



# Murmurs

JAN - JUN 2009 Issue 1 A quarterly publication of National Heart Centre Singapore MICA (P) 038/09/2008

## HIGHLIGHTS

- New procedure for patients with severe valvular heart disease
- NHC breaks ground for new building
- Up-close and personal with Dr Lim Chong Hee, Healthcare Humanity Award 2009 winner



## Making Medical History Asia's First Combined Heart and Liver Transplant

When a bout of diarrhoea persisted for six months, followed by numbness in his right leg, it set off the alarm bells in 57-year-old Lau Chin Kwee. A visit to the neurologist revealed the diagnosis of a rare genetic condition known as Familial Amyloid Polyneuropathy (FAP) where a single gene mutation caused the liver to produce abnormal proteins known as amyloids.

These proteins affect the nerves and the organs, impairing the functions of these organs over time. As liver was the source of the mutant protein, liver transplantation was recommended as a potential curative treatment. Clinical evaluation of his heart also confirmed that it was affected by the disease. Mr Lau was then placed on the waiting list for a combined heart and liver transplant in November 2008.

Suitably matched organs from a deceased donor under HOTA became available in early April 2009 and the retired pastor underwent the historic Asia's first combined heart and liver transplantation jointly performed by the National Heart Centre Singapore (NHC) and the Singapore General Hospital (SGH). The multi-disciplinary team included surgeons, physicians, anaesthetists, transplant coordinators, operating room staff, intensive care unit staff, pharmacists, physiotherapists and medical social workers.

### No Room For Error

The landmark surgery started with the heart transplant followed by the liver transplant. The entire surgery including the pre-transplantation preparation took about 12 hours. The heart transplantation led by Dr C Sivathasan, Dr Lim Chong Hee and Dr Lim Yeong Phang



NHC cardiothoracic surgeons, Dr Lim Chong Hee (left), Dr C Sivathasan (right) and Dr Lim Yeong Phang (back facing) performing the heart transplant of the landmark surgery.

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was completed within 3.5 hours. The liver transplantation led by Dr Tan Yu Meng, Dr Cheow Peng Chung and Dr Alexander Chung took another 5 hours. Mr Lau has since discharged from the hospital and is recovering well.

Citing the challenges faced, Dr C Sivathasan, lead surgeon of the NHC heart transplantation team said, "This was a long surgery with no room for error. We had to complete the heart transplant within 3 - 4 hours. The heart also had to recover from the transplantation and withstand the stress of the liver transplantation. There was also the risk of bleeding."

The sheer complexity of the surgery called for seamless interface and co-ordination between the heart and liver transplant teams, for both the donor and the recipient. The timing between the procurement and transplantation of individual organs was crucial as it would affect the viability of the organs.

### Key to Success

Dr Lim Chong Hee, Senior Cardiothoracic Surgeon, NHC, who was also involved said, "The cooperation between the SGH and NHC medical teams was excellent. We had numerous discussions prior to the surgery including possible scenarios which may arise." Dr Siva added, "The review team meeting helped us to establish communication, re-identify responsibilities of the various teams and the role of coordinators. It was like conducting an orchestra. Coordinators kept the lines of communications and various timings. There was constant communications between recipient and donor teams, harvesting sequence, donor organ arrivals, team rotation etc."

Encouraging signs that the operation went well came in three stages: When the donor heart started beating and adequately took over the load from the heart-lung machine; after the liver transplantation and successful reperfusion; and finally adequate control of the bleeding.

The success of the double-organ transplant is far-reaching. "The Outram Campus has reached the state of maturity of a major transplant centre. The increase in public awareness would certainly promote organ donation – the gift of life, to bring new lease of life to those who are desperately ill, for them to get back to their family and community," said Dr Siva.

*"All of us are well experienced and trained in our fields and the teams have spent some time together to work out the issues and alternative plans prior to the operation. When the time comes for the actual operation, we focused on the task at hand, as patient's safety and outcome is first and foremost in our mind. It is definitely satisfying to be able to help the patient at the end of the day."*

**Dr C Sivathasan, Lead Surgeon,  
NHC Heart Transplantation Team**

## New Minimally Invasive Procedure for Patients with Severe Valvular Heart Disease – Percutaneous Aortic Valve Replacement

National Heart Centre Singapore (NHC) recently introduced a new minimally invasive procedure known as the Percutaneous Aortic Valve Replacement for patients with severe aortic stenosis. This is a condition where the heart's aortic valve becomes narrowed or obstructed, preventing it from opening properly and blocking the flow of blood from the left lower chamber of the heart to the aorta.

