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# PULSE

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Issue  
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## NUHCS LEADERSHIP

Reaching  
**NEW HEIGHTS**

**PULSE's New Look**  
After A Decade!

(Left to Right): Leading NUHCS - Dr. Daniel Tan, Prof. A. Mark Richards, Prof. Lee Chuen Neng, A/Prof. Tan Huay Cheem, Ms. Chia Lay Hoon, A/Prof. Yeo Tiong Cheng and Adj. A/Prof. Michael George Caleb.



# NUHCS LEADERSHIP

**A/PROF. TAN HUAY CHEEM** reflects on the various developments and achievements of the National University Heart Centre, Singapore (NUHCS) throughout 2013, including the collaboration of diverse departments, development of new technology and procedures, success in treating cases, individual and team awards, staff training and bonding, and the achievement of different research grants and funding.

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By  
A/Prof. Tan  
Huay Cheem

## Dear Colleagues and Friends:

The Year 2013 came and went in a flash. The NUHCS kick-started the year by re-examining its tripartite mission at a work plan seminar. All senior staff members attended the event. The year's roadmap was largely achieved by the tireless efforts of all. Most impressively, the two Clinical Departments of Cardiology and Cardiothoracic & Vascular Surgery (CTVS) are now working closely with the introduction of several clinical, teaching and research programmes.

As a national centre, the NUHCS provides various tertiary and quaternary services to our patients. The Department of Cardiology obtained the Health Services Development Programme (HSDP) funding to start its renal denervation therapy for patients with resistant hypertension.

We also installed the Hansen Sensei X robotic navigation system to perform catheter-based arrhythmia ablation in patients with atrial fibrillation – the first in Asia. The system has improved the effectiveness and success rate of treatment, and has driven the NUHCS ahead in its electrophysiological catheter ablation programmes.

The Department of CTVS has developed its minimally invasive surgery programme, with the introduction of its single incision approach for mitral and tricuspid valve replacement, arrhythmia ablation and coronary artery bypass surgery. Hybrid coronary revascularisation (combining both percutaneous and surgical revascularisation in the same setting within our Hybrid Operating Theatre) has also advanced our complex coronary revascularisation programme.

Our team of cardiologists and cardiothoracic surgeons, headed by A/Prof. Theodoros Kofidis, were featured in the local news for successfully treating a young patient with a complex case of near fatal myocardial abscess.

Our globally distinguished thoracic surgeons have the most experience in single incision thoracoscopic surgery (SITS) for thoracic procedures in the region. Our vascular surgeons manage the largest volume aortic stenting programme in Singapore, pushing new frontiers through their collaboration with international experts.

Our intensivist-led Cardiothoracic Intensive Care Unit (CTICU) has helped our ill-stricken patients who need extracorporeal membrane oxygenation (ECMO). The first Inherited Cardiac Conditions (ICC) Clinic, run by A/Prof. Roger Foo provides integrated genetic testing and clinical support for patients with hereditary heart diseases such

as congenital heart diseases (Marfan syndrome) and dilated cardiomyopathies. Both departments recognise patient care and quality outcomes as the key cornerstones of our clinical services.

The NUHCS was ranked 3<sup>rd</sup> in the national patient satisfaction survey among all national centres and general hospitals. With a satisfaction scoring of 79.3%, this is no mean feat considering our high volume load.

The NUHCS and Cardiovascular Research Institute (CVRI) clinched competitive research grants provided by the National Medical Research Council (NMRC) in 2013. Prof. Mark Richards and his team attained a second 4-year Centre grant of S\$10 million to study the mechanisms, markers and management of heart failure, a growing epidemic in our ageing population. The CVRI also gained the Translational Clinical Research (TCR) grant in collaboration with NUS Department of Biochemistry, Genome Institute of Singapore and Institute of Medical Biology to research on genetic and epigenetic aspects of heart failure and pre-heart failure states. Dr. Jimmy Hon and his team achieved the impressive A\*STAR Biomedical Engineering Programme Research Grant for their work on percutaneous mitral valve replacement. The NUHCS has the largest pool of cardiovascular scientists (six) within an institution, not to mention the junior doctors who are embarking on a research track.

