

HIGHLIGHTS

Considered Canada's leading expert in the physics of cardiac PET imaging, Dr. Robert de Kemp pioneered the application of Rb-82 PET perfusion imaging in Canada.

(from Canada's First MicroPET Research Facility Targets Animal Models, pages 4)

"The goal is to examine the prevalence of hypertension and learn how well it is being treated both for the population in general and how this may vary by age, gender and ethnic background."

– Dr. Frans Leenen, Cardiologist, Pfizer chair in Hypertension Research, UOHI
(from Mapping Ontario's Blood Pressure, pages 1, 6)

The total energy consumption of the Heart Institute's new LED lighting systems (which comprise 184 bulbs per pod) is less than one single light bulb typically found in a residential bedside lamp.

(from Advanced Technology Shines New Light on Cardiac Surgery, page 2)

Statins lower the level of LDL-cholesterol and have been shown to dramatically reduce heart attacks and coronary heart disease deaths as well as overall death rate in patients with or without existing heart disease.

(from Lower Numbers, Lower Risk, page 3)

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The Beat is published 9 times a year 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



Dr. Terrence Ruddy – UOHI's new Chief of Cardiology – aims to boost research productivity while maintaining excellence in clinical care and education.

Enhanced Cardiology Division Combines Advanced Clinical Care, Education and Discovery

At least two new special interest Cardiology clinics; one for Southeast Asians, another for women, will open at UOHI adding to the Acute Referral Clinic, set up last year for urgent visits by appointment through physicians.

Reorganization of the Heart Institute's Cardiology clinics is among the priorities for Dr. Terrence Ruddy, recently appointed Chief of Cardiology at the Heart Institute. As director of Nuclear Cardiology at the Heart Institute, Dr. Ruddy put the department on the map internationally. The department is the largest clinical Nuclear Cardiology service in Canada and ranked by the Intersocietal Commission for the Accreditation of Nuclear Medicine Laboratories (ICANL) as one of the best in North America. Nuclear Cardiology

at the Heart Institute is the only ICANL accredited laboratory in Canada, at present.

The Heart Institute's Special Cardiology services include the Arrhythmia Clinic, Hypertension Clinic and Lipid Clinic. With an aging population and an increased demand for complex therapies for patients, specialty clinics can provide services in areas of Cardiology requiring specific expertise and a multi-disciplinary team approach, says Dr. Ruddy. The Acute Referral Clinic was initiated by Dr. Lyall Higginson, former Head of Cardiology. Urgent referrals are seen within a matter of days. More than 1,000 patients were referred last year including many who were seen in regional Emergency Rooms. Most of these patients have chest pain and

are referred for the investigation of potential coronary artery disease. Patients with valvular abnormalities, arrhythmias, and heart failure are seen through this clinic.

A special clinic serving South and East Asians is being established at the Heart Institute to address a newly defined need. Recent studies have suggested higher mortality rates among South Asian-born Canadians compared to people born in Canada. Statistics Canada's 2000 Canadian Community Health Survey indicates that South Asian and Southeast Asian people have higher blood pressure, are less physically active than people born in Canada and are consequently seen as having a higher prevalence of coronary artery disease.

(continued on page 2)

Mapping Ontario's Blood Pressure

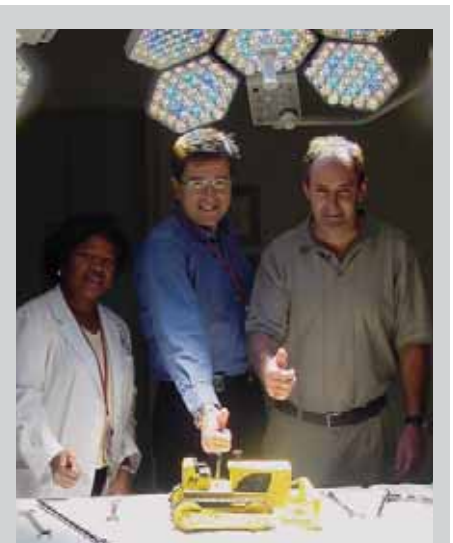
A team of researchers at UOHI is conducting an Ontario-wide study into the prevalence of high blood pressure and its effective treatment. An extensive survey, which got underway in August 2005, involves 16 sites from Sudbury in the north to the Windsor area in the south. The team plans to elicit results from a random sample of at least 2,500 people after interviews and tests.

