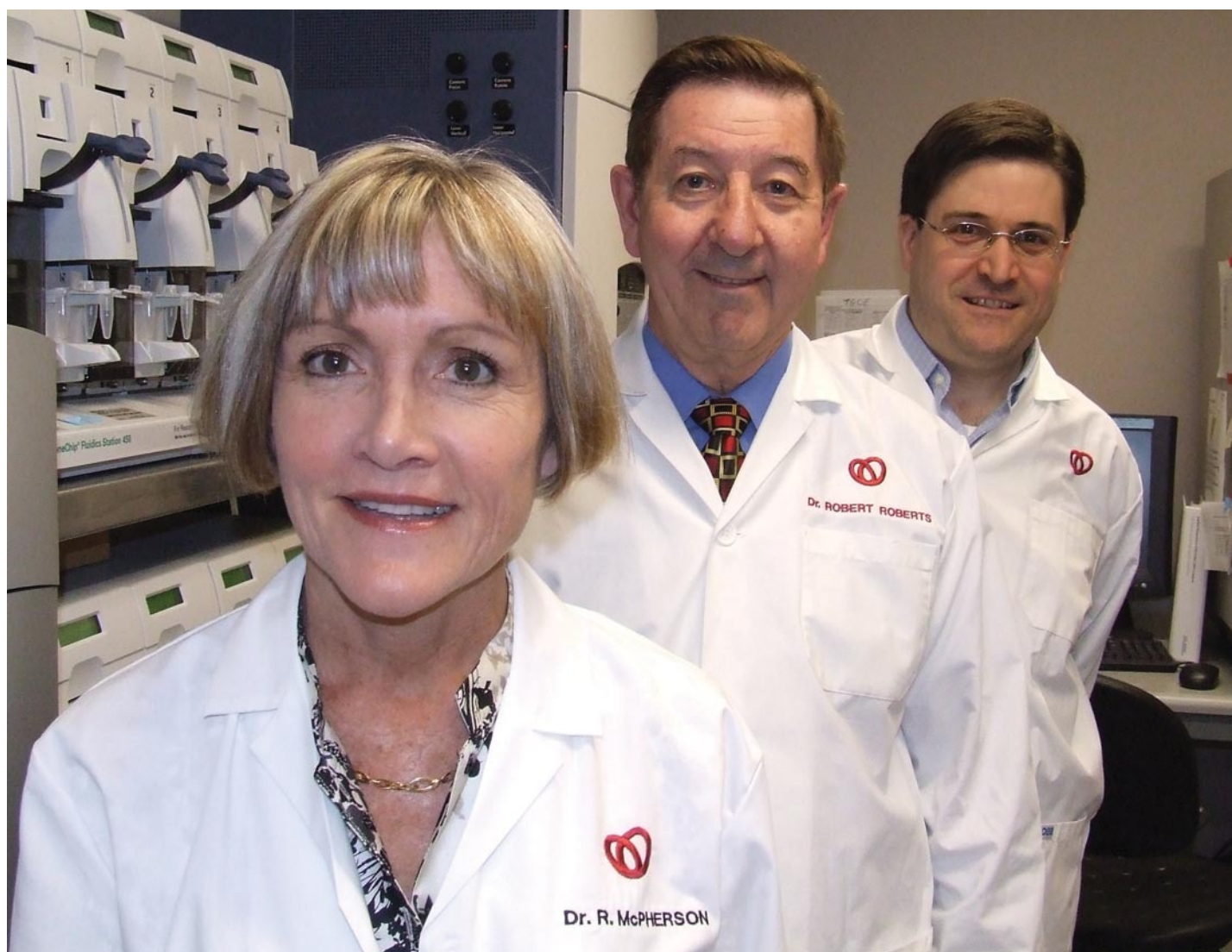
Some UOHI research team members:
Dr. Ruth McPherson, Dr. Robert Roberts and Alexandre Stewart, PhD, whose genetic investigation found a link to heart disease.



The stretch of DNA at the top of the chart shows the genetic markers that point the way to larger genetic clues for disease. The bottom half of the illustration shows a portion of the microchip containing human genetic data.

"Science has excellent insight as to how to cope with environmental factors such as obesity, but genetic influence on heart disease is less clear. The Heart Institute is targeting these questions."

– Dr. Robert Roberts, UOHI President and CEO



New Best Practice Tool Helps Women Quit Smoking

The Heart Institute's quit-smoking system, which is quickly being adopted as a national model, has been integrated for the first time into a major women's health program.

