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

THE BEAT™

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HIGHLIGHTS

This level of agreement put half-time scans within the level of consistency found across full-time scans. The team's findings were published and profiled on the cover of the April 2009 issue of the *Journal of Nuclear Medicine*, the leading journal in the field.

(from *Half-time SPECT Just as Good for Perfusion Imaging*, page 2)

"This technology right now offers hope to the hopeless. A less invasive therapy is considered the holy grail in our field. A less invasive therapy is what interventional cardiology is all about."

— Dr. Marino Labinaz, Director, Cardiac Catheterization Laboratory, UOHI (from *Novel Team Approach for Percutaneous Valve Replacement*, page 3)

"We are learning that genes which make you fat are not the same as the genes that help you lose weight. And now we can put our finger on just how the weight-loss gene is activated."

— Alexandre Stewart, Principal Investigator, Ruddy Canadian Cardiovascular Genetics Research Centre, UOHI (from *Tipping the Scales in the Genetics of Weight Loss*, page 4)

3-D X-Ray Technology Is the First in North America for Improving the Effectiveness of Angiograms



A new look in angiography: The University of Ottawa Heart Institute is the first site in North America to put a new dual-axis rotational cardiac X-ray technology into clinical practice. The system generates a continuous 3-D view of blood flow in the coronary arteries rather than a series of still images. The result is decreased radiation exposure and enhanced diagnostic precision.

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

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The University of Ottawa Heart Institute is the first medical facility in North America to implement dual-axis rotational cardiac X-ray technology for clinical use. The new system provides physicians with a three-dimensional imaging capability to more precisely locate and diagnose blockages in the coronary arteries. This advanced equipment also benefits patients in that it significantly cuts radiation exposure and reduces the amount of dye necessary for imaging.

Coronary artery disease is caused by a build-up of plaques in the artery walls that can narrow the blood vessels and restrict blood flow to the heart. Plaques can also break free and cause obstructions downstream. Angiography is a catheterization procedure used to visualize these obstructions and flow restrictions in the coronary arteries.


Diagnosing blockages with coronary angiography traditionally involves generating six or seven static X-ray views, called angiograms. For each, dye is injected

into the coronary artery to provide higher contrast in the X-ray image. "The Heart Institute typically conducts 6,000 catheterizations each year," said Dr. Marino Labinaz, Director of the Cardiac Catheterization Laboratory.

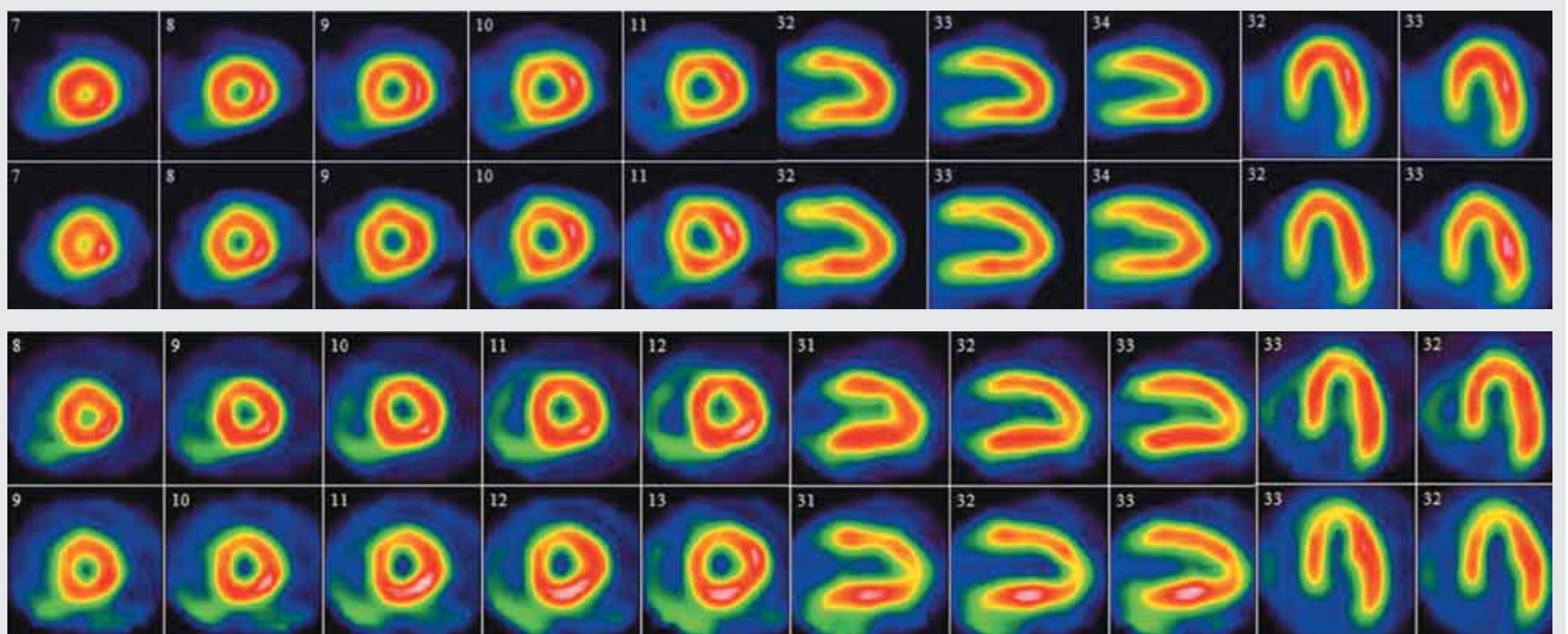
The new X-ray system quickly rotates around the patient, providing the medical team with live 3-D images of the arteries. With these unprecedented views, doctors can see arterial blockages more precisely, which improves the quality of diagnosis and of treatment. "Patients at the Heart Institute continue to benefit from the most advanced practices, technologies and treatments in coronary artery disease," Dr. Labinaz said. "As this technology gets adopted elsewhere, our experience here will reduce the learning curve for other clinical centres and benefit patients across the country."