The principal investigators of the \$1.2 million study are Drs. Frans Leenen and George Fodor, both Heart Institute cardiologists whose research into hypertension is recognized internationally. Dr. Leenen holds the Pfizer Chair in Hypertension Research at the Heart Institute. Dr. Fodor is the Institute's

Head of Research, Prevention and Rehabilitation Research. The Heart Institute was awarded the contract to conduct this survey by the Heart and Stroke Foundation.

"The goal is to examine the prevalence of hypertension and learn how well it is being treated both for the population in general and how this may vary by age, gender and ethnic background," Dr. Leenen said. "This is very important information for the Ministry of Health and to help scientists come up with better strategies for treating hypertension. If, on the other hand, we learn it is extremely well controlled at the moment, then we know we are doing a good job in terms of prevention and treatment."

(continued on page 6)



UOHI's new surgical lighting system gets a big thumbs up from Clinical Nursing Coordinator Berneta Washington, Dr. Thierry Messana – Chief of the Division of Surgery, and Andy Blair, Project Manager.

See Advanced Technology Shines New Light on Cardiac Surgery on page 2

(Enhanced Cardiology Division Combines Advanced Clinical Care, Education and Discovery, continued)

Now with a view to the future, Dr. Ruddy looks to the strengths of the Heart Institute while addressing critical strategies in the prevention and treatment of heart disease. With a current staff of 25 cardiologists, many of whom are deeply involved in advancing innovative technologies and pursuing cutting-edge, internationally acclaimed projects, Dr. Ruddy's chief objective is to exploit new areas for laboratory discovery at the Heart Institute.

Dr. Ben Chow is involved in at least five major studies using the first high-volume, state-of-the-art 64-slice scanner in Canada dedicated to cardiac care. Drs. Chow and Carole Dennie, co-directors of Cardiac Radiology at the Heart Institute, are testing the super-speed imaging technology of computerized tomography (CT) as a tool to improve patient care and shorten waiting lists for more invasive diagnostic techniques.

“The Heart Institute’s Cardiology Division has the most successful clinical care, educational and training program in the country.”

– Dr. Terrence Ruddy

“My goal is to develop research productivity within the Division of Cardiology while at the same time maintaining our excellence in clinical care and education,” he says. “The plan is to take our clinical strengths and complement these successful programs with basic scientists. We want to encourage innovative research, which in turn will optimize clinical care. We will also recruit new staff to satisfy our clinical needs and also complement our research directions.”

Major opportunities lay within the fields of genetics and molecular biology particularly with the Canadian Cardiovascular Genetics Centre™, which opened in June 2005, says Dr. Ruddy. Research led by Dr. Michael Gollob, a clinical arrhythmia specialist and geneticist at the Heart Institute, has revealed that one of the most common forms of heart disease – atrial fibrillation (AF) – is caused by a mutation in DNA. His breakthrough study, recently published in the *New England Journal of Medicine* (Vol. 354, No. 25, pp. 2637-2744; www.nejm.org), provides new insight into how common diseases may develop and will likely lead to targeted therapies aimed at eliminating or preventing AF.

Another opportunity lies in expanding successful Heart Institute programs such as STEMI program, initiated by Dr. Michel Le May in the Ottawa region to a larger program across the province, says Dr. Ruddy. The STEMI program, which serves Ottawa and the surrounding region, involves UOHI-trained paramedics to recognize a particular type of ECG waveform called a STEMI (ST-Elevation Myocardial Infarction). They then initiate a protocol designed to deliver the fastest, most effective treatment by bypassing normal emergency room procedures and routing the patient directly to a specialized treatment lab at the Heart Institute. The new protocol is now standard at the Heart Institute and holds tremendous promise for significantly reducing mortality rates of heart attack victims in hospitals across the country and around the world. A new study by Dr. Le May, Director of UOHI's Coronary Care Unit, showed that the STEMI program resulted in a 75% reduction in mortality among older, more fragile and higher risk patients experiencing a heart attack.