Unlike the conventional surgical approach which opens up the heart and the patient is put on a heart and lung machine to stop

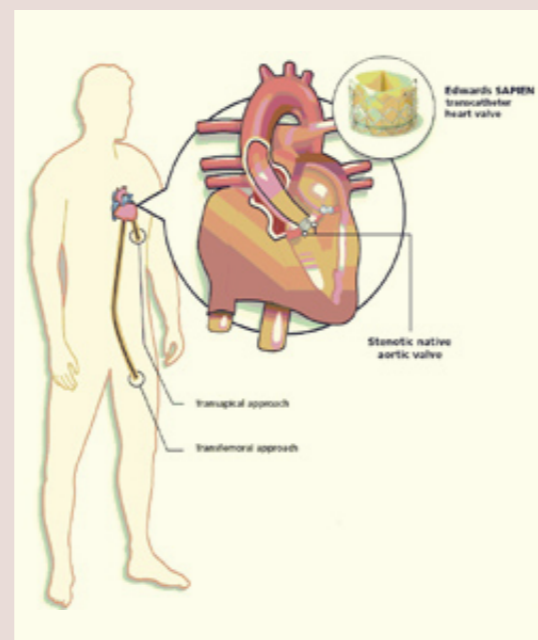


Illustration on the percutaneous aortic valve replacement, courtesy of Edwards Lifesciences



The PAVR team: 1) Dr Lim Soo Teik, 2) Dr Chua Yeow Leng, 3) Dr See Tho Ving Yuen, 4) Dr Lee Chung Yin, 5) A/Prof Koh Tian Hai, 6) A/Prof Hwang Nian Chih, 8) Dr Paul Chiam, 9) Dr Victor Chao and the cardiac catheterisation staff who performed the first case under the proctorship of 7) Dr John Webb, Medical Director – Catheterisation Lab, The Heart Centre, St. Paul's Hospital, Vancouver, USA.

the heart from beating, the percutaneous aortic valve replacement is performed through a tiny incision of 4 – 6 cm at the groin or chest where a balloon catheter pre-mounted with the tissue valve is guided to the diseased heart valve. The doctor uses echocardiographic and fluoroscopic guidance for visualisation during the valve delivery. Once at the diseased site, the new valve is placed across the stenotic valve by balloon expansion. This method reduces the trauma to patients and leads to a faster recovery and shorter hospital stay.

NHC was the first in Asia to perform the percutaneous aortic valve replacement procedure. The centre performed its first such procedure using the transfemoral approach on 9 February 2009 and the transapical approach on 2 March 2009.

The multi-disciplinary team involved were Associate Professor Koh Tian Hai, Dr Paul Chiam, Dr Chua Yeow Leng, Dr Victor Chao, Dr Lee Chung Yin and Dr See Tho Ving Yuen.

Aortic stenosis occurs in approximately 2% of the population above 65 years old and 4% of those above 75 years old. With Singapore's rapidly ageing population, the number is set to rise. Explaining the significance of this new therapy, Dr Paul Chiam, Consultant, Department of Cardiology said: "Left untreated, the survival rate for severely symptomatic patients could be as high as 50% within 2 years."

Currently, patients with severe aortic stenosis are considered for surgical aortic valve replacement. However for those with multiple medical problems, such as very advanced age, poor heart function, renal failure, severely calcified aorta, previous scarred chest due to surgery or irradiation, they would not be suitable as it increases the

*"Before the procedure, I had to make 3 stops for a short trip to the market as I felt so breathless. Now, I no longer feel breathless and am very happy to resume my normal lifestyle."*

**77-year-old retiree Tang Yat Cheong,  
first PAVR patient**

morbidity and mortality associated with surgery. The introduction of the minimally invasive percutaneous aortic valve replacement offers them an alternative therapy that helps to prolong survival and improve their quality of life, especially in the elderly patients.

As of June 2009, NHC has performed a total of seven cases.

Citing the key challenges of this highly complex procedure, Dr Victor Chao, Consultant, Department of Cardiothoracic Surgery said, "As Asians typically have smaller arteries, the artery may be injured when the catheter goes through it. In addition, the doctors have to be very precise in deploying the valve to prevent possible dislodgement."

