LIBIN CARDIOVASCULAR INSTITUTE of Alberta

A Publication for the Members and Associates
of the Libin Cardiovascular Institute of Alberta

Follow up on Innovation in Service Delivery

Atrial Fibrillation Clinic

Atrial fibrillation is the most common sustained heart rhythm abnormality and occurs when the atria or the upper chambers of the heart do not beat properly. Between April 1, 2004 and June 30, 2005 in the Calgary Health Region, atrial fibrillation was the primary diagnosis for 1,667 Emergency Room visits and 511 hospitalizations from the Emergency Room. Atrial fibrillation was a secondary diagnosis for 852 Emergency Room visits, 54 percent of whom were admitted to hospital.

In response to a growing population of patients with atrial fibrillation in the Region served by the Cardiac Arrhythmia Service (Southern Alberta, Eastern B.C. and Saskatchewan) and through funding provided by the Alternate Relationship Plan's Innovation Program, the Atrial Fibrillation Clinic was created in March 2006.

The Atrial Fibrillation Clinic team consists of two nurse clinicians, a pharmacist and clerical support as well as Drs. Gillis, Wyse, Kavanagh, Pollak and Veenhuyzen. The goals of this specialized clinic are to permit earlier access to medical care for patients with atrial fibrillation and to manage patients with atrial fibrillation in accordance with the guidelines proposed by the Canadian Cardiovascular Society. The Atrial Fibrillation Clinic provides support and education to referring physicians and provides patient education to both urban and rural patients.

We are proud of the Atrial Fibrillation Clinic team who have been working hard over the past year and have made significant headway in achieving these goals.

The clinic is actively following more than 400 patients and continues to receive 20 to 40 referrals per week. The establishment of the clinic has had a profound impact on wait times for ambulatory care - which have been reduced for this specific population by three to six months. The clinic has also resulted in an astounding 82 percent reduction in Emergency visits and a 56 percent reduction in inpatient admissions.

Cardiac Function Clinic

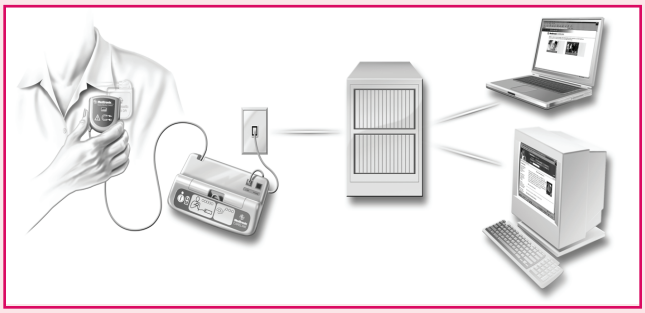
Between one and two percent of the Canadian population has heart failure and this number is expected to rise as the population ages. Heart failure patients can be difficult to manage and primary care physicians may not have sufficient experience to serve the unique needs of this patient population. If optimal care is not achieved, these patients may experience frequent Emergency Room visits and hospital admissions.

The first Cardiac Function Clinic in Calgary was established in 1997, with the purpose of providing evidence-based care to the heart failure patient population in the Calgary Health Region. In 2004/2005 the Cardiac Function Clinic was required to limit enrollment to 400 patients due to limited resources.

In 2005 the Libin Cardiovascular Institute of Alberta received funding through the Department of Medicine's Alternate Relationship Plan's Innovation Program to facilitate the expansion of the Cardiac Function Clinics at the Foothills Medical Centre, Peter Lougheed Centre and Rockyview General Hospital. These clinics are staffed by a nurse clinician with special training in heart failure diagnosis and treatment.

We are excited to report that the expansion of these clinics has been an incredible success! The Rockyview General Hospital clinic opened on October 1, 2005 and now serves 125 patients; the Peter Lougheed Centre clinic opened on December 1, 2005 and now serves 100 patients. This has resulted in a 50 percent decrease in hospital admission rates for the heart failure patients served by these clinics. Including the Foothills Medical Centre clinic, a total of 600 patients are now receiving specialty care through the Cardiac Function Clinics in the Calgary Health Region.

Carelink™



The Cardiac Arrhythmia Group in the Calgary Health Region provides services to patients from southern Alberta, western British Columbia and Saskatchewan. This group currently follows 550 patients with Implantable Cardiac Defibrillators (ICD). The ICD has been shown to be superior to pharmacologic therapy for the purpose of preventing sudden cardiac death in patients with life threatening heart rhythm abnormalities. Approximately 31 percent of these patients must travel from geographic regions more than 100 kms round-trip for the follow up that is required.