Dr. Ruddy is currently conducting a study involving women and ischemia. Women with chest pain are evaluated with



Dr. Terrence Ruddy

“My goal is to develop research productivity within the Division of Cardiology while at the same time maintaining our excellence in clinical care and education.”

- Head, Division of Cardiology, UOHI and The Ottawa Hospital
- Director of Nuclear Cardiology, UOHI
- Head, Division of Nuclear Medicine, The Ottawa Hospital
- Chair, Divisions of Cardiology and Nuclear Medicine, University of Ottawa
- Professor of Medicine and Radiology, University of Ottawa
- President, Canadian Society of Nuclear Cardiology
- Past President, BP Canada
- Research Interests: Cardiac Imaging

various non-invasive tests and are followed to determine the optimal diagnostic testing resulting in early and accurate diagnosis at reasonable cost. Cardiac ischemia refers to the lack of blood flow and oxygen to the heart muscle. Heart disease is the main cause of death in women over the age of 55. Women are 10 times more likely to die from heart disease than any other disease. Even if women survive a stroke or heart

attack, their quality of life, activities and mobility may be severely limited.

“The Heart Institute’s Cardiology Division has the most successful clinical care, educational and training program in the country,” says Dr. Ruddy. The next step, he says, is to add more world-leading research to the division. “This will make us a world-class site in all areas.”

Advanced Technology Shines New Light on Cardiac Surgery



New state-of-the-art LED lighting systems have been installed in three operating theatres at the Heart Institute. Unlike traditional ceiling fixtures, these are built in a prism fashion resembling a large honeycomb of LED lamps allowing light to be diffused at different angles. “If I were a surgeon, I could bow my head directly above what I’m looking at and there will not be a single shadow,” says Timothy Zakutney, Manager of Biomedical Engineering at the Heart Institute’s Cardiovascular Devices

Division. New lighting technology in the OR, believed to be the first of its kind in North America, is also the first step to setting up a camera-ready facility for educational purposes. Camera-ready lights will in due course enable live video feeds in the auditorium of surgical procedures taking place in the OR. Additionally, the boom used to support the lighting system holds a 21-inch LCD monitor that allows the surgical team to flip through video feeds of images ranging from the echo image to the anesthesia monitor. “The layout of operating rooms hasn’t changed much,” says Zakutney. “It is the integration of technology that makes an OR unique.”

Big Bright Lights

- The Heart Institute’s new LED honeycomb lights use a Light Emitting Diode technology, a semiconductor light source that emits visible light.
- A total of 184 bulbs per pod are positioned in the Heart Institute’s new LED system.
- The total energy consumption is less than one single light bulb typically found in a residential bedside lamp.
- These bulbs will not need replacement for 10 to 25 years.
- These LED lights have infrared light and give off virtually no heat, making it more comfortable for the surgical team particularly during lengthy procedures.

- The ‘colour’ temperature of the lights can be adjusted depending on the kind of tissue the surgical team needs to visualize. By removing various colours in the spectrum, a surgeon will have a better view of tissue unclouded by the colour of the surrounding blood, for example.
- The intensity of light of this system is equivalent to 160,000 lux (lx), the units used to measure illuminance based on a standardized model of human brightness perception. Intensity of sunlight on an average day is about 32,000 lx.

Landmark Genetic Discovery Unlocks Cause of a Common Form of Heart Disease



Dr. Michael Gollob

Heart Institute Research Expected to Fuel New Therapies for Atrial Fibrillation

Research at the University of Ottawa Heart Institute has revealed that one of the most common forms of heart disease – atrial fibrillation (AF) – is caused by a genetic mutation that occurs during in-utero development. The landmark discovery provides a fresh view of how common diseases may develop and is expected to fuel targeted therapies that help eliminate

It is known that defective genes can be inherited and can lead to familial disease.

or prevent AF, which affects millions of North Americans and is responsible for more than a third of all strokes.

Details of the discovery were reported in *The New England Journal of Medicine* (vol. 354, No. 25, pp. 2637-2744, www.nejm.org). The work has been led by the Heart Institute's Dr. Michael Gollob, a clinical arrhythmia specialist and geneticist who heads the Arrhythmia Research Lab affiliated with the Institute's Canadian Cardiovascular Genetics Centre™.