The technology offers some other important benefits, as well. With standard angiography, each image takes time—to set up, to make the injection and to take

the image. With the new rotational X-ray, only one injection is needed to cover all views, requiring up to 20 per cent less dye. This is significant because the dye can cause potential damage in patients with kidney problems. The length of the procedure is also somewhat reduced. Finally, the advanced nature of the equipment lowers the amount of radiation required by up to 33 per cent, helping to reduce potential radiation risks for patients.

The Heart Institute is the first clinical site in North America and one of only a handful of cardiac catheterization facilities in the world to employ the dual axis rotational X-ray. The system is part of a new generation of imaging equipment that provides patients here with improved accuracy and speed in the diagnosis and treatment of coronary artery disease. "As part of our research mandate," Dr. Labinaz concluded, "We plan to investigate the full impact of this advanced X-ray technology on patient risk and improved effectiveness." 

Half-time SPECT Just as Good for Perfusion Imaging



Myocardial perfusion imaging visualizes how much blood reaches different parts of the heart. Heart Institute researchers have validated a new approach for the test that cuts scan times in half, improves image quality, and may allow for reduced radiation dosage. The top rows were generated from a standard full-time scan. The bottom rows used the half-time method. The study found that half-time scans using a new software package are as consistent and accurate as full-time scans.

Coronary heart disease (CHD) affects millions of Canadians and is a primary cause of heart attack and death. A widely-used way to assess the presence and extent of CHD is a nuclear imaging test known as myocardial perfusion imaging (MPI). The University of Ottawa Heart Institute alone conducts 6,000 MPI tests annually. Heart Institute researchers have now validated a method for cutting the duration of these scans in half without

In individuals with CHD, the relative blood flow under stress is compromised. Nuclear medicine offers two technologies to conduct MPI, each using radioactive tracers. The current study deals with single photon emission computed tomography (SPECT). Positron emission tomography (PET) is the other method.

PET offers better overall information about cardiac blood flow, but the tracers

heart. Software processes the data and generates images that show the amount of tracer throughout the heart. Areas with low tracer readings are suffering from impaired blood flow.

There are several reasons why shorter scans are a good thing. The main one is that shorter scans can actually improve image quality. Each scan in a standard MPI test lasts 12.5 minutes. Patients must lie motionless on their back with their hands above their head for the duration. This can be difficult to do. Studies have shown that healthy people tend to move after six minutes and that older people or those that are feeling unwell move after only three to five minutes. The data processing packages for scanners include motion correction algorithms to compensate for patient motion, but they can only do so much to salvage useful images. Of all standard length scans, 10 to 20 percent must be repeated because the patient moved too much.

The ability to generate accurate blood flow images in just six minutes would go a long way to reducing patient motion and bringing down the percentage of scans that need to be re-run. Half-time scans would also greatly improve the patient experience by addressing both physical discomfort and the anxiety some people feel while lying in the scanner. Because the new software also better compensates for variables such as breast tissue and excess fatty tissue in obese patients, it had the potential to provide much more accurate reconstruction of the scan data.