Medtronic Inc. has developed a management system for patients with ICDs called the Carelink™ Network. This allows patients to transmit information downloaded from their ICD via the telephone to a secure website. The data is then reviewed within 24 to 48 hours by a nurse clinician or physician. Through the use of Carelink™ remote ICD follow up, rapid diagnosis and early treatment can occur at the patients location. The implementation of Carelink™ has had a significant effect on the care provided to geographically isolated patients with an ICD and has reduced unnecessary visits to the specialized ICD clinic and to Emergency Rooms. It has reduced the travel time and costs for patients and improved the quality of life and satisfaction of the patients it serves.

As of October 31, 2007, 275 patients have been enrolled in the Carelink™ remote monitoring service. Patients have responded positively to the service. The latest advantage of the newest generation of Carelink™ is that it allows for automatic remote transmissions if the ICD detects any values out of the norm during its routine nightly system check. This allows for earlier recognition of any potential problems with the ICD functioning and prompt correction.

The Libin Insitute offers a broad range of opportunities for professional and research training in cardiovascular patient care, clinical research, translational research and basic science research.

Tomorrow's Research Cardiovascular Health Professionals (TORCH)

TORCH is an integrated program at the Universities of Alberta and Calgary with the mission to prepare Canada's next generation of trans-disciplinary cardiovascular health research leaders through a structured, dynamic and innovative training program. TORCH appreciates that tomorrow's solutions will require diversity and respect for differing talents and career paths, the ability to work within and across groups of health care professionals and researchers, and recognizes the synergism achieved through trans-disciplinary collaboration. Towards this end, TORCH congregates outstanding individuals with differing backgrounds, preparatory training and career aspirations, all of whom share the qualifications and disposition to be successful in a cardiovascular research career. Research trainees include qualified individuals from diverse areas such as basic scientists with a translational focus, health promotion and population health specialists, pharmacists, physicians, nurses, nutritionists, rehabilitation medicine specialists and surgeons.

If you are a prospective trainee you will find that TORCH is committed to providing a well-rounded education. You will work in an atmosphere of inquiry and excellence that attracts highly qualified health care professionals, students and faculty. You will be encouraged to explore the numerous opportunities and innovations that our diverse and expert faculty offers in all areas of cardiovascular research. Our commitment to research training and to you includes a promise that you will be afforded challenges commensurate with your enthusiasm and appetite for knowledge and that we will collaborate in your career planning and development.

Yours sincerely,

Paul W. Armstrong MD
Program Director
Tomorrow's Research Cardiovascular Health Professionals (TORCH)

U of C Research Fellow Wins Canadian Cardiovascular Society Award

By Laurie Wang

A Faculty of Medicine research student has been recognized by the Canadian Cardiovascular Society for his research into a magnetic resonance imaging process that can detect bleeding in the heart tissue as a result of treatment following a heart attack.

Dr. Andreas Kumar competed with over 70 other researchers for the Canadian Cardiovascular Society Student Clinical Research Award. The award acknowledges superior research in cardiology.

"It feels good to win this year. There are definitely many others who deserve this award too, so I'm sure it was an extremely difficult decision for the judges," he says.

Kumar, 34, moved to Calgary two and a half years ago from Germany to research alongside Dr. Matthias Friedrich, Director of the Stephenson Cardiovascular Magnetic Resonance (MR) Centre, the first centre for imaging of the heart in the country.

Using MR to detect bleeding heart tissue

"When a patient has a heart attack, it means an artery is blocked so we try to open up the artery, either with drug therapy or angioplasty," Kumar explains. "But sometimes when opening up the artery, capillaries are diseased. These capillaries can get clogged up and eventually bleeding can occur in the heart's muscle tissue."

This bleeding can be problematic, but physicians aren't able to tell how the bleeding has impacted the patient because there is no way to diagnose this while the patient is alive.

"We see the bleeding in the heart tissue when we look at the heart after the patient has already passed away," Kumar says.

To solve this, Kumar developed a magnetic resonance imaging process that detects the bleeding and shows what is going on in the tissue.

Kumar's research found that out of the 20 patients who have undergone angioplasty surgery studied, 40 percent have bleeding in the heart tissue. Now he is working with Friedrich's team to answer some key questions before they can keep moving forward in implementing this magnetic resonance imaging process further:

"By making the bleeding visible, we are able to investigate further and answer all these questions in the future," Kumar says.