**“OUR DOCTORS WON THE FIRST AND SECOND PRIZES IN THE YOUNG INVESTIGATOR AWARDS FOR BOTH THE BASIC SCIENCE AND CLINICAL CATEGORIES AT THE 25<sup>TH</sup> ANNUAL SCIENTIFIC MEETING OF THE SINGAPORE CARDIAC SOCIETY – OUR STRONGEST SHOWING EVER.”**

On the education front, the Accreditation Council for Graduate Medical Education International (ACGME-I) accredited the NUHCS for its Internal Medicine Cardiology Advanced subspecialty programme, a two-year course with a complement of 21 trainee positions. Along with the rest of the National University Health System (NUHS), it obtained the Joint Commission International (JCI) re-accreditation as an academic medical centre. It continues to be active in undergraduate teaching and successfully hosted the annual Cardiology Review Weekend course attended by Final Year medical students. The NUHCS also organised several international meetings such as the 8<sup>th</sup> Introductory Course in Interventional Cardiology Training, 2013 Asia Pacific Athero-Venous Thrombosis Forum,

7<sup>th</sup> Certificate in Perfusion Technology Course 2013, and 8<sup>th</sup> Asian Cardiothoracic Surgery Specialty Update Course 2013. At the community level, the NUHCS organised its well-received biennial English public symposium, The HEART Truth. Additionally, A/Prof. Carolyn Lam was involved in organising the World Heart Day with the Singapore Heart Foundation. A/Prof. Yeo Tiong Cheng, Head of Department of Cardiology, was awarded Best Tutor Award by the NUS Yong Loo Lin School of Medicine for his teaching prowess.

Our cardiovascular nursing programme continues to flourish with the training of 3 advanced practice nurses (APN) within the NUHCS, and another 4 targeted for 2014. New services, such as the introduction of specialty nurses for Coronary Artery Bypass Grafting (CABG) and thoracic services, delivery of quality care, and patient safety with good risk management based on international benchmarks, were launched in 2013.

Our staff also attained several coveted national awards. Ms. Chia Lay Hoon, Head of NUHCS Nursing, won the President's Nurse Award for 2013; Ms. Karen Koh, our APN Nurse, and Ms. Christina Ng, personal assistant to the Director of the NUHCS, were awarded the National Day service awards. Nurse manager (NM) Susan Lam from our Coronary Care Unit was awarded the MOH Nurses' Merit award. Yours truly is humbled

to be elected the President of the Asia-Pacific Society of Interventional Cardiology in November, and was tasked to lead the development of endovascular catheter-based therapy in the region.

We ended the year on a high note with our long-established NUHCS Family Day held at the River Safari in November 2013. Over 400 staff and their family members had fun and enjoyed the group activities organised. The NUHCS spirit was never more evident.

On a personal note, I entered into my second term as the Director of the NUHCS in 2013. Not only have I the tremendous privilege and honour of working with my outstanding group of NUHCS colleagues in pioneering the development of our national heart centre, I have also enjoyed the support of both senior leadership and all my fellow colleagues in the NUHS. I look forward to the coming year to continue working with you in building the NUHCS into an esteemed model of a world-class centre. ●

# MATTERS OF THE Heart

This article was first published in the January 2014 issue of EVIDENCE+

**A patient with a rare infection in his heart would have lost his life had it not been for the resourcefulness of three doctors from the National University Heart Centre, Singapore (NUHCS).**

Mr. Tan\* had 24 hours left to live, but neither he nor his doctors knew it. A strain of bacteria had wormed its way into his heart, creating a pus-filled abscess the size of a golf ball that threatened to burst and kill the healthy 52-year-old. It was an extremely rare case – there was no other recorded case since 1981 – and nobody here nor overseas knew how best to save him.

Mr. Tan complained of dizziness and chest pains after he returned from a holiday in Bangkok and checked into the National University Hospital (NUH) in May 2013. Doctors initially thought he had suffered a heart attack. “But when we examined his coronary arteries, we realised he wasn’t having a heart attack,” said Dr. Pipin Kojodjojo, a consultant at the NUHCS’ Department of Cardiology and the lead cardiologist on the case. “The most profound abnormality was that the main electrical wire in the heart was broken.”