At the behest of Dr. Terry Ruddy, head of Cardiology and Nuclear Medicine at the Heart Institute, a study was initiated to assess the viability of half-time scans using a software package developed by General Electric Healthcare, the SPECT manufacturer. Similar software

is already in use for applications such as bone and brain imaging, but the Heart Institute study was the first to do a real-world assessment for cardiac imaging. “GE tests the software on ‘phantoms,’ which are anatomical models of the heart and chest,” said Dr. Ruddy. “These are static models that don’t move the way real hearts and people do. We needed to test half-time scans in a patient setting with all the variables that go along with that.”



The importance of the Heart Institute findings on half-time SPECT scans was reflected in its selection for the cover of the *Journal of Nuclear Medicine*, the leading journal in the field.

The ability to generate accurate blood flow images in just six minutes would go a long way to reducing patient motion and bringing down the percentage of scans that need to be re-run.

compromising data quality. Requiring little more than a software upgrade, faster and better scans will benefit patients and health care providers alike.

CHD is the result of impaired blood flow to the heart, usually due to blockages or narrowing of the coronary arteries. The gold standard for visualizing these obstructions is a coronary angiogram. In this test, a dye is injected directly into the coronary artery via a catheter, and the flow of the dye is viewed using x-ray technology. While angiography is the best method for locating obstructions, the invasive procedure entails potentially serious risks and doesn’t provide functional data on the extent of blood flow to the heart muscle.

MPI is non-invasive and poses far less risk. The test compares the flow of blood to the heart while at rest and during stress.

used are very short-lived and require a cyclotron nearby to produce them as needed. SPECT doesn’t have these same restrictions, and so is used much more widely. “The ability to improve SPECT MPI while using the same equipment and scanning procedures makes it accessible to any centre around the country,” said physicist Glenn Wells, leader of the research team. “This can impact a large number of Canadians with heart disease.”

For an MPI test, patients undergo an initial scan while they are at rest. They then follow a treadmill exercise protocol or are given a drug to induce stress, after which they are scanned a second time. To carry out the scans, patients are injected with a radiotracer that is absorbed from the bloodstream by the heart tissue. The SPECT scanner records the photons given off by the tracer that accumulates in the

The study randomly assigned patients to undergo two MPI procedures, either one full-time and one half-time or two full-time. The use of a group that receives two full-time scans is called test-retest. This allowed the researchers to compare the variability between half- and full-time scans with the variability inherent in standard full-time scanning procedures. The resulting images were then analyzed

both with automated tools and by radiologists who were unaware of how the images were acquired.

“We found that, in 95 percent of the cases, the image quality and clinical diagnosis were equivalent for half-time and full-time scans,” said Wells. This level of agreement put half-time scans within the level of consistency found across full-time scans. The team’s findings were published and profiled on the cover of the April 2009 issue of the *Journal of Nuclear Medicine*, the leading journal in the field (Ali I, Ruddy TD,

Almgrahi A, Anstett FG, Wells RG. *J Nucl Med.* 2009 Apr;50(4):554-62.).

“I think this paper got the cover for a few reasons,” said Dr. Ruddy. “It’s a high quality, well-designed study with a large number of patients, and no one had assessed the software clinically for cardiac imaging. Most importantly, though, it was an important observation. It provides hard evidence that half-time scans are viable and can improve throughput, increasing the return on investment for these expensive pieces of equipment.”

Throughput refers to the number of patients that can be tested in a given period of time. If half-time scans save nearly 15 minutes per patient, then an additional patient or two can be tested each day. With the Heart Institute’s present rate of 6,000 MPI scans per year, those 15 minutes saved add up very quickly.

The validated software also opens up other possibilities. As Wells explained, one is to scan for the full-time duration but give patients half the radiation dose. With the increasing number of

diagnostic tools that use radiation—from SPECT and PET to computed tomography (CT) to dental X-rays—this may be an attractive option, especially for younger patients who may accumulate a greater radiation dose over their lifetimes. Another is full-time scanning with the full radiation dose in order to generate higher resolution images that offer greater diagnostic potential. These are areas the imaging group will continue to explore. ☞

Novel Team Approach for Percutaneous Valve Replacement

A medical team at the University of Ottawa Heart Institute is treating patients suffering progressive aortic valve disease with a revolutionary new procedure that reduces recovery time while improving quality of life.