Up to 50 percent of participants in the Ottawa Model are smoke-free at 12 months. UOHI's model is a hospital-based program involving an exceptional combination of personal consult and intervention, information, follow-up and feedback.

The Shirley E. Greenberg Women's Health Centre, a comprehensive research, diagnostic and treatment facility located in Ottawa, is implementing the Heart Institute's stop-smoking protocol as part of its program to promote good health and the overall well-being of women.

Heart disease is the No. 1 killer of women in North America. Tobacco use is the leading cause of preventable death among women. Research shows that women who smoke are at greater risk for other diseases such as cervical cancer, but they have a more difficult time quitting smoking. Women have distinctive smoking patterns that include strong social interaction, and their smoking behaviours differ from men. Research shows that women who smoke tend to have more concerns about weight gain and some experience withdrawal related to menstrual cycle phase.

"This program provides the Heart Institute with a unique opportunity to target 25,000 women who are referred to a centre dedicated to their specific health needs," said Bonnie Quinlan, Advanced Practice Nurse in Smoking Cessation and Tobacco Addiction Counsellor, UOHI. "Our own patients who have successfully quit have gone on to enjoy healthier, longer lives. We know that women respond especially well to individual counselling and support provided by our model to successfully quit smoking."

Dr. Elaine Jolly, Medical Director, Women's Health Centre, said: "The Ottawa Model is an innovative approach that will have an enormous impact on our ability to help our patients develop and enhance their personal and physical well-being. The Heart Institute's Smoking Cessation program provides our centre with an exceptional tool for women who smoke and want to take this most significant step to improve their health. We are thrilled to be part of this venture."

The Heart Institute's Smoking Cessation model is receiving national recognition as an efficient but highly personal approach to help patients quit smoking. More than 35 hospitals across the country have implemented UOHI's Ottawa Model. These include hospitals within River Valley Health in New Brunswick, Vancouver Coastal Health (VCH) in British Columbia and 12 regional hospitals outside of Ottawa in Eastern Ontario. Health officials in Toronto are currently in discussions with the Heart Institute to replicate the program.

Some distinctive issues that women face include the following:

- Women who smoke have double the risk of developing cervical cancer. Tobacco-related byproducts have been found in the cervix of women who smoke. Researchers believe these substances damage the DNA of cells.
- Smoking has been implicated in problems related to reproduction – from increased risk of infertility to premature birth. Research shows that cigarette smoking combined with the use of oral contraceptives also increases the risk of heart attack or stroke. A risk of clotting associated with hormone therapies is shown to increase in women who smoke.
- Changes in mood and withdrawal from smoking vary with menstrual cycle phase in some women. Research has suggested that women who smoke may suffer greater withdrawal during the last two weeks of their cycles versus the first two weeks.
- Research has suggested that women's smoking habits are more strongly reinforced by factors such as social interaction and personal stressors. Consequently, some evidence suggests that nicotine replacement is less effective for women than men.
- Weight gain is a strong barrier for women wanting to quit smoking. Women are more at risk of weight gain. Some research has shown greater quit-smoking success for women enrolled in both a smoking cessation program and supervised weekly exercise programs. They increased cardiovascular health and gained less weight. The Ottawa Model offers individual counselling with strategies on how to manage weight. 🌀

The Ottawa Model at the Women's Health Centre

UOHI's Ottawa Model systematically identifies smokers and offers assistance to quit. The Women's Health Centre will adapt the Ottawa Model to achieve the following:

- All physicians and nurses will be provided with one-on-one training in how to manage tobacco dependency.
- All smokers admitted to the centre will be identified and treated with support from a designated nurse counsellor and stop-smoking aids. Smoking status will be documented in the patient's record.
- The attending physician or nurse will advise all smokers to quit using an unambiguous but non-judgmental approach. An order for nicotine replacement therapy would be provided if necessary.
- A quit plan will be developed with smoking patients ready to quit. Nurse counsellors would be trained to talk about nicotine dependence and smoking cessation.
- Patients are contacted at home via a sophisticated integrated voice response technology that tracks their progress using a detailed series of questions. If any response suggests the patient is having trouble remaining smoke-free or if they've started smoking again, a nurse counsellor will call to talk about options and help get the patient back on track.

"Our own patients who have successfully quit have gone on to enjoy healthier, longer lives. We know that women respond especially well to individual counselling and support provided by our model to successfully quit smoking."

– Bonnie Quinlan, Advanced Practice Nurse in Smoking Cessation and Tobacco Addiction Counsellor, UOHI