Atrial Fibrillation is the most common form of cardiac arrhythmia (irregular heart beat). AF is a rapid, irregular fluttering of the heart's beat caused by random electrical discharges. Instead of pumping effectively, the condition can allow blood to pool and clot in the heart, and sometimes can trigger a stroke. In the U.S., more than 3.0 million people and in Canada some 250,000 people are estimated to have persistent AF. AF increases the risk

of stroke significantly and is responsible for more than 75,000 strokes in the U.S. at a cost of more than U.S.\$1 billion.

It is known that defective genes can be inherited and can lead to familial disease. However, it has not been well established that mutations during in-utero development (somatic mutation) can also trigger disease. Noting that cases of familial AF are rare, the researchers hypothesized that cases of AF for which there is no obvious cause (idiopathic) might be due to a somatic mutation confined to the heart tissue.

Dr. Gollob and colleagues focused on a gene (GJA5) which makes a protein known as Connexin 40. The protein is specific to the atrial tissue of the heart and plays a crucial role in how electrical impulses are conducted. They discovered genetic mutations in the Connexin 40 gene in AF patients. Researchers proved the disease was tissue-specific and not present in all body cells by detecting the mutation

only in the heart tissue and not in the blood cells of affected patients.

Currently, AF is treated with medications that do not specifically target the Connexin 40 protein. A mechanical procedure called catheter ablation is also employed but it is invasive and significant complications can arise, including stroke and death. By unlocking the mechanism responsible for AF, it is expected that novel drug treatments that target Connexin 40 will be developed to modify or control the disease.

"First, this study confirms that Connexin 40 plays a critical role in the electrical conduction in the atrium of the heart," said Dr. Gollob. "Second, current medications have a moderate effect at best. These findings suggest that drugs targeting Connexin 40 may lead to more effective treatment for AF. Third, it also shows that common idiopathic diseases may have a genetic basis with the genetic defect confined to the diseased tissue."

"This is a significant development in understanding the causes of heart disease," said Dr. Robert Roberts, President & CEO. "We salute the impressive accomplishment of Dr. Gollob and his team and note the important contribution of the Canadian Cardiovascular Genetics Centre." ❧

Lower Numbers, Lower Risk

When it comes to cholesterol numbers, lower is better. Canadian guidelines for physicians will soon be aiming lower still as newer recommendations are published for the prevention of heart disease.

"For patients who have heart disease, lowering LDL-cholesterol is one of the most important things we can do," says Dr. Ruth McPherson, Director of UOHI's Lipid Clinic. Studies clearly show that higher doses of cholesterol-lowering drugs called statins can further reduce the risk of a second heart attack due to even great reductions in the 'bad' low-density lipoprotein (LDL) cholesterol in the blood.

"If someone had definitive heart disease, years ago it was believed that a small dose of statin was adequate to reduce risk," says Dr. McPherson. "The recently published studies clearly show that if we treat more intensively with higher doses of statin to get LDL-cholesterol even lower, there is a progressive improvement in terms of fewer cardiac events (such as heart attack or stroke)."

Dr. McPherson is a member of the Canadian Cardiovascular Society (CCS) Consensus Panel on the Diagnosis and Treatment of Dyslipidemia and Prevention of

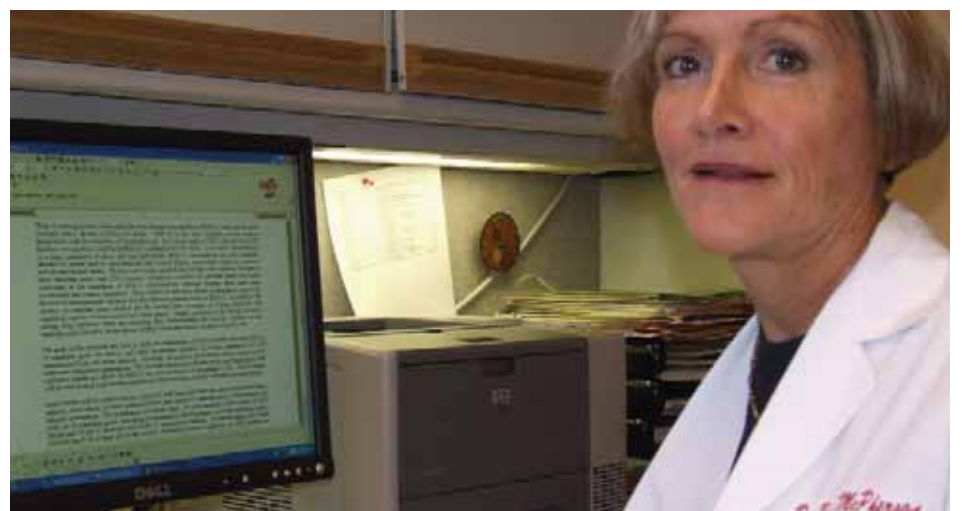
Cardiovascular Disease. The 2006 position statement will be published in the *Canadian Journal of Cardiology* in October of this year. Dr. George Fodor, Head of Research, Prevention and Rehabilitation Research at UOHI, is also a member of the panel.