Aortic stenosis is an increasingly common valve problem that involves narrowing of the aortic valve opening, thus reducing blood flow from the left ventricle to the rest of the body. “This is a progressive and lethal disease,” said Dr. Marino Labinaz, Director of the Heart Institute Cardiac Catheterization Laboratory.

Until recently, the only treatment was open heart surgery to remove and replace the diseased valve. This remains the proven therapy for the majority of patients, but some are too ill or not strong enough for open heart surgery. Now, in the last year, a Heart Institute medical team led by an interventional cardiologist and a cardiac surgeon are performing a much less invasive catheterization procedure.

This technique involves threading a catheter from an artery in the leg up to the heart and across the diseased valve. A stent is used to open the narrowed valve.

between a cardiac surgeon, a cardiologist and an anesthesiologist is unusual. The collaboration creates a close-knit team that pools medical expertise across specialties in the best interests of the patient. Their evolution of this procedure may lead the way to a feasible, efficient non-surgical treatment option for high-risk patients who are too ill to undergo surgical aortic valve replacement.

“We are putting our best minds forward in this approach,” adds Dr. Labinaz. “As interventional cardiologists, we bring certain expertise with catheters and X-rays. Surgeons have a specific knowledge of the anatomy of the valve. This collaboration also helps us decide which patients are most appropriate for open heart surgery and which patients are best suited for this novel catheter-based procedure. Anesthesiology has its own expertise in how to support these very sick patients during and after the procedure.”

Known as percutaneous aortic valve replacement (AVR), the procedure is performed on select patients suffering the most severe symptoms but who are not good candidates for open heart surgery. “Because of other medical problems that often go along with aging, we’re

stopping at least twice. “His wife calls the procedure a miracle. The first thing he did after leaving the Heart Institute was go out and buy himself a lawnmower,” said Dr. Labinaz.

Treating aortic stenosis through surgery typically involves removing the diseased valve and replacing it either with a tissue valve from a horse or pig, or a mechanical valve of titanium stainless steel. Earlier catheter-based interventional treatment used simple balloon angioplasty for aortic valves—that is, inserting and then inflating a balloon to widen the inside of the narrowed valve. But re-narrowing (restenosis) would often occur within six months, so the approach was largely abandoned.

More recent techniques have followed the use of stents, which are inserted to open blocked arteries in a procedure called percutaneous coronary intervention (PCI). This approach is used particularly after heart attack. The percutaneous AVR procedure at the Heart Institute uses a smaller, more flexible stent made of a nickel titanium alloy called Nitinol. The procedure takes an average of two hours. Patients can get up and move around the room immediately afterwards and are able to return home within five or six days.

The 13 cases performed to date have been elderly, severely ill patients and a comparison is not valid with, say,

(continued on page 4)

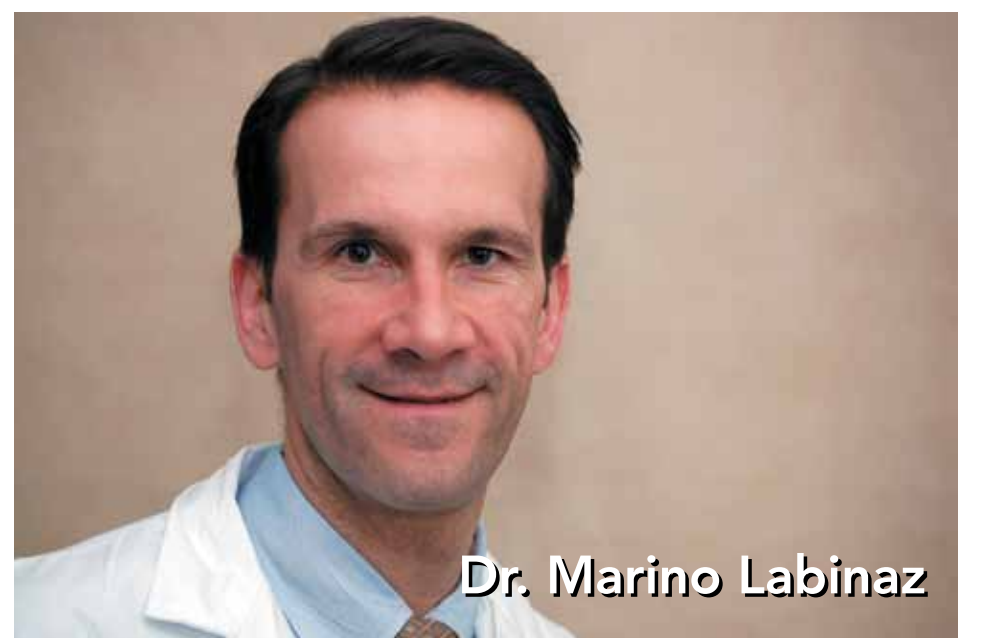
The close working relationship found here between a cardiac surgeon, a cardiologist and an anesthesiologist is unusual.