To help patients defray the cost of the procedure, NHC had secured a grant of \$200,000 from the Lee Foundation and the SingHealth Foundation to pay for the heart valve device. The centre estimates that about 10 to 20 patients would benefit from this new treatment each year.

# NHC Breaks Ground For New Building

The air was thick with excitement on 28 March 2009 morning when some 150 guests and staff arrived at the NHC's new building site at the Hospital Drive to witness the historic groundbreaking moment. The ceremony, graced by Health Minister Khaw Boon Wan, saw the centre unveil the design and plans for its new building.



Left to right: Prof Ivy Ng, DCEO, SingHealth; A/Prof Koh Tian Hai, Medical Director, NHC; Health Minister Khaw Boon Wan; Prof Tan Ser Kiat, GCEO, SingHealth and A/Prof Terrance Chua, Deputy MD, NHC celebrating the NHC new building ground breaking.

## Seamless Care Delivery

A key focus area on the NHC new building is on seamless care delivery. This includes centering care around the needs of patients and families; forming coordinated systems to deliver effective and appropriate care to patients, and developing and supporting care models that include defined care coordinators for patients with chronic and acute conditions.

To meet current workload and in anticipation of rising demand with a rapidly ageing population, NHC will increase the number of clinics by three-fold. The centre will also be setting up day surgery facilities at the new building to provide a holistic and seamless care by consolidating the services under one roof. By further addressing right site of care, patients can expect a lower hospitalisation bill due to a shorter hospital day. This will help them to stretch their healthcare dollar.

Self-registration and payment kiosks and a one-stop payment system can also be expected to bring forth greater ease and convenience to patients.



The new building will add a health information library to facilitate patients to learn about specific heart diseases or conditions and healthy living.

On the teaching front, NHC will continue to strengthen its status as the preferred cardiovascular training centre through training an increasing pool of qualified doctors, nurses and allied healthcare workers in cardiovascular medicine to meet the rising expectations of patients and to serve the ageing population.

Research facilities currently being sited out off the main building due to space constraints will be housed at the new building. Co-locating service and research will enhance interaction between researchers and clinicians, creating a vibrant academic medical environment that promotes the translation of research into clinical services that can improve the diagnosis, treatment and cure for the patients. The centre will also intensify its collaborations with the Duke-NUS Graduate Medical School to strengthen cardiovascular research on the Outram Campus in the next decade.



## Digital Heart Hospital

Setting sights on being a Digital Heart Hospital, the new NHC building will harness the prolific use of information technology (IT) to dramatically improve the processes and outcomes of care.

This include the Computerised Physician's Order Entry (CPOE) system, a cluster-wide initiative by SingHealth, which allows doctors to place clinical orders such as radiology or laboratory tests and outpatient medication prescriptions electronically, via customised clinical order sets. This will save them the hassle of filling up tedious physical order forms, providing them ease and speed in consultation. More importantly, the system reduces errors associated with illegible handwriting and built-in decision support mechanisms allow pharmacists and nurse to cross-check the orders.

The centre will move from the conventional paper clinical notes to an electronic-structured clinical documentation. With data entered electronically, it eliminates the need for paper notes and reminders. This improves accuracy and readability and outcomes can be tracked for decision support to improve clinical care continually.

To enable our doctors to meet, confer and share knowledge, across borders, the new NHC will leverage on telemedicine with digital imaging capabilities. The centre is also gearing towards a paperless environment to enhance productivity and patient safety while being environmentally friendly as well.

The 12-level building of 35,000 square metres will complete by end 2012, and operational in early 2013.

## "Placing People First" Design Philosophy



Jointly designed by Ong & Ong and Broadway Malyan, the inspirational concept of the NHC new building was drawn from the "Placing People First" philosophy. It encompasses the needs of the various key users – the patient, the visitor and the staff.

A distinctive feature is its two fronts - institutional and garden. The institutional front, the main approach for vehicles and houses the medical facilities, is quiet and formal. The garden front, at the other end, faces the garden deck in the Outram Campus Masterplan. This serves primarily as the healing park and waiting area. The first and second storey will allow direct passage by the public from the institutional front to the garden deck, to promote integrated access to other facilities within the Campus.



The new building will adopt various green building features, technologies and innovations to achieve better performance in energy efficiency, water usage, use of recycled and reusable materials, indoor environmental quality and environmental management. The use of sustainable construction defines a green benchmark for healthcare design in South-East Asia.