Canada's guidelines emphasize risk calculation, taking into account blood pressure, age, gender, the presence of diabetes, total cholesterol levels and the 'good' high-density lipoprotein (HDL) cholesterol concentration in the blood.

The previous guidelines published in 2003 recommended that patients at the highest risk for coronary artery disease be treated with medication together with diet and lifestyle changes to effect a reduction of LDL-cholesterol to less than 2.5 mmol/L and the total cholesterol:HDL-cholesterol ratio to less than 4.0.

Revised guidelines will recommend treatment to lower LDL-cholesterol to less than 2.0 mmol/L and the total cholesterol:HDL-cholesterol ratio to less than 4.0.

Statins lower the level of LDL-cholesterol and have been shown to dramatically reduce heart attacks and coronary heart disease deaths as well as overall death rates



Dr. Ruth McPherson is helping to shape new cholesterol guidelines for Canadians. The new guidelines are expected to be published shortly.

in patients with or without existing heart disease. They work by blocking an enzyme in the liver that is required for the production of cholesterol. This in turn signals the liver to upregulate the receptors that remove LDL from the bloodstream, thus lowering LDL-cholesterol.

Dr. McPherson is also Director of the Heart Institute's Lipid Research Laboratory. The breadth of her research into heart disease spans a range of factors from HDL metabolism to genetics. She is a principal

investigator of a major national study under way at the Heart Institute to investigate the genetic differences between patients who suffer early onset heart disease and people who do not (www.heartstudy.ca). The ultimate goal is to help develop simple blood tests that could identify people at increased future risk for heart disease and permit early application of preventive strategies, including diet and exercise. ❧

Canada's First MicroPET Research Facility Targets Animal Models

A colony of mice with traits linked to heart disease has proven invaluable for scientists who want to understand the root causes and most effective treatments for saving human heart patients. The newest addition to the Heart Institute's diagnostic imaging technology, a MicroPET (Positron Emission Tomography) scanner, is being used for extensive cardiac research on mice with heart ailments similar to human disorders.

The new MicroPET, which measures blood flow to the heart and chemistry of the heart muscle, works by detecting short-lived radioactive tracers as they move through the heart tissue. Research at the Heart Institute's National Cardiac PET Centre will focus initially on verifying accurate, complete measurements of a tiny mouse heart that is not much larger than a pencil eraser. With the MicroPET, the PET centre becomes the first research facility in Canada capable of studying animal models with genetic traits associated with heart ailments, says Robert de Kemp, Head Imaging Physicist at UOHI's Cardiac PET Centre in the Department of Cardiac Imaging.

"We have more than 10 years of experience in human PET imaging that we can apply to mouse imaging," says de Kemp, who is considered Canada's leading expert in the physics of cardiac PET imaging. "There is so much research now into the genetic base of these diseases, much of which was done in mice. This research is ideally suited to small animal PET imaging."

His goal is to produce complete and accurate measurements of heart function and biochemistry with small animal PET

imaging, which remains a relatively new field in cardiac research. "There are still some challenges trying to image the mouse heart, which has a one-millimetre heart wall that beats at 400 or 500 beats a minute," says de Kemp. "We want to ensure we can make as accurate measurements in mice as we can in humans."