The stent also contains the new valve, which restores normal function to the heart. “We are now employing a new approach in cardiovascular medicine that allows a unique collaboration between cardiologists and cardiac surgeons,” explained Dr. Labinaz.

Ottawa is one of several sites in Canada employing this new technique. However, the “holistic” team model makes the Heart Institute unique. Competition between the specialties of cardiology and surgery is not uncommon. The close working relationship found here

discovering that up to one third of patients are denied open heart surgery,” he said. “As we are getting better at enabling people to live longer, we will be seeing more of these patients because they are not dying of heart attack at age 68 or bowel cancer at age 72. Now they are living into their 80s and 90s. So aortic stenosis is becoming much more prevalent.”

In fact, one of the Heart Institute’s patients was a 95-year-old man who is doing very well. Before his AVR, another patient, in his 80s, couldn’t walk down the hallway to the elevators without



Dr. Marino Labinaz

“At the end of the day, it is all about treating patients and making their outcomes better. The patient’s interests are paramount.”

- Director, Interventional Cardiology, University of Ottawa Heart Institute
- Director, Cardiac Catheterization Laboratory, University of Ottawa Heart Institute
- Professor of Medicine, University of Ottawa
- Research Interests: Coronary restenosis and related vascular biology of angioplasty, outcomes of patients undergoing percutaneous coronary intervention, acute coronary syndromes. ☞



The Aortic Valve Team (left to right): The Heart Institute team integrating cardiology, surgery and anesthesiology for percutaneous aortic valve replacement is led by (left to right) surgeon Dr. Mark Ruel and cardiologist Dr. Marino Labinaz. Other member of the team include Dr. Donna Nicholson (anesthesiologist), Laurie Trussler (nurse), Dr. Ian Burwash (cardiologist), Dr. Mark Hynes (anesthesiologist), Jason Hann (nurse), and Norm Gardiner (nurse).

(Novel Team Approach for Percutaneous Valve Replacement, continued)

a 58-year old man who undergoes valve surgery and leaves for home in several days. “These are what we call patients of last resort,” Dr. Labinaz said. “The vast majority of these patients had no other option.”

The program was initially developed two years ago as a collaboration between the divisions of surgery and cardiology at the

Heart Institute. Dr. Marc Ruel, Director of Cardiac Surgery Research, works alongside Dr. Labinaz. “Dr. Ruel and I have done all the procedures together and evaluate the patients together. Our skills are growing simultaneously. We have received comments on how well we work as a cohesive, well-oiled team,” he pointed out.

“We’ve developed this program together and I foresee us continuing that. We are offering the least invasive therapy

to our patients. We felt we should take advantage of all the specialties, including anesthesia, because these are high-risk patients and we want to have the most optimal outcomes.”

Some question whether percutaneous AVR might replace surgery as the standard in treating patients with aortic stenosis. There is no answer, said Dr. Labinaz. “This technology right now offers hope to the hopeless. A less invasive

How Aortic Stenosis Develops

The aortic valve allows blood to exit the left ventricle of the heart. The valve itself is comprised of three leaflets. When the leaflets become narrowed by scarring, the flow of blood from the heart to the remainder of the body becomes restricted.

Typical symptoms can include chest pain, shortness of breath or fainting. Once these symptoms develop, average life expectancy is between one and three years. There is no medical therapy to fix the problem. Medication will temporarily relieve some symptoms, but the disease remains. A progressive condition, aortic stenosis is lethal if left untreated. ❄️

therapy is considered the holy grail in our field. A less invasive therapy is what interventional cardiology is all about.”

“At the end of the day, it is all about treating patients and making their outcomes better. It is not about defending certain specialties or approaches. The patient’s interests are paramount, do what is best for them and that is what counts.” ❄️

Tipping the Scales in the Genetics of Weight Loss

North America is obsessed with losing weight—how to take it off, how to keep it off. Fad diets, an endless stream of food and exercise programs, and reality TV’s *The Biggest Loser* are all symptoms. As we learn more about the genetics of weight loss, many of us may be able to take solace in, or vent our frustrations on, the fact that a lot of it comes down to our genes.