It will introduce intuitive wayfinding, with most facilities visible from the main reception, bringing ease and convenience to the patients and visitors.

# Connecting to The Human Spirit

When asked on his thoughts on clinching the Healthcare Humanity Award 2009, Dr Lim Chong Hee, Senior Cardiothoracic Surgeon and Director, Heart and Lung Transplant Programme at the National Heart Centre Singapore, was momentarily stumped. "I wasn't expecting a prize for doing what I'm supposed to do. This comes as a surprise and it's a great honour. Being a heart surgeon is a privileged position. You are that one person who can turn a sick man healthy again with the correct operation," said Dr Lim.

The Healthcare Humanity Award recognises the giving spirit of healthcare professionals despite all adversities and their relentless care to the nation, community and patients. These individuals embody the values of courage, extraordinary dedication, selflessness, steadfastness in ethics, compassion and humanity - all that underscore healthcare as a noble profession.

Throughout his career, the 44-year old surgeon has pulled many back from the brink of death with his deft hands and determined nature.

Recalls Dr Lim, "Just today, I operated on this 15-year old with a big tumour, probably a few kilograms. Almost immediately after removing the tumour, you see this amazing transformation in his state of health. It's very gratifying especially in such young patients as they have yet to experience life to the fullest."

Yes, this life-saving power is divine. But equally important is one's compassion and dedication. Citing a challenging case, Dr Lim said, "There was this teenager who needed a heart transplant but he was extremely afraid of pain and had difficulty understanding the severity of his condition. We spent a considerable amount of time to build trust and allay his fears, convincing him that the heart transplant was in his best interests. Today, he is a completely new man, happily married and a proud father."

Cardiothoracic surgery is not for the faint-hearted. It constantly tests the surgeons on their courage and tenacity as challenging and complex cases are a norm in this specialty. "In cardiothoracic surgery, you have to push the envelope all way. We try all options and do not give up easily," said the resolute surgeon.

Though faced with rigorous demands of the job, Dr Lim would not settle for anything else, given a choice. "Since young, I have wanted to be a doctor. I enjoy new experiences and take pleasure in 'instant gratifications'. Being a cardiothoracic surgeon gives



me the variety I relish - cardiac, thoracic, mechanical heart assist device, heart failure cases, plus the satisfaction of seeing my patients getting better each day."

After graduating with his Bachelor of Medicine and Surgery from the National University of Singapore in 1990, Dr Lim set his mind on being a cardiothoracic surgeon during his trainee days at the old Changi General Hospital. A registrar then had advised him on taking up this specialty. After watching him operate and witnessing the dramatic transformation to a patient's health, he was convinced that was his calling. He went on to pursue his postgraduate training at the Cleveland Clinic Foundation, Cleveland, Ohio, USA from 1999 to 2001.

A typical day for Dr Lim starts at 8am with meetings, clinic or surgery sessions and ends around 6pm. He operates three sessions per week with 2 - 3 cases per session. Occasionally he is called to see patients in other hospitals. Besides clinical work, the energetic doctor is also actively involved in teaching and research.

If you think that the surgeon doesn't have a life, you are wrong. Dr Lim is very much a family man. He makes an effort to go home for dinner almost daily. Weekends are usually family outings and once a month, the extrovert will catch up with friends over a drink. In addition, his timeshare scheme 'forces' him to take a one-week vacation with his family annually and this sometimes, turns into a romantic getaway with just the wife.

With the strong bond between the surgeons and their patients, so how does one cope when the patient doesn't pull through. "Well, to be honest, most of us will take it very hard. We will think through the entire process to see how we can do better the next time. Exercise is a good way to unwind. I enjoy cycling and a game of squash. It helps to clear the mind and allows critical thinking," said the athletic surgeon.

An avid reader, Dr Lim enjoys Man Booker Prize books. His recent conquest was White Tiger, a compelling read on the cut-throat world of an Indian entrepreneur.



One happy family - Dr Lim Chong Hee with wife, Janice and their children Ronan, 5 and Deanna, 7.