A pioneer who has developed new applications in PET perfusion imaging in Canada, de Kemp holds a PhD in

This area of research is a specialty of Dr. Michael Gollob, whose expertise is cardiac electrophysiology. His clinic focus is the ablation and cure of common arrhythmias (also referred to as irregular heart beats), including Wolff-Parkinson-White Syndrome. Dr. Gollob has applied his training to identifying genetic causes for common cardiac arrhythmias and inherited heart rhythm disorders. His research is supported by the Heart and Stroke Foundation.

changes in blood flow to the heart because it's the blood flow that is delivering all of these nutrients and oxygen to the heart."

Other research will investigate creation of new blood vessels using cell transplantation. Cardiac surgeon Dr. Marc Ruel is researching new ways to treat coronary artery disease involving regeneration of blood vessels. Dr. Ruel's work is addressing the critical area of cell survival and he is investigating a special biopolymer that can effectively protect the cells within the first days of implantation giving them better survival and function. Regenerating blood vessels would serve as the main mechanism in improving heart function.

The MicroPET will enable researchers to track the injected cells as they are delivered to the heart. PET imaging will allow researchers to observe whether the cells actually survive and for how long, and whether the cells migrate or if they remain the heart region.

PET technology is used predominantly in cancer diagnosis and research around the world. While the initial and certainly the major focus of the MicroPET is cardiac research, the technology is expected to become a valuable regional resource, says de Kemp. This means other research programs such as the Ottawa Health Research Institute, the research arm of The Ottawa Hospital, might also become involved. The Heart Institute's National Cardiac PET Centre is also equipped with its own cyclotron, which produces the tracers used in PET imaging.

"The mouse model which also has chemical and functional changes is a good stepping stone for us to learn more about this particular disorder."

– Robert de Kemp

Electrical and Computer Engineering from McMaster University in Hamilton, Ontario. His systems have been routinely used at UOHI since 1997 and his innovative work in improved image signal corrections in PET scanning has set the commercial standard for three-dimensional PET imaging.

Currently, researchers are working with a mouse model of human Wolff-Parkinson-White (WPW) Syndrome. With this syndrome, the electrical signal to the heart arrives at the left ventricle too early. This electrical abnormality can cause episodes of rapid heart beat, known as tachycardia.

"The mouse model which also has chemical and functional changes is a good stepping stone for us to learn more about this particular disorder," says de Kemp. "It is really a perfect collaborative study. I have the technological experience. Dr. Gollob has the biological expertise that is perfectly suited for an initial study."

The syndrome produces arrhythmia and causes glycogen storage so it changes glucose use in the body, explains de Kemp. "With the MicroPET, we can look at glucose metabolism and that lets us look at a host of other changes in energy demand by the heart. We can also look at



Robert de Kemp is leading the use of MicroPET technology to study animal models with genetic traits associated with heart ailments.



UOHI's new MicroPET measures blood flow to the heart and the chemistry of the heart muscle in a mouse heart that is about the size of a pencil eraser.

Robert de Kemp

"We have more than 10 years of experience in human PET imaging that we are translating to mouse imaging."

- Head Imaging Physicist at UOHI's Department of Cardiac Imaging.
- Associate Professor of Medicine (Cardiology) and Engineering, University of Ottawa
- Adjunct Professor of Physicians, Ottawa Medical Physics Institute, Carleton University.
- Research interests: medical imaging physics and engineering, Positron Emission Tomography (PET), single photon emission computed tomography (SPECT), X-ray computed tomography (CT), X-ray angiography, and multi-modality image fusion.
- Considered Canada's leading expert in the physics of cardiac PET imaging; pioneered the application of Rb-82 PET perfusion imaging in Canada, including automated Rb-82 infusion systems.
- Research focus: developing innovative tracer kinetic and statistical parametric methods for serial imaging of PET blood flow and metabolism, and 3D fusion imaging of coronary angiography and myocardial perfusion.

World Congress Advances Broadened Dimensions of Cardio-Thoracic Medicine

Three pioneering physicians from the Heart Institute have been honoured by their peers as Living Legends for outstanding contributions to the field of medicine. The three men, Drs. Donald S. Beanlands, Adolfo de Bold and J. Earl Wynands, received awards at a ceremony to mark the achievements of scientists whose invention and discovery over the years have contributed to major scientific and technological advances through their work, teaching and leadership.