- How often does bleeding happen?
- Who gets the bleeding?
- How does the medication impact bleeding?
- Are we, without intending to do so, making the heart tissue bleed because of the procedures we are currently taking to treat blocked arteries?
- What is the effect of bleeding on the patient's survival?

Tomorrow's Research Cardiovascular Health Professionals (TORCH)

Kumar credits a program called Tomorrow's Research Cardiovascular Health Professionals (TORCH) for contributing to his success. TORCH is an integrated program at the Universities of Calgary and Alberta that prepares and trains Canada's next generation of transdisciplinary cardiovascular health research leaders.

"There are workshops and video conferences where we learn from world class leaders in the field. We receive a wide range of training: in scientific methods, statistics, basic sciences, grant applications. We even learn about time management and balancing work and life," Kumar says. "It's a program I'm proud of being a part of and a program Calgary and Edmonton should be very proud of having."

The Cardiovascular/Respiratory Sciences (MDCV) Graduate Program

The main goal of the Cardiovascular/Respiratory Sciences Graduate Training Program is to provide a training experience, based on research excellence, which will enable graduates to proceed to further academic training and/or research/technical/professional positions in the Medical Sciences or related areas. In order to achieve that goal, rather than study in "classical" disciplines such as Anatomy or Physiology, students are placed with a supervisor who is a member of a multidisciplinary research group involved in cardiac, vascular and respiratory disciplines.

This multidisciplinary approach has proven to facilitate the development of individual research programs, especially with respect to collaborations involving different techniques and model systems. Students are encouraged to take advantage of such collaborations to enhance the scope and quality of their dissertation research.

Cardiovascular Research

Cardiac research ranges from analyses of molecular processes to patient-based studies. Research projects focus on: cardiovascular molecular biology; coronary artery disease; regulation of cardiac metabolism; coupling between the capacitance veins and the heart; interplay between the heart and pericardium; lipid metabolism in blood vessels; mechanics of the heart as a pump; mechanism, diagnosis and treatment of life-threatening arrhythmia; heart rate control; sleep, and cardiorespiratory and thermoregulatory control.

Respiratory Research

Respiratory research involves several areas of multidisciplinary research. These include neural control of breathing from cellular interactions in the in vitro reconstituted respiratory network of the mollusc through the control of breathing during sleep in patients with sleep apnea. A major new focus of the group is the investigation of asthma, both in the clinical setting and in the laboratory. Fundamental aspects of pulmonary and airway surfactant functions are investigated by electron microscopic and biophysical techniques. The latter project is related to the defence mechanisms of the lung, especially to particle (solid and fluid) clearance of the airway system after environmental challenge. Intrauterine and neonatal lung development are also investigated including the therapeutic effects of artificial surfactants in the respiratory distress syndrome of the newborn.

Smooth Muscle Research Group

The Smooth Muscle Research Group consists of 14 full and 12 local and international associate members and their research teams. The combined expertise of the group members spans the disciplines of biochemistry, molecular biology, biophysics, cell biology, developmental biology, physiology and pharmacology. The general areas of investigation include: contractile and regulatory proteins involved in smooth muscle contraction and relaxation and signal transduction pathways that control these processes; bioactive lipid second messengers and metabolism of the diacylglycerol second messenger; ion channel function and regulation, in particular potassium and chloride channels; control of cytosolic free calcium concentration and the involvement of intracellular organelles (sarcoplasmic reticulum and mitochondria); protein structure, structure-function relations and protein-protein interactions; receptor biology (e.g. proteinase-activated receptors; enzymology) in particular of protein kinases and phosphatases; endothelium-smooth muscle interactions: endothelium-derived relaxing and contracting factors; regulation of the renal microvasculature: signal transduction pathways in the afferent and efferent arterioles and the regulation of glomerular capillary pressure; atherogenesis; blood vessel development in zebrafish; smooth muscle and endothelial cell dysfunction in specific disease conditions such as persistent pulmonary hypertension of the newborn, cerebral vasospasm, diabetes mellitus and end-stage renal disease; and the physiology of lymphatic vessels and mechanisms of spontaneous lymph propulsion.