**Certainly, the man seems successful in all aspects of life. So any tip for the budding doctors?**

*"Medicine is an evolving practice. To stay relevant, you have to constantly keep up with the latest developments around the world, not only in this area but the other topics such as economics, politics etc. Such intelligence will allow you to see the intricate pattern between them and the trends that emerge."*

## Contact Us



For appointments or enquiries, please contact

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- Conventional coronary artery bypass graft surgery
- Off-pump / beating heart surgery
- Congenital heart disease surgery
- Maze surgery for atrial fibrillation
- Left ventricular reconstructive surgery (Dor or Saver surgery)
- Heart transplantation
- Valvular heart surgery including valve repair and replacement surgery
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- Endoscopic vein harvest

#### THORACIC SURGERY

- Complete muscle sparing thoracotomy
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- Drainage of empyema
- Lung resection for cancer of the lung
- Lung transplantation for advanced lung disease
- Lung volume reduction surgery (LVRS) for chronic obstructive pulmonary disease (COPD)
- Mediastinoscopy for staging of lung cancer
- Minimally invasive (endoscopic) thoracic sympathectomy
- VATS pleurodesis for spontaneous pneumothorax
- Resection and reconstruction of chest wall tumour including locally advanced breast cancer
- Resection of mediastinal tumours
- Total oesophagectomy for cancer of oesophagus / other disorders
- VATS thymectomy for myasthenia gravis
- Trachea-resection and reconstruction
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#### AORTIC AND PERIPHERAL VASCULAR SURGERY

- Abdominal aortic aneurysm surgery
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#### MECHANICAL HEART ASSIST DEVICE

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- Dr Kenny Sin Yoong Kong, Head and Senior Consultant
- Dr Chua Yeow Leng, Senior Consultant
- Dr Lim Chong Hee, Senior Consultant
- Dr Lim See Lim, Senior Consultant
- Dr Tan Teing Ee, Senior Consultant
- Dr Lim Yeong Phang, Consultant
- Dr Victor Chao Tar Toong, Consultant
- Dr Su Jang Wen, Associate Consultant

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## Retrograde Technique for Chronic Total Occlusion

Dr Aaron Wong, Senior Consultant, Department of Cardiology

*Chronic total occlusion (CTO) is defined as the blockage of a coronary artery for more than 3 months (Fig 1A). It is present in 20% - 30% of coronary artery disease patients who undergo diagnostic coronary angiography and 5% - 10% of all percutaneous coronary interventions (PCI). The success rate for CTO intervention previously was a mere 50% - 60% at best hands and the commonest reason for failure is unsuccessful crossing of the total occlusion.*

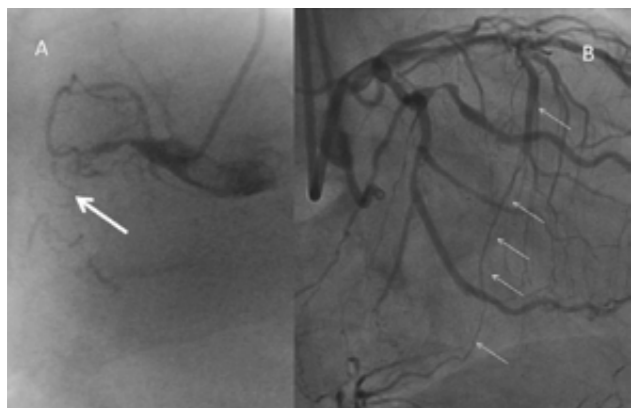


Fig 1. A) A long CTO in mid right coronary artery (arrow). B) Contralateral injection from left coronary artery showing good septal collaterals (arrows) to the distal RCA branches.

To overcome the dismal outcomes in CTO intervention, many dedicated CTO wires have been developed to facilitate CTO lesion crossing. These dedicated CTO wires, in addition to various CTO wire crossing techniques have improved the success of CTO intervention to 70% - 80%.

Traditionally, the approach for CTO is always antegrade approach, often with cannulation of contralateral artery to visualise the collaterals and guide the antegrade guide wires. Once the CTO is successfully crossed, balloon catheter and stent can be delivered to the CTO. The limitation of this antegrade technique is that the guide wires usually go into the false lumen and are unable to re-enter the true lumen distal to the CTO.