The awards ceremony at a gala evening capped a four-day World Congress of the World Society of Cardio-Thoracic Surgeons, hosted by the Cardiovascular Devices Division of UOHI. More than 900 delegates representing 65 countries attended the Congress, held in Ottawa in late August. A total of 1,200 papers were delivered in sessions that reflect the broadened dimensions currently evolving in cardio-thoracic medicine. Aside from new surgical techniques and procedures, other areas that brought wide attention dealt with prevention, rehabilitation, biomedical engineering, advanced diagnostic imaging technology and genetic research.

The 14 Living Legends, representing distinguished men of medicine from Canada and around the world, were honoured for their remarkable accomplishments in transforming the quality of cardio-thoracic medicine and advancing the state of knowledge in their respective fields. Not all were surgeons. Among them is Leon Katz, an engineer whose experimental efforts and ground-breaking research in four Montreal hospitals and the Canada's Department of Health and Welfare over nearly 40 years changed the face of clinical medicine and regulatory policies. Katz's many 'firsts' included thyroid diagnosis using radioactive iodine, open-heart bypass surgery with Drs. Edouard Gagnon and Arthur Vineberg, whole-body bypass perfusion during more than 1,500 heart operations, and preparation and management of human arterial grafts.

At the Heart Institute, honours went to Dr. Beanlands, who founded the Cardiology Division at UOHI in 1977 and remained Chief of Cardiology for 19 years. Widely acclaimed for his teaching, Dr. Beanlands has led national and international training programs. The Heart Institute today remains a centre of excellence in teaching as a result of his work and he remains an ardent researcher whose focus is methods of treatment of non-reperusable intractable angina.

Dr. De Bold, who founded and became the first director of the UOHI Research Centre in 1986, is currently Director of

the Cardiovascular Endocrinology Lab at the Heart Institute. In 1981, he discovered, isolated and sequenced the cardiac polypeptide hormone named Atrial Natriuretic Factor (ANF), in which he established that the heart has an endocrine function. His work on ANF was declared the first of the top 10 research achievements funded by in the last 50 years by the Ontario Heart and Stroke Foundation.

Dr. Wynands pioneered the anesthesia management of patients undergoing myocardial revascularization surgery. His early groundwork took place in Montreal until coming to Ottawa in 1988 where his work in cardiac anesthesia was continued at the Heart Institute and through his teaching at the University of Ottawa, where Dr. Wynands served as Chairman of Anesthesia at the University.

The program of the Congress explored several novel approaches by providing two sessions entirely open to the public, including a Q&A forum where top cardiologists were available to answer audience questions related to heart disease. Another session open to the public brought together religious leaders who openly encouraged discussion about organ donation among family members facing the death of a loved one. The venue also provided an opportunity for Frank Markel, President and CEO of the Trillium Gift of Life Network, the Ontario provincial body that administers organ donations, to discuss the continuing shortage of donor organs in the province.

Other highlights of the sessions included new work and issues at the forefront of cardio-thoracic medicine being conducted at UOHI. These include:

- New therapies and genetic research into atrial fibrillation.
- Stent technology in the treatment of heart diseases.
- Cardiac hormones as therapeutic agents to help heal the heart.
- Revascularization procedures and controversies.
- Minimally invasive techniques in coronary artery bypass grafting.
- Viable use of ventricular assist device support (VAD) in cardiac surgery; state of new technology.
- Successful clinical approaches to smoking cessation for heart patients.
- Discovering genetic predisposition to coronary artery disease.

Many of these techniques, approaches and research activities are underway at the Heart Institute. Some have been described in previous issues of *The Beat* and others will be discussed in future issues. ❧



Drs. Donald S. Beanlands, Adolfo de Bold, and J. Earl Wynands were among the 14 "Living Legends" honoured for outstanding contributions to the field of medicine.



More than 65 countries were represented at a world congress hosted by the Heart Institute

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(Mapping Ontario's Blood Pressure, continued)

Updated 2006 recommendations for the management of hypertension were published with stricter guides and more substantial information about the effect of lifestyle changes (such as reducing salt and alcohol intake, and weight loss) on blood pressure were published earlier in the summer. High blood pressure is one of the leading causes of death in Canada and can cause stroke, heart attack, and heart and kidney failure. More information about the public recommendations can be seen at www.hypertension.ca.