## HEART-STOPPING BACTERIAL THREAT

The presence of bacteria in the heart can lead to terrible consequences – the most common is infected heart valves (endocarditis). Dr. Kong and Dr. Kojodjojo took blood samples from Mr. Tan and sent it to the NUH’s Division of Infectious Disease for testing. There, associate consultant Dr. Nares Smitasin identified the errant bacteria as *streptococcus agalactiae*, commonly found in the gut and the female genital tract. How it burrowed into Mr. Tan’s heart was anybody’s guess. “And we may never know,” Dr. Smitasin said. Dr. Kojodjojo and his colleague, associate consultant Dr. William Kong, ordered a CT scan and found an abscess in the myocardium, the muscular tissue of the heart. A magnetic resonance imaging (MRI) scan confirmed the

finding—but the two specialists had no idea what caused it.

The cardiologists decided to put Mr. Tan on intravenous antibiotics. “We discussed the case with colleagues in the US, UK and Europe, and sent them the scans,” Dr. Kojodjojo recalled. “But they basically said, ‘No idea.

Never seen one like this before.’” The baffling case also ended up on the desk of A/Prof. Theodoros Kofidis, Head of the Division of Adult Cardiac Surgery, Department of Cardiac, Thoracic and Vascular Surgery at the NUHCS. A/Prof. Kofidis eventually operated on Mr. Tan.

“With the antibiotic treatment, the abscess started to reduce in size,” A/Prof. Kofidis explained. “But that left behind a cavity in the centre of the heart.” Every time Mr. Tan’s heart pumped, blood would spill into the cavity, stretching the walls around the cavity and reducing their thickness to mere millimetres. Worse, the cavity was surrounded by critical valves, blood vessels, heart chambers and electrical wires. “It became like a balloon within the heart muscle that threatened to burst,” A/Prof. Kofidis continued. “If the patient isn’t already in the ICU or operating theatre when the balloon bursts, there is a high likelihood he would exsanguinate within three minutes. There’s no way to contain such massive bleeding.”

MRI scans showed the cavity swelling dramatically and the team was forced to stitch it up and reinforce the rapidly thinning walls. “It was now or never,” A/Prof. Kofidis recounted. “If I don’t do anything, he’s 100% dead. It was a ticking bomb.”

## A STITCH IN TIME

**After conveying to Mr. Tan the urgency of his condition and getting his consent to operate, A/Prof. Kofidis, Dr. Kojodjojo and Dr. Kong convened to strategise.**

**The precarious location of the cavity and it growing backwards rather than forwards made surgery trickier and more dangerous. According to A/Prof. Kofidis, it was akin to a bomb squad attempting to defuse an explosive it had never encountered before—one wrong snip could spell disaster! Despite the dangers, the team forged ahead.**

It was imperative to patch the hole—from within—that fed blood into the cavity. A/Prof. Kofidis decided to cut open the cavity, flatten it and, with the two cut ‘flaps’, fold them back against the thinning walls and glue them together with surgical adhesive. The operation required a little technical ingenuity. As the hole was patched from within, removing the suture needles was a challenge. “So I had to open the aorta and go in from the top,” A/Prof. Kofidis described. “Then I fished the needle out bit by bit. This was actually the most difficult part.”

After the cavity was dealt with, A/Prof. Kofidis turned his attention on the posterior wall of Mr. Tan’s heart. Scans revealed that the wall had thinned significantly, but imaging technology has a margin of error. “I thought, ‘Why don’t I lift the heart and look at what’s going on behind?’” What he saw startled the experienced surgeon: Mr. Tan’s heart had already ruptured!