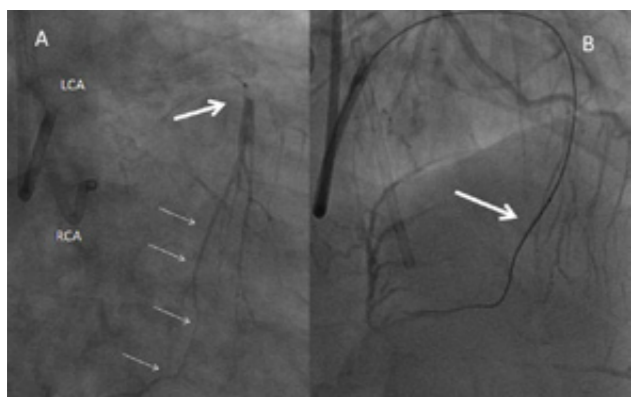


Fig 2. A) Both coronary arteries were cannulated with guiding catheters (RCA and LCA). A selective septal injection was performed through a microcatheter (thick arrow) to visualise the septal connection (thin arrows). B) The guide wire (arrow) entering the septal collaterals entering into the true lumen distal to the CTO.

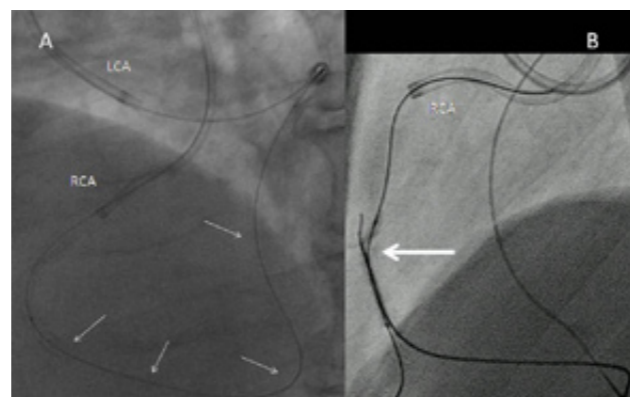


Fig 3. A) Scenario 1 – The retrograde wire crossed the CTO from distal to proximal and into the antegrade guiding catheter (RCA) and exchanged with a long guide wire (arrows) with both ends of the guide wire outside the body. B) Scenario 2 – Both wires went into the false lumen and balloon inflation (arrow) was performed in the retrograde and/or antegrade guide wire to create dissection planes.

More recently, the retrograde technique for CTO, developed, refined and popularised by the Japanese CTO specialists, has made a great improvement in the success rate for CTO. The principle of retrograde technique is to approach the total occlusion distally from the contralateral artery via the collaterals. One of the most important factors in retrograde approach is to have good collaterals so that a retrograde channel, most commonly using a septal channel, can be identified (Fig 1B).

In the retrograde technique, both coronary arteries are cannulated with large guiding catheters (Fig 2A) and wiring with a soft wire starts from the contralateral artery. After crossing an appropriate septal channel (Fig 2A and 2B), it is dilated with small balloon to facilitate wire manipulation and balloon catheter crossing. When the soft guide wire reaches the distal part of the CTO, we can be certain that the guide wire is in the true lumen at the distal segment of the occlusion. The guide wire is exchanged with a stiffer wire, through a microcatheter (a small hollow tube), to attempt to penetrate the CTO from distal aspect.

Two possible scenarios with this retrograde approach.

### 1) The retrograde stiffer guide wire crosses the CTO distally and enters the proximal true lumen of the artery.

In this case, no antegrade wiring is required. The retrograde guide wire will enter into the antegrade guiding catheter and this can be exchanged with an extremely long guide wire, again through a microcatheter. As a result, the long guide wire makes a loop, connecting the coronary arteries via the collaterals, with both ends outside the body (Fig 3A). Interventions can then be performed via the antegrade segment of the long guide wire (Fig 4A and 4B).



Fig 4. A) The antegrade wire in the right coronary artery (either crossed antegradely or exchanged after a retrograde wire crossed the CTO distally) and stenting performed (arrow). B) Final angiographic after stenting from distal to proximal right coronary artery with 3 stents.

### 2) The retrograde stiffer guide wire enters the false lumen and unable to enter into the proximal true lumen of the artery.

In this case, antegrade wiring with a stiff wire is required in an attempt to cross the CTO antegradely. However, the antegrade guide wire usually enters the false lumen antegradely and the tips of both wires fail to connect. When this happens, a balloon catheter is passed through the retrograde and antegrade guide into the false lumens and inflated to create dissection planes intentionally (Fig 3B). The principle is that dissection planes will usually connect to each other. The antegrade guide wire will usually find the dissection plane created by the retrograde wire and follows the dissection plane into the true lumen distally guided by the retrograde wire. This technique is called Controlled Antegrade and Retrograde Subintimal Tracking (CART) (Fig 5). When the retrograde wire is successfully used to find the true lumen proximally, it is called reverse CART technique. In this case, the retrograde wire will enter the antegrade guiding catheter and PCI can be done as in scenario 1 above.