Researchers at the University of Ottawa Heart Institute have unlocked the mechanism that turns on a weight-loss gene in muscle. Their new study shows that the mechanism—a DNA sequence variant identified as rs2419621—increases the activity levels of gene ACSL5. This was among the first genes to be associated with weight loss, and the variant that increases expression of ACSL5 enables rapid weight loss in people who are dieting.

Of course, there are important reasons, beyond aesthetics, to be concerned with excess weight. Increased risk of heart disease, diabetes and cancer are just a few. Unfortunately, our genetic makeup can work against our best efforts at

shedding pounds. “Evolution has made us like calories,” said Alexandre Stewart, principal investigator at the Heart Institute’s Ruddy Canadian Cardiovascular Genetics Research Centre. “It’s geared us toward putting on weight, keeping it on and burning it off slowly.”

If food is scarce and you burn through your fat stores quickly, you can get into trouble. If you run out of fat, your body will begin to degrade muscle tissue for fuel. From an evolutionary standpoint, this is not advantageous. But in modern society, there is no shortage of food. In fact, it tends to be abundant, heavily processed and loaded with calories, contributing to epidemic levels of obesity.

Working with The Ottawa Hospital Weight Management Clinic, Heart Institute scientists previously identified the ACSL5 gene as being linked to how quickly overweight people lose weight in response to diet. Unlocking the mechanism that activates this gene represents a major step forward in developing new treatments for chronic illnesses, which are increased as a

consequence of obesity. About 33 percent of Caucasians carry this genetic variant, as do 50 percent of Blacks and 29 percent of Asians.

Diet and exercise are both important in weight loss. But individual response to diet and exercise vary dramatically—something that has long perplexed

the genes that help you lose weight. And now we can put our finger on just how the weight-loss gene is activated.”

The recent study, led by Stewart and fellow geneticist Frédérique Tesson, is expected to pave the way for therapies to fuel ACSL5-enhanced weight loss. Further, medical professionals

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medical professionals. “Weight loss, especially among people who are dieting, is affected by several factors, and we’ve long suspected that personal genetic makeup is a real influence,” Stewart explained. “We are learning that genes which make you fat are not the same as

will be able to identify people who won’t respond to diet and target drug treatment to help them lose weight more quickly. Details of the study were published online ahead of print on February 13 in *The FASEB Journal* (www.fasebj.org).

The findings show that people who carry the ACSL5 variant are able to lose weight faster when following a low-calorie diet than those who do not. Stewart uses a skiing analogy: “Those of us who have this variant are on the black diamond run of weight loss, while the rest of us are on the bunny slope. Everybody eventually gets to the bottom of the hill, but it takes a lot longer for some than others.”

Obesity and weight-related illness have been the focus of major scientific projects

at the Heart Institute and are part of a global drive to fight obesity. Another such research effort, led by Dr. Ruth McPherson, has been investigating the genetics behind obesity—a serious risk factor for coronary artery disease. Her team is searching for patterns among obese people to help explain why one may suffer from heart disease or diabetes while a second, equally heavy, does not.

“We know that controlling obesity is hugely important in managing serious

chronic disease such as heart disease and diabetes,” said Dr. McPherson, Director of the Lipid Clinic. But clearly, we also know the problem is much more complex than just teaching people how to eat better and get more exercise. We need to understand the genetics and biology of obesity in order to individualize treatment.” Such personalized treatment will become an increasingly common theme across medicine in the coming years. ❧

Correction

In Volume 4, Issue 1, we incorrectly stated that the University of Ottawa Heart Institute “opened the first multidisciplinary Pulmonary Hypertension Clinic in Canada.” In fact, several others pre-date the Heart Institute clinic.

Controlling Hypertension: The Efficacious and the Effective

“I don’t have a multitude of tools with which to fight hypertension,” sighed Dr. George Fodor, Head of Prevention and Rehabilitation Research at the University of Ottawa Heart Institute. “Drug treatment is the most successful strategy to get hypertension under control.”

That’s the conclusion he and Dr. Frans Leenen, Director of the Hypertension Unit, reached after analyzing the results of the 2006 Ontario Survey on the Prevalence and Control of Hypertension. Funded by the Ontario Heart and Stroke Foundation, theirs was the largest hypertension study in Canada in 15 years. The latest findings from the survey’s large pool of data indicate that lifestyle changes did not improve control of high blood pressure, even though the value of some, notably loss of excess weight and reduction of salt intake, have been shown to work.