The 2006 recommendations emanate from the Heart and Stroke Foundation, the Canadian Coalition for High Blood Pressure and Control, and the Canadian Hypertension Society. Dr. Fodor was the founding president of the latter two national organizations. Dr. Leenen is a past president of the Canadian Hypertension Society.

The Ontario blood pressure study began with three pilot sites compiled with the co-operation of Statistics Canada, which has extensive data and maps based on years of decades of detailed census material. Statistics Canada helped compile household listings in the 16 sites, designed to meet specific criteria to represent the dominant ethnic composition of the province. This would ideally yield a sample comprising roughly 25 percent in each of the following: Black, Caucasian, South Asian and East Asian.

The Heart Institute is in the process of setting up special interest cardiology clinics, among them a clinic involving South Asian and East Asian patients. Studies have suggested different mortality rates among South Asian-born Canadians, for example, compared to people born in Canada. More research is needed to identify specific genetic predispositions to heart disease and stroke among different

A team of UOHI researchers are determining the prevalence of high blood pressure in Ontario. Pictured are (foreground), Drs. Frans Leenen and George Fodor, Rosemary LaRose and (background) Penelope Turton and Kathleen Nemeth.

ethnic groups. Statistics Canada's 2000 Canadian Community Health Survey indicates that South Asian and Southeast Asian people have higher blood pressure and are less physically active than people who are born in Canada. Thus they are regarded as having a higher prevalence of coronary artery disease.

The Ontario blood pressure study, which is expected to take 18 months to two years to complete, involves interviews of nearly 7,000 randomly selected adults between the ages of 20 and 79. They are asked to fill in a detailed questionnaire followed by an appointment to a community clinic set up by the Heart Institute at specific neigh-




A total of five blood pressure readings are taken at one-minute intervals for each individual using a digital machine. Every 10th survey participant has an extra series of four readings using the mercury sphygmomanometer, the traditional blood pressure device used for about 100 years, which is gradually being phased out.

A team of 25 to 30 nurses, who conduct the tests at specialty community clinics set up for this survey, measure weight, height, waist and hip circumference required for the waist-to-hip ratio along

women in 52 countries, has concluded that the waist-to-hip ratio is a stronger predictor of heart attack than the standard BMI.

A full analysis will get underway once the complete survey results are in, Nemeth said. "We have been trying, as much as possible, to do preliminary analysis in terms of what we are seeing in different age groups," she said. Researchers won't know until the survey is completed whether they have achieved the 25 percent target for each of the four representative ethnic groups.

The Heart Institute has been a leading site for research into hypertension. Dr. Leenen, for example, was principal Canadian investigator into the largest ever hypertension study to assess the most effective treatment for patients with high blood pressure. More than 42,000 participants in 623 specialty clinics across Canada and the United States were studied over a five-year period. The findings were released in late 2002 by the Antihypertensive and Lipid-Lowering Treatment to Prevent Heart Attack Trial (ALLHAT).

Dr. Fodor is a member of the Canadian Cardiovascular Society Consensus Panel on the Diagnosis and Treatment of Dyslipidemia and Prevention of Cardiovascular Disease. New guidelines on the treatment of high cholesterol are to be published in a 2006 position statement in the *Canadian Journal of Cardiology* in October of this year. He is also a researcher and co-author of special recommendations by the Canadian Medical Association on lifestyle modifications to prevent and control hypertension. 

The Heart Institute has been a leading site for research into hypertension. Dr. Leenen, for example, was principal Canadian investigator into the largest ever hypertension study to assess the most effective treatment for patients with high blood pressure.

"If we want to have a true picture and if we know who our target audience is, these are the primary ethnic groups for Ontario," said research nurse Kathleen Nemeth, project manager of the survey.

bourhoods throughout the province for a series of blood pressure tests and other measurements. It is expected the survey will yield strong results from at least 2,500 survey participants.

with body mass index (BMI). However, BMI is no longer considered the best obesity measure for assessing a person's risk of heart attack. Recent research, based on a study of 27,000 men and