In experienced Japanese centres, the overall CTO success rate can be up to 95% with application of retrograde techniques. In some case, initial retrograde approach is preferred when there is favourable anatomy and the success rate of the antegrade approach is low. However, retrograde approach to CTO is not without complications. Perforation of the artery and rupture of collateral channels are some of the serious complications. Retrograde technique for CTO usually requires long procedural time, radiation injury and renal injury secondary to large contrast load are of major concern, as well as thrombus formation in the catheter due to under anticoagulation. Therefore, the skills and patience of the operator, and special devices (longer wire and balloon, shorter guiding catheters, septal dilator) are required to execute this technique successfully.

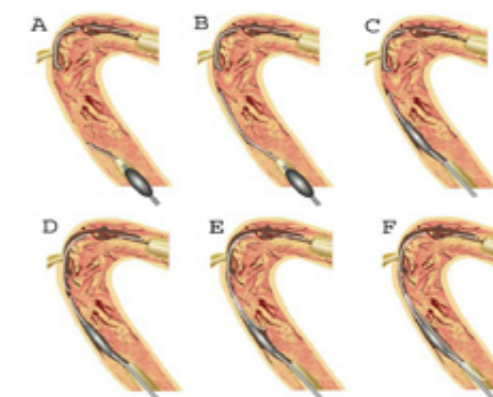


Fig 5. A graphic description of CART technique. A) The CTO is approached from both directions with the antegrade wire in the false lumen. B) The retrograde wire is advanced into the false lumen. C) Balloon inflation through the retrograde wire creates a dissection plane. D) and E) Manipulation of antegrade wire in the false lumen and attempt to enter the dissection plane. F) Antegrade wire enters into distal true lumen following the dissection plane.

# Singapore LIVE 2009

## - Engaging Minds, Strengthening Ties

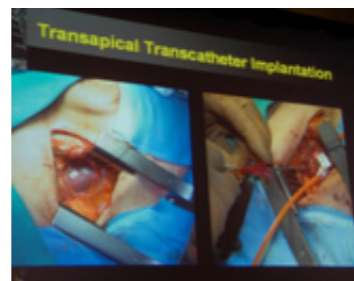
Asia's premier cardiovascular interventional meeting, the Singapore LIVE 2009 took centrestage on 26 February – 1 March 2009 at the Suntec Singapore. The course, in its 18th running year, is synonymous with featuring cutting-edge technology and techniques in interventional cardiology.



This year, the course showcased the latest interventional devices in cardiology including percutaneous aortic valve replacement, utility of the stent wire and the SeQuent® drug-eluting balloon, Corsair® catheter for Chronic Total Occlusion (CTO) and BioSTAR® device for septal repair.

This year, the Singapore LIVE 2009 was privileged to have an associated meeting with the EuroPCR. Various interventional experts such as Dr Ron Waksman and Dr Eberhard Grube spoke on the future generations of drug-eluting stents and percutaneous aortic valve replacement.

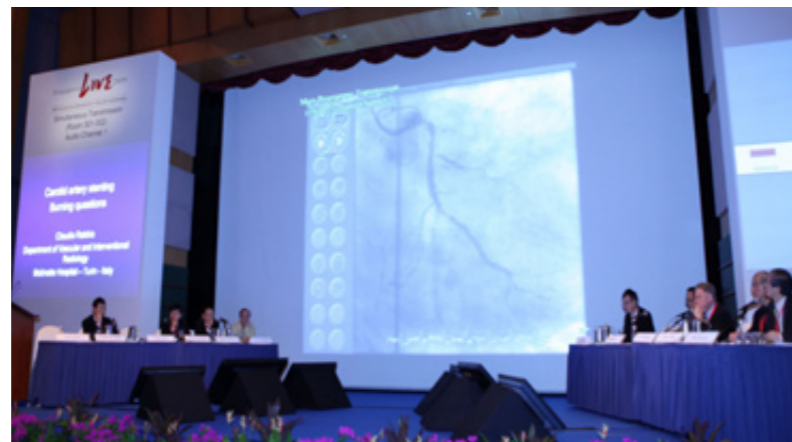
New this year was the Workshop on Transcatheter Aortic Valve Replacement, a total knockout. Other popular sessions included Complications Session - Tips and Tricks of PCI, CTO Live Demonstration Course and Intravascular Ultrasound (IVUS) imaging course, helped by Dr Gary Mintz, the IVUS guru.