There was a ‘crater’ at the back of the organ, covered by swollen, bloody tissue. “Basically, this poor gentleman had another 24 hours to live—that’s it,” said A/Prof. Kofidis. Thankfully for Mr. Tan, there was still a thin membrane (pericardial tissue) that contained the bleeding; otherwise, the patient would have bled out. A/Prof. Kofidis then stitched the sac of a cow’s heart to the surface of the crater to prevent a leak and reinforce the repairs. After two and a half hours, the operation was over. One week later, in July, Mr. Tan was on his way home, alive and well. •

# Doctors save man with rare infection in heart

NUH specialists treat patient, 52, with cavity in heart as big as a golf ball

By POON CHIAN HUI

A PATIENT with a cavity the size of a golf ball in his heart was saved after doctors operated in the nick of time.

The 52-year-old was just minutes from death due to a rare infection that was last recorded in 1981. Bacteria had invaded his heart, triggering a chain of events that created the ballooning cavity.

This left a team of specialists at the National University Heart Centre facing a problem that would test their knowledge and expertise to the limit.

While one misstep could easily lead to the patient bleeding to death, doing nothing was simply not an option.

"It was like tossing a coin; we do not know what will happen," said Associate Professor Theodoros Kofidis, who heads adult cardiac surgery at the centre. "But if we don't do anything, he is 100 per cent dead."

To add to their difficulties, little information was available on the infection - which had been recorded only twice, both times in the United States.

Yet despite the challenges, the operation was a success. The patient, who wanted to be known only as Mr Tan, was able to sit up and talk normally the next day. Doctors said he is "extremely healthy" and will be able to live a regular life.

Mr Tan first came to the hospital in May, complaining of chest pain and dizziness following a trip to Bangkok. At first, doctors thought he had suffered a regular heart attack. But tests showed they were dealing with something far more serious.

Bacteria in the heart had caused pus to accumulate inside. Even when wiped out by antibiotics, it left an "empty shell" the size of a golf ball at the centre of the heart. Every time the organ pumped, blood filled the space. Soon, the wall of the heart around the cavity became stretched, reducing its thickness to mere millimetres.

"It became like a balloon within the heart muscle," said Prof Kofidis.

"It was threatening to burst. If this happened, he would have bled out in three minutes."

However, figuring out how to save Mr Tan's life was no easy task. Not much was known about the condition, said cardiologist Pipin Kojodjojo.

With the only two recorded cases happening back in 1977 and 1981, the doctors had little international research to fall back on.

The cavity was also difficult to reach, flanked by key heart structures such as valves.

This meant the team was sailing into "uncharted waters", said Dr Kojodjojo.

Despite the dangers, it decided to press ahead with the 2½-hour operation. During the surgery, doctors reached into the empty space from the right side of Mr Tan's heart. The cavity was cut apart, flattened and forged together. It was only then that doctors made their most surprising discov-

ery. Mr Tan's heart had already burst.

Prof Kofidis said there was a "crater" at the back of the organ that was leaking blood. Thankfully, a very thin membrane had yet to give way, preventing him from bleeding to death. If not for this, the effect would have been like a knife stabbing into the heart, said cardiologist William Kong.

Doctors then stitched a piece of cow heart tissue over the hole to patch the leak. Mr Tan was discharged in July after making a full recovery.

Only one mystery remains: How did the bacteria, called *streptococcus agalactiae*, find its way into his heart? National University Hospital's infectious diseases specialist Nares Smitasin said the patient might have eaten food that was contaminated with the bacteria, which are found in the gut.

"It is strange," he admitted. "And we may never know why."

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“

DO OR DIE

It was like tossing a coin; we do not know what will happen... But if we don't do anything, he is 100 per cent dead.

— Associate Professor Theodoros Kofidis

”

“

It's a very, very rare case, and hardly reported in the world," Dr. Kong sums up. "It's a team effort, and we pooled our own expertise in managing it. And we ended up with a very excellent result."

”



By  
Dr. Pipin Kojodjojo



By  
Dr. William Kong



By  
A/Prof.  
Theodoros Kofidis



# JOURNEY AT DUKE



By  
Dr. Devinder  
Singh

It was an honour to receive the Academic Medicine Development Award (AMDA) scholarship. It was a once-in-a-lifetime opportunity to get advanced training in clinical cardiac electrophysiology and cardiac magnetic resonance imaging at Duke University Medical Center (DUMC), Durham, North Carolina, USA, from January 2012 to June 2013.