As Dr. Fodor explained, there is a nuance that makes all the difference. A treatment is considered *efficacious* if it is capable of producing the desired result. It is considered *effective* if patients actually succeed with it. For example, reducing salt intake from the average of three teaspoons a day to one will reduce hypertension. So will losing weight. However, these activities are efficacious—but not effective. As the study reveals, it can be very hard to make consistent and

sufficient lifestyle changes given the nature of our modern society.

Dr. Fodor laments the overabundance of salt in almost every item in the grocery store, from processed meats to bread, not to mention the pre-prepared meals. Almost 80 percent of salt intake comes from the store, not the salt shaker on the dining table. He is equally vocal about the lack of opportunity for exercise, citing the dearth of sidewalks, bike paths and grocery stores in Canadian suburbs. As well, most Canadians live in a climate that discourages moderate outdoor

activity in the dead of winter. Many also hang on to a way of life that no longer caters to their needs. Generations of Ontarians were raised on salt pork, salt beef, salted butter—because that’s how food was stored for winter until not so long ago—and they still have a taste for that sharp flavour.

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years during which their circulatory systems could suffer irreversible damage. Instead, he would advise patients that two efficacious approaches for treating hypertension are available, but only one is likely to succeed. Because of the importance of getting hypertension under control quickly, he would start them on both approaches and gradually reduce the drug load if they really can lose the weight and reduce their salt intake.

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“Hypertension, especially uncontrolled hypertension, is very, very serious—a silent killer,” he warned. The World Health Organization estimates that high blood pressure is the cause of at least 50 percent of heart disease and 75 percent of strokes. It is also a leading cause of kidney disease. Even a slight rise in blood pressure (normal is 120/80 mm Hg) can shorten life expectancy. Starting at 115/75, the risk of cardiovascular disease doubles with each increase of 20/10. At 180/120, if uncontrolled or untreated, a person can only expect to live a few years. “If people really want to do something for their health, I can offer efficacious and effective drugs,” he added.

Dr. Fodor is by no means suggesting that people should tear up their gym membership and sink into the couch with

(continued on page 6)



Dr. George Fodor

- Head of Research, Prevention and Rehabilitation Research, University of Ottawa Heart Institute
- Professor of Medicine, University of Ottawa
- Dr. Fodor recently organized a meeting of seven countries (five European countries, China and India) in Slovakia, supported by the World Hypertension League and the Canadian Institutes for Health Research. The international gathering marked the launch of a series of model projects to demonstrate that low-cost, effective, preventive strategies can reduce cardiovascular morbidity and mortality.
- He is also the principal investigator of an ongoing study on metabolic syndrome, funded by the Canadian Institutes of Health Research, conducted in co-operation with Memorial University of Newfoundland.
- Dr. Fodor has received many national and international honours, two of the most recent include the Golden Medal for Merits from the Slovak Medical Society, in 2007, and honorary membership in the Hungarian Hypertension Society, in 2008. ❧

(Controlling Hypertension: The Efficacious and the Effective, continued)

a bottle of pills in their hand, content that they are looking after their health. Although lifestyle changes do not seem to be effective at reducing hypertension, they are nevertheless efficacious, and their overall benefits on general health are overwhelmingly in their favour. When followed consistently, the DASH diet (see sidebar) helps to control weight, while regular exercise strengthens the heart and lungs, lowers cholesterol, and leads to better sleep and a reduced risk of cancer.

“I encourage people to exercise because they feel better,” confirmed Dr. Fodor. “They should do it for so many reasons, but not because they believe it will solve their hypertension problems.”

Early in his career, Dr. Fodor remembers young people dying from stroke because pharmaceuticals to treat hypertension weren't yet available. Those experiences left an indelible impression on him.

“People tell me that society has become medicalized and that it's a horrible thought,” he said. “I reply that it's a horrible thought that still too many people are dying or are crippled unnecessarily because their hypertension is not treated or treated insufficiently.”

Tools for Fighting High Blood Pressure

Lifestyle changes can help to control hypertension risk factors. Key steps include:

- Losing weight and exercising at a moderate level
- Following the DASH (dietary approaches to stop hypertension) diet, which involves cutting back on sugar, salt and red meat, favouring instead nuts, whole grains, fish, poultry, fruit and vegetables
- Going tobacco- and alcohol-free
- Managing stress through, for example, meditation or yoga

Dr. Fodor emphasizes that these measures greatly benefit general health and go a long way towards preventing hypertension as well.