Despite the current economic climate, the Singapore LIVE 2009 garnered a substantial crowd. The power-packed course matched by a stellar faculty gave the participants an invigorating and enriching learning experience.



The Singapore LIVE 2009 opened formally with the keynote address on "Chronic Total Occlusion 2009 – Retrograde Approach: State-of-the-Art" by top CTO expert, Professor Masahiko Ochiai from Showa University, Northern Yokohama Hospital, Japan. One of the pioneer adopters of the retrograde CART technique, Prof Ochiai gave an insightful lecture detailing the evolution of Percutaneous Coronary Intervention (PCI) devices and various strategies for CTO, greatly benefiting the participants on this novel technique.



# Keeping Influenza A (H1N1) at Bay

Influenza A (H1N1) can be spread through droplets when an infected person coughs, sneezes or speaks. It can also be spread when a person touches a contaminated surface and then touches his nose or mouth. To protect yourself and others around you against Influenza A (H1N1), you can:

- Wash your hands regularly and thoroughly with soap and water, especially before touching your eyes, nose or mouth.
- Turn quickly away from anyone near you if you are about to cough or sneeze.
- Cover your nose and mouth with a piece of tissue paper when coughing or sneezing. Dispose of the tissue paper properly in the dustbin after use.
- Avoid crowded places if you are unwell and wear a surgical mask to cover your nose and mouth. Seek prompt medical attention.
- Stay home when you are sick. Do not go out, to work or to school.



Precautionary measures at NHC.

Source: Ministry of Health website

## Appointments at Duke-NUS Graduate Medical School Singapore



Dr Philip Wong, Senior Consultant, Department of Cardiology, NHC was appointed as Associate Professor to the Duke-NUS Graduate Medical School Singapore, from 15 March 2009 to 30 June 2011. Dr Wong is also the NHC's Director of Research & Development Unit.



Dr Tan Ru San, Senior Consultant, Department of Cardiology, NHC was appointed as Adjunct Associate Professor to the Duke-NUS Graduate Medical School Singapore, retrospectively from 1 February 2008 to 31 July 2009. Dr Tan is also NHC's Director of Clinical Trials.

## Service from The Heart



Left to right: NHC Service Quality Gold Award 2008 Winners - Dr Lim See Lim, Senior Consultant, Department of Cardiothoracic Surgery, Rosalind Sim, Senior Nurse Manager, Ward 44 and William Chua, Patient Services Officer, Ward 44.

Always putting patients at the heart of all they do, the trio embrace the centre's core values of Compassion, Communication, Commitment, Collaboration and Consistency and serve as role models for their peers and colleagues.

# Share With Us Your Thoughts

Formerly known as NHC news, we have given the newsletter a 'facelift' and would love to have your feedback on the new Murmurs. Simply complete the below questionnaire and 3 lucky winners will each receive a \$50 shopping voucher. (Open to general practitioners only.)

Please ✓ your answer accordingly.

**1. Would you read MURMURS regularly?**

- Yes, why \_\_\_\_\_
- No, why \_\_\_\_\_

**3. Do you like the new look?**

- Yes, why \_\_\_\_\_
- No, why \_\_\_\_\_

**2. Which section do you like best?**

- Cover story
- Patient Care
- UpClose
- Medical Edge
- Snapshots

**4. Suggestions for improvements**

\_\_\_\_\_

\_\_\_\_\_

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Submit your entry via any of the following ways by **31 July 2009.**

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## Upcoming Events



### NHC Heart Care Symposium

**New Perspectives in Atherosclerosis: What Has Recent Trials Taught Us?**

**Date** 25 July 2009 (Saturday) **Venue** Sheraton Hotel

### American College of Sports Medicine (ACSM)

**Certified Clinical Exercise Specialists Workshop and Certification 2009**

**Date** 14 - 17 August 2009 **Venue** NHC Lecture Theatre

For registration and enquiry, please check out NHC website at [www.nhc.com.sg](http://www.nhc.com.sg)

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