Duke Heart Center is consistently ranked top 10 in the nation by U.S. News & World Report and no. 6 in heart and heart surgery in 2013. A tertiary referral centre in the Southeastern U.S., it has an electrophysiology programme specialised in complex catheter ablation procedures, including those used to treat atrial fibrillation (AFib), ventricular tachycardia (VT), and other arrhythmias. It has four state-of-the-art labs with 3-D mapping and recording systems, and actively cooled radiofrequency ablation and percutaneous cryoablation technologies. I obtained cardiac electrophysiology training accredited by the Accreditation Council for Graduate Medical Education (ACGME) during the first year of my fellowship. I worked with Dr. James Daubert, chief of the division, and other

faculty members in the electrophysiology lab everyday. There was a balanced mix of electrophysiology procedure and device implantation. I got ample hands-on training opportunities with adequate supervision.

Cardiac electrophysiology training has a steep learning curve. However, initial exposure at the National University Hospital (NUH) during my cardiology fellowship helped me to grasp things quickly. Atrial fibrillation ablation is a well-established treatment for AFib and Dr. Tristram Bahnson heads its programme at Duke. I worked with him and learnt the tips and tricks for the ablation of persistent atrial fibrillation and post ablation left atrial tachycardias. Duke also has one of the busiest implantable device lead extraction programmes and offers laser lead extraction in hybrid operating room with cardiac electrophysiology surgical multidisciplinary team.

The last six months of my training were spent in Duke Cardiovascular Magnetic Resonance Center (DCMRC).

Headed by Dr. Raymond Kim, DCMRC is one of the first dedicated cardiac magnetic resonance (CMR) programmes in the world, and is currently one of the largest, performing approximately 3,000 clinical procedures per year. I performed and reported cardiovascular MR and Adenosine CMR with experts in the CMR field.

It was a great learning experience, not only in cardiac electrophysiology and CMR, but also in learning the American culture and way of life. I got a first-hand experience of one of the most intense rivalries in all of sports between Blue Devils and UNC Tar Heels. Also, watching a baseball game on a pleasant summer afternoon with my family and friends was an amazing experience, even if you did not understand the game.

**I returned to Singapore in July 2013 with fond memories of Duke that I would cherish all my life. I look forward to working with my colleagues and sharing the knowledge and expertise acquired at Duke for the benefit of our patients. •**

# 2013 ASIA PACIFIC ATHERO-VENOUS THROMBOSIS FORUM



By  
Dr. Mark  
Chan

In its 8<sup>th</sup> year, this annual regional forum remains highly successful for training physicians, nurses and pharmacists from around the region. As the course director for this 8<sup>th</sup> installment, I felt especially privileged and honoured that Prof. Peter Robless had handed over the reins of the annual meeting to me.

Continuing the industry-academic unrestricted educational programme, Sanofi supports a workshop focused on the diagnosis and management of venous thromboembolism and arterial thrombotic disorders. More than 130 delegates from Singapore, Malaysia, Vietnam, Indonesia, New Zealand, South Korea and even as far away as Brazil attended the 2-day event.

The faculty included A/Prof. Tan Huay Cheem, A/Prof. Jackie Ho, Dr. Julian Wong and Adj. A/Prof. Peter Robless (whose term with NUHCS had ended) from the National University Heart Centre, Singapore (NUHCS). Dr. Chee Yen Lin from the National University Cancer Institute, Singapore (NCIS) and Dr. Bernard Chan from the University Medicine Cluster gave clear insights on haematology and neurology respectively. We also had guest faculty from Singapore General Hospital, Tan Tock Seng Hospital, National Heart Centre and Khoo Teck Puat Hospital. Dr. Doreen Tan, a clinical pharmacist from Khoo Teck Puat Hospital, stole the show with her deep

insights on the evidence underlying the clinical use of novel oral anticoagulants. We also had a strong guest faculty representation – Prof. Kim Moo Hyun from Busan, South Korea, a good friend and collaborator of A/Prof. Tan Huay Cheem and I, and A/Prof. Richard Troughton, my close collaborator from Christchurch, New Zealand.