Dr. Dawei Jiang graduated from the Xinxiang Medical University, China in 2000 (MD). He then joined Dr. Wayne Chen's laboratory for his PhD research training. His research reveals novel mechanistic insights into the molecular mechanisms underlying calcium-associated cardiac arrhythmias, the actions of some pro-arrhythmic and anti-arrhythmic drugs, and skeletal muscle disorders linked to the ryanodine receptor. He has published seven peer-reviewed original manuscripts all in prestigious journals. Dr. Jiang is also the recipient of numerous awards and distinctions, including doctoral research awards from the Canadian Institutes of Health Research (CIHR), Heart and Stroke Foundation of Canada (HSFC), and Alberta Heritage Foundation for Medical Research (AHFMR). He is now conducting his postdoctoral research in Dr. David Clapham's laboratory at the Harvard Medical School under the Fellowship support from CIHR and AHFMR. Dr. Jiang was the winner of the University of Calgary 40th Anniversary Senate Graduate Award at the doctoral level which recognizes outstanding scholastic achievement and credits Dr. Jiang's thesis as well as the Department of Cardiovascular and Respiratory Sciences Graduate Program for their contribution to medicine.

Dr. Chen's Comments: Dawei is an exceptional student and a wonderful person to have in the lab. Dawei entered Medical School at the surprising young age of 15! And, he finished by the age of 20! This dedication was not only prominent in his scholastic activities as he filled his spare time as a member of a local soccer team. Although Dawei is extremely focused in his day to day activities, he is very much liked by his peers. He is pleasant and an honor to have in my lab.

For more information or to apply to the program please visit us online at:

www.med.ucalgary.ca/education/gse/cardiovascular/index.htm

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CLINICAL

Training Programs

The University of Calgary residency programs enable trainees to achieve certification by the Royal College of Physicians and Surgeons of Canada. At present, 51 accredited training programs are offered, including the Cardiology and Cardiac Surgery Training Programs.

Training may take place at any of the affiliated teaching hospitals within the Calgary Health Region, which include: the Alberta Children's Hospital, the Peter Lougheed Centre, the Foothills Medical Centre and the Rockyview General Hospital. In addition, selective rotations may occur at other locations in southern Alberta and beyond. Residency programs benefit from the excellent working relationship between the University of Calgary and the Calgary Health Region.

CORE CARDIOLOGY

Training Program

The Core Cardiology Training program at the University of Calgary is directed by Dr. Lisa Welikovitch, FRCPC, who joined the Department of Cardiac Sciences in 1998. The Core Cardiology Program was reaccredited in 2003 and is nationally renowned for the experience offered to trainees.

The objective of the program is to encourage the development of outstanding clinical skills in an atmosphere of academic inquiry. The University of Calgary offers a three-year training program in adult cardiology funded by the Ministry of Health and is fully accredited by the Royal College of Physicians and Surgeons of Canada. In accordance with the requirements for training in adult cardiology, the core program consists of 28 months of mandatory clinical rotations, four elective months and four research months. The program is flexible in supporting trainees to spend elective time at training sites outside Calgary, when appropriate.

There is also a five-year Clinician Investigator Program, which was developed in conjunction with the basic and clinical research groups at the University of Calgary and covers a wide range of interests in cardiovascular physiology and pathophysiology. The clinician investigator stream is intended for individuals committed to an academic career as a Clinician/Scientist or Clinician/Educator. Trainees who select this pathway will complete two consecutive years of dedicated research, in addition to the usual three years of clinical study. Research may be undertaken in a variety of areas, including scientific bench research, clinical epidemiology, or medical education.

There are usually eight to 10 trainees in the core cardiology training program. In addition, there are several research/clinical fellows pursuing sub-specialized training i.e. interventional cardiology, electrophysiology, echocardiograph, cardiac MR.

Upon completion of the training program, trainees will have been exposed to a broad range of clinical cardiology experiences and will be well equipped for independent practice, or may choose to pursue further training with a view toward an academic career in cardiovascular research and/or education.

International Experts Advisory Meeting, 2007

The fourth annual meeting of the International Expert Advisory Committee of the Libin Cardiovascular Institute of Alberta was held in Calgary, Alberta on June 2, 2007.

In attendance were Dr. Anthony DeMaria, Director, USCD Cardiovascular Centre, University of California, San Diego; Dr. Gilles Paradis, Professor, Department of Epidemiology and Biostatistics and Occupational Health, McGill University, Montreal; Dr. Douglas Zipes, Professor of Medicine Pharmacology and Toxicology, Director of Division of Cardiology, Krannert Institute of Cardiology, Indiana University School of Medicine and Dr. Norman Hollenberg, Professor, Harvard Medical School, Department of Radiology, Brigham and Women's Hospital, Boston, USA.