Several classes of drugs are available to bring hypertension under control:

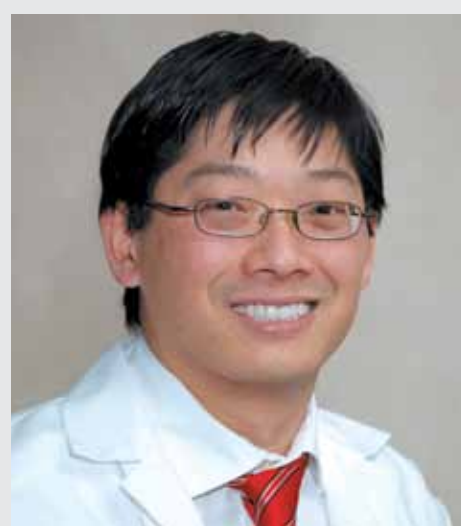
- Diuretics remove excess fluid in the body
- Beta blockers slow the heart beat and reduce the stress response in the sympathetic nervous system
- ACE inhibitors, calcium channel blockers, angiotensin II receptor blockers, and vasodilators help relax and/or widen the blood vessels
- Alpha blockers block nerve impulses that tighten the blood vessels
- Nervous system inhibitors increase nerve impulses that relax the blood vessels.

The Heart Institute at the American College of Cardiology

Several physicians and scientists from the University of Ottawa Heart Institute gave invited talks and research presentations at the American College of Cardiology's (ACC) recent Annual Scientific Session. With attendance upwards of 15,000 medical professionals, the meeting, held in late March in Orlando, Florida, is one of the top cardiovascular conferences in North America. Heart Institute presentations ranged from invited educational talks in symposium sessions to posters on cardiac imaging and preliminary findings from the ASTRONOMER aortic stenosis study.

Dr. Rob Beanlands, Director of Cardiac Imaging, was particularly busy. He participated as a panelist for a “Core Curriculum” session in which leaders in the field discussed key aspects on the use and application of nuclear cardiology. He then co-chaired a symposium session on the state of the art of cardiac positron emission tomography (PET) and PET/computed tomography (PET/CT) for molecular imaging of the cardiovascular system.

Earlier at the meeting, Dr. Beanlands was a panelist at a “Lunch with the Experts” session in which a medical case was presented to stimulate panel discussion on various approaches for assessing viability of heart tissue. The case in question was presented by Dr. Benjamin Chow, Co-Director of Radiology and a specialist in cardiac CT. Dr. Chow also chaired an oral session on coronary CT angiography and presented a poster proposing a possible



Drs. Rob Beanlands, Benjamin Chow, and Michael Gollob were among Heart Institute staff giving invited talks or chairing sessions at the 2009 American College of Cardiology Annual Scientific Session.

new anatomical measure for assessing the severity of coronary artery blockages.

Dr. Michael Gollob, an electrophysiologist and Director of the Inherited Arrhythmia Clinic, gave an invited talk at a symposium session entitled Sudden Cardiac Death in the Young. Dr. Gollob spoke on catecholergic polymorphic ventricular tachycardia, an arrhythmia that has a high rate of mortality in younger people and presents no anatomical manifestations.

The ACC Scientific Session featured an international symposium jointly sponsored by the ACC and the Canadian Cardiovascular Society on the use of stem cell therapy for heart failure and

heart attack. As part of the program, Erik Suuronen presented a primer on the importance of better understanding the role of stem cells in therapy. Suuronen's research explores methods for the repair and regrowth of damaged heart tissue using stem and progenitor cells as well as specially engineered biomaterials.

Addressing quality of care in STEMI heart attack cases, Dr. Michel Le May spoke on the key role of emergency medical services (EMS) in achieving shorter “door-to-balloon times”. Door-to-balloon is the critical interval between the point a STEMI heart attack patient arrives at the emergency room and the moment their artery is re-opened with a balloon

angioplasty. Dr. Le May pioneered a new STEMI protocol for the Ottawa region that involves close coordination with EMS and has cut mortality rates in half.

Heart Institute staff also authored half a dozen posters. Several assessed ways to better align patients with appropriate treatment paths using imaging techniques or biomarkers. Others assessed treatment options for atrial fibrillation and smoking cessation. In all, an interesting window on current clinical thought.