A special feature was a hands-on percutaneous coronary intervention (PCI) practicum on radial artery access, led by A/Prof. Ronald Lee. Radial artery access is now the preferred route of access for PCI as it causes less bleeding and has a far higher level of patient acceptance than femoral (groin) access.

**In partnership with Terumo, who generously supported this practicum with their state-of-the-art radial access simulator, delegates not only experienced accessing the radial artery but also performed a PCI from start-to-finish in a simulated model.**

I would like to thank the faculty who contributed their valuable time and expertise to this forum. I am deeply grateful for the strong support from Ms. Amanda Chiam and Ms. Yvonne Lin from the NUHCS Communications & Development team, who really ran the event like clockwork. We look forward to an even more exciting educational forum on athero-venous thrombosis in 2014!•



By  
Dr. Saket S  
Junagade



## LEARNING AND CULTURAL EXPERIENCE AT ASIAN INTERVENTIONAL CARDIOVASCULAR THERAPEUTICS 2013

The 9<sup>th</sup> Asian Interventional Cardiovascular Therapeutics (AICT) was successfully held in Bangkok from 14<sup>th</sup> to 16<sup>th</sup> November 2013. The Asia-Pacific Society of Interventional Cardiology (APSIC) and the Cardiovascular Interventional Association of Thailand hosted the conference. The 9<sup>th</sup> AICT conference stayed true to the theme of "The Art of Asia Pacific Intervention".

The conference brought together the collaborative efforts of cardiologists from Asia-Pacific, America, Europe and all over the world to disseminate the knowledge of new treatments and technologies.

The scientific programme began with a live demonstration from the NUHCS. A complex percutaneous coronary intervention (PCI) case performed by A/Prof. Tan Huay Cheem and Prof. Adrian Low, and a percutaneous mitral valve repair using Mitraclip performed

by Dr. Edgar Tay, A/Prof. James Yip and Dr. William Kong, were transmitted live and were very well received and appreciated. Not only were there didactic lectures by well-known and foremost speakers, there were also numerous interesting cases and live case demonstrations. The NUHCS had two entries for the "You did it, you fixed it" competition. It was a good platform for us, as fellows, to present our cases in front of the distinguished judges and learn from their insights. Dr. Gary Roubin (Australia) and Dr. Mitsudo Kazuaki (Japan) received lifetime achievement awards for their exemplary work in the field of interventional cardiology. A/Prof. Tan Huay Cheem, current president of APSIC, presented the awards. The conference was also a good experience of the Thai culture and hospitality through a phenomenal Thai classical performance and authentic Thai cuisine during the gala dinner. •



imprinting their "lips-print". Donors received free blood pressure and Oxygen Saturation (SpO<sub>2</sub>) screenings. This also highlighted the importance of monitoring blood pressure regularly, as a means to reduce one's risk of health problems. Educational panels, about the disease as well as its treatments, were exhibited. Goodie bags were also given away.

The well-received campaign at NUH collected an impressive 574 Blue Lips pledges.

**IT WAS ENCOURAGING TO SEE EVERYONE DOING THEIR PART FOR PATIENTS TO CREATE AWARENESS OF THE DISEASE.**

We would also like to express our heartfelt thanks to all our volunteers, namely patients, medical students, as well as our staff. This campaign would not have been successful without their help and support. We look forward to the next campaign. •

## PULMONARY HYPERTENSION AWARENESS MONTH



By  
Ms. Amanda  
Chiam

The first Pulmonary Hypertension Awareness Month for patients in Singapore was held in November 2013. The awareness campaign took place at 5 different hospitals, including National University Hospital (NUH) on 22<sup>nd</sup> November 2013. It was also held in conjunction with the National University Heart Centre, Singapore (NUHCS) Structural Heart Disease Programme's 10<sup>th</sup> anniversary celebration.

Led by NUHCS and its patient volunteers, the campaign aims to bring awareness to Pulmonary Arterial Hypertension (PAH). This condition is often misdiagnosed due to a lack of understanding among both public and healthcare professionals, often preventing patients from gaining access to the specialised care and treatments they require.