During the annual meeting, the Institute Director, Dr L. Brent Mitchell, provided an overview of the general progress of the Institute over the past year since the committee last met, and the current status of the strategic initiatives of the Institute. The Director of Research, Dr. Jonathan Lytton, reviewed the progress within three thematic areas in the basic or laboratory research arena. Finally, the Chair of the Health Promotion and Disease Prevention Leadership Council, Dr. Charlotte Jones, presented a summary of the Council's activities since she last presented to the Committee three years ago.

As in past years, committee members were impressed with the accomplishments made by the members of the Libin Institute in all areas which were presented. Dr. DeMaria noted:

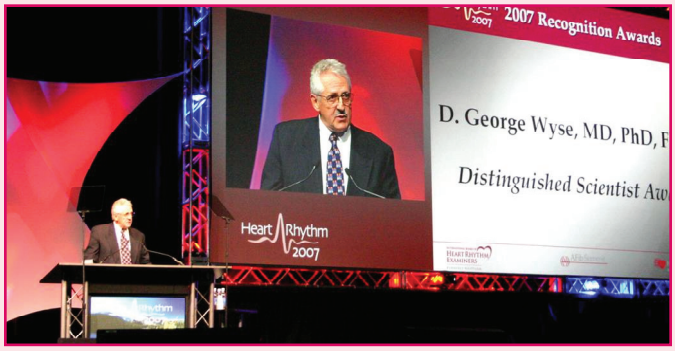
"The (Libin) Institute continues to thrive in virtually all facets of endeavor…. As in prior visits, I view Libin Institute to be in a position to be a worldwide thought leader, with the potential to be in the highest echelon of the most elite cardiovascular centers worldwide."

Attendees provided advice and guidance to further enable the Libin Institute to continue its vision of providing a superb, efficient, integrated program of cardiovascular wellness healthcare, research and education.

"…those involved should take great pride and pleasure in the advances made in only four years. Areas of excellence emerged, as has top-notch leadership. The optimal directions for continued growth are emerging rather clearly."

– Dr. Norman Hollenberg

The Libin Institute is proud to congratulate...



The Libin Institute is proud to congratulate Dr. D. George Wyse, who is the recipient of the Heart Rhythm Society's Distinguished Scientist Award 2007.

Dr. E.R. Smith is the recipient of two awards in 2007. The first is the James Graham award from the Royal College of Physicians and Surgeons of Canada. Recipients of this award are recognized for outstanding achievements which reflect the aims and objectives of the Royal College of Physicians and Surgeons of Canada.

Dr. Smith will also receive the Life Membership for outstanding service to the Profession from the Canadian Medical Association and the Alberta Medical Association.

Dr. Merril Knudtson was recently awarded the Distinguished Achievement award by the Faculty of Medicine at the University of Calgary.

The Libin Institute would also like to congratulate:

Dr. Hude Quan and Dr. Brenda Hemmelgarn, who have been recognized for their achievements in research by the Faculty of Medicine at the University of Calgary.

New Space Opening Summer/Fall 2008

Planning is currently underway to for relocation to the Health Research Innovation Centre (HRIC) and the Teaching Research and Wellness (TRW) buildings. The Libin Cardiovascular Institute has been awarded space in both buildings

The Health Research Innovation Centre (HRIC) is set to open Summer/ Fall 2008. Construction has begun on the interior of the building; the Libin Institute has been awarded space on the main floor for those who are moving from the Heritage Medical Research Centre as well as the Health Science Centre. Planning for the outfitting of the space and the move into the new space is underway, although an expected date of completion has not been identified.

Planning is also underway for the Teaching Research and Wellness Building (TRW) where space has been identified for the Libin Institute on the main floor. The floor will house the Human Physiology Laboratory which will be used by Cardiology, Nephrology and Respiratory physicians and staff. Other groups which may be housed in this area are: the STEMI/Heart Alert/ APPROACH program and the HBP Rotary Flames Centre of Excellence.

The UCMC Clinic, currently located in the Health Science Centre will also be relocated to the second and third floor of the TRW. All Cardiac Sciences ambulatory services currently offered at the Foothills Medical Centre Campus will now be located out of one area within the TRW which will allow us to provide more patient centered care approach and it will facilitate collaboration between staff within the various subspecialties and clinics in Cardiac Sciences.

UNIVERSITY OF CALGARY

calgary health region

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