Pledge notes were given out to encourage participants to pledge support for patients by







By  
Mr. Goh  
Si Guim

## 7<sup>TH</sup> CERTIFICATE IN PERFUSION TECHNOLOGY COURSE 2013 SIMULATION IN PERFUSION TRAINING

*“How do perfusionists do what they are doing?”*

During most open heart surgeries, the patients' hearts are deliberately stopped. The perfusionists, with their heart-lung machines and extracorporeal circulations, keep the patients alive while the surgeons work to mend the hearts. Cardiopulmonary bypass is one of the highest levels of trauma intentionally inflicted onto the human body.

The perfusionists work together with the surgeons and anaesthetists to bring the surgery to a choreographical conclusion. All of the patients' physiological parameters are maintained within narrow limits, ensuring that vital life-sustaining functions, down to the cellular levels, are minimally disrupted. Sequelae due to the surgery are avoided as much as possible.

Proper training enables the perfusionists to provide optimal support for the patient during those critical hours of total dependence on artificial life support.

Training of perfusionists takes many forms. They range from formal and accredited programmes to on-the-job apprenticeships. Those that lack a formal programme are hampered by the lack of numbers to start a course, much less the ability to sustain one over the long term, and are trained with in-house resources.

Recognising the dire need for systematic training of perfusionists, the then NUH's Division of Cardiothoracic Surgery (part of Department of Cardiology) launched the first 6-month course in 1991. It was the only course of its kind that provided foundation training for perfusionists. Opened to more countries, it gained sufficient numbers to be viable. Over the last two decades, it helped to address not only the local needs of perfusionists but also provided training for hospitals in the region. A total of 70 participants, including some from as far away as India, Pakistan and the Middle East, had since gone through the course.

A one-day simulation module was incorporated into the current course, which ran from June to October 2013. Simulation training is an increasingly important training tool in many industries, including healthcare. Heart surgery involves the interaction and interdependence of many service providers, which are crucial in avoiding missteps that can lead to adverse outcomes. Participants were able to appreciate the importance of the many events that take place during complex operations. Some realistic adverse-event scenarios were acted out to give them a feel of what can possibly happen and how to deal with them. Thankfully, such events are rare but they could be tackled better with the practical knowledge gained.

Simulation provides a safe but real-life environment where participants learn to work and communicate as a team, and where all the right moves contribute to the safe conduct of the surgery and favourable outcome for the patient. ●





# 8<sup>TH</sup> ASIAN CARDIOTHORACIC SURGERY SPECIALTY UPDATE COURSE

THE CORE AIM OF THE COURSE IS TO SHARE, DEVELOP AND PROMOTE GOOD MEDICAL PRACTICE IN CARDIOVASCULAR AND THORACIC SURGERY WITHIN ASIA. **DR. JIMMY HON** GIVES AN ACCOUNT OF THIS YEAR'S COURSE, WHICH RECEIVED TREMENDOUS LOCAL AND OVERSEAS SUPPORT, REMARKABLY POSITIVE FEEDBACK AND FULLY SUBSCRIBED WORKSHOPS.

The 8<sup>th</sup> Asian Cardiothoracic Surgery Specialty Update Course (ACSSUC) was hosted by the Department of Cardiac, Thoracic and Vascular Surgery (CTVS) of the National University Heart Centre, Singapore (NUHCS) from 2<sup>nd</sup> to 6<sup>th</sup> December 2013.

The ACSSUC was first envisaged as a comprehensive yet affordable and accessible educational platform in Asia for the sharing of information and expertise among all practising professionals and trainees in various disciplines associated with cardiovascular and thoracic surgery. The core aim is to develop our discipline and promote good medical practice in the field of surgery within Asia.

**This year's groundbreaking course consisted of six separate workshops and more than 160 delegates across 18 countries attended them.**

We had great support from both local and overseas faculty, even from as far afield as the United Kingdom (UK), Europe and the United States. All workshops were fully subscribed and all feedback was remarkably positive.

The 5-day ACSSUC Course was kicked off with the inaugural **Minimally Invasive Cardiac Surgery (MICS) Workshop**, held over 2 days at the Khoo Teck Puat Advanced Surgery Training Centre (KTP-ASTC). This course was the first of its kind in South East Asia. It was a great honour to host Prof. Hendrik Treede, Director of Minimally Invasive Cardiac Surgery Programme, University Heart Centre Hamburg, Germany. He presented a series of world-class lectures and moderated academic sessions at a very high standard. The MICS Workshop consisted of a live case operated by A/Prof. Kofidis, transmitted straight from our operating theatre (OT), a cadaveric demonstration and a mannequin simulation taught by both A/Prof. Kofidis and Prof. Treede. The exciting workshop fostered interest in surgeons across the region to expand the practice of this new evolution in the field of cardiac surgery, which potentially provides faster recovery by

inflicting fewer traumas to our patients.

In addition, through close collaboration with our UK faculties, we successfully conducted the Chest Trauma Workshop, Video-Assisted Thoracic Surgery (VATS) Workshop and Cardiac Wetlab Training Workshop using porcine models.

Back by popular demand, the **2<sup>nd</sup> Singapore Chest Trauma Course** featured hands-on learning on the management of chest injuries. This workshop was in collaboration with a very experienced UK trauma faculty consisting of Dr. Timothy R Graham, Dr. Stephen J Rooney, Dr. Pala Rajesh and Dr. Timothy J Jones, all of whom are familiar with treating war wounded UK soldiers from Afghanistan and Iraq and are involved in training new British medics before deployment to the various war zones. Both military and civilian surgeons from different specialties involved in the care of trauma patients, namely Cardiothoracic, Trauma, Orthopaedics, General Surgery and Emergency Medicine Physicians, attended the workshop. We are also proud to have our local faculties, namely A/Prof. Agasthian, A/Prof. Phillip lau, Dr. Julian Wong and Dr. Jimmy Hon, teaching hands-on live operative training and contributing in lectures and discussions on real-life-based various trauma scenarios.

Thoracic surgery training has always been the ACSSUC's forte. This year, a strong local faculty led by A/Prof. Agasthian and A/Prof. John Tam from the National University Hospital (NUH) and Dr. Adrian Ooi and Dr. Aneez from Tan Tock Seng Hospital (TTSH), together with Dr. Pala Rajesh from the UK, conducted a high quality hands-on **VATS Workshop**. Delegates especially benefitted from the lively discussions and exchange of ideas and knowledge, as well as the invaluable live operating experience on the porcine model.

In the **Cardiac Wetlab Training Workshop**, aortic root enlargement, mitral and tricuspid valve repair techniques were taught using explanted pig's hearts. All the delegates truly enjoyed the teaching sessions by our UK faculties, Dr. Timothy J Jones, Dr. Timothy R Graham, Dr. Stephen J Rooney from Birmingham, and Dr. Marek Ehrlich from Austria. The feedback was highly positive, as many found the workshop extremely useful in understanding cardiac anatomy and enhancing surgical skills.

The **Extracorporeal Membrane Oxygenation (ECMO) Workshop** was notably a big hit for clinicians seeking to improve their skills and knowledge in

managing ECMO patients. It was led by Prof. Graeme MacLaren, the inaugural Chairman of the Asia-Pacific Chapter of the Extracorporeal Life Support Organization (ELSO) and Director of Cardiothoracic Intensive Care of the NUH, and his team. Delegates asked for more future courses as they really enjoyed the interactive simulative waterdrills sessions conducted by our experienced Perfusion team on how to handle ECMO emergencies.

Last but not least, the **Endoscopic Vein Harvest Workshop** was popular with both local and international delegates looking to start this programme in their respective hospitals. Two American proctors, Mr. Ray Griffith and Mr. Drew Spindler, supported this workshop and also stayed on to help our doctors in NUH to perfect their skills in the OT the following week.

The final event of our ACSSUC Course was the Friday morning NUH Grand Round, where Dr. Timothy J Jones delivered a world-class lecture on **Paediatric Cardiac Surgery – Current Trends and Future Challenges**. Dr. Timothy J Jones is a Paediatric Cardiac Surgeon from Birmingham Children Hospital, which is the busiest Paediatric Cardiac Surgery Centre in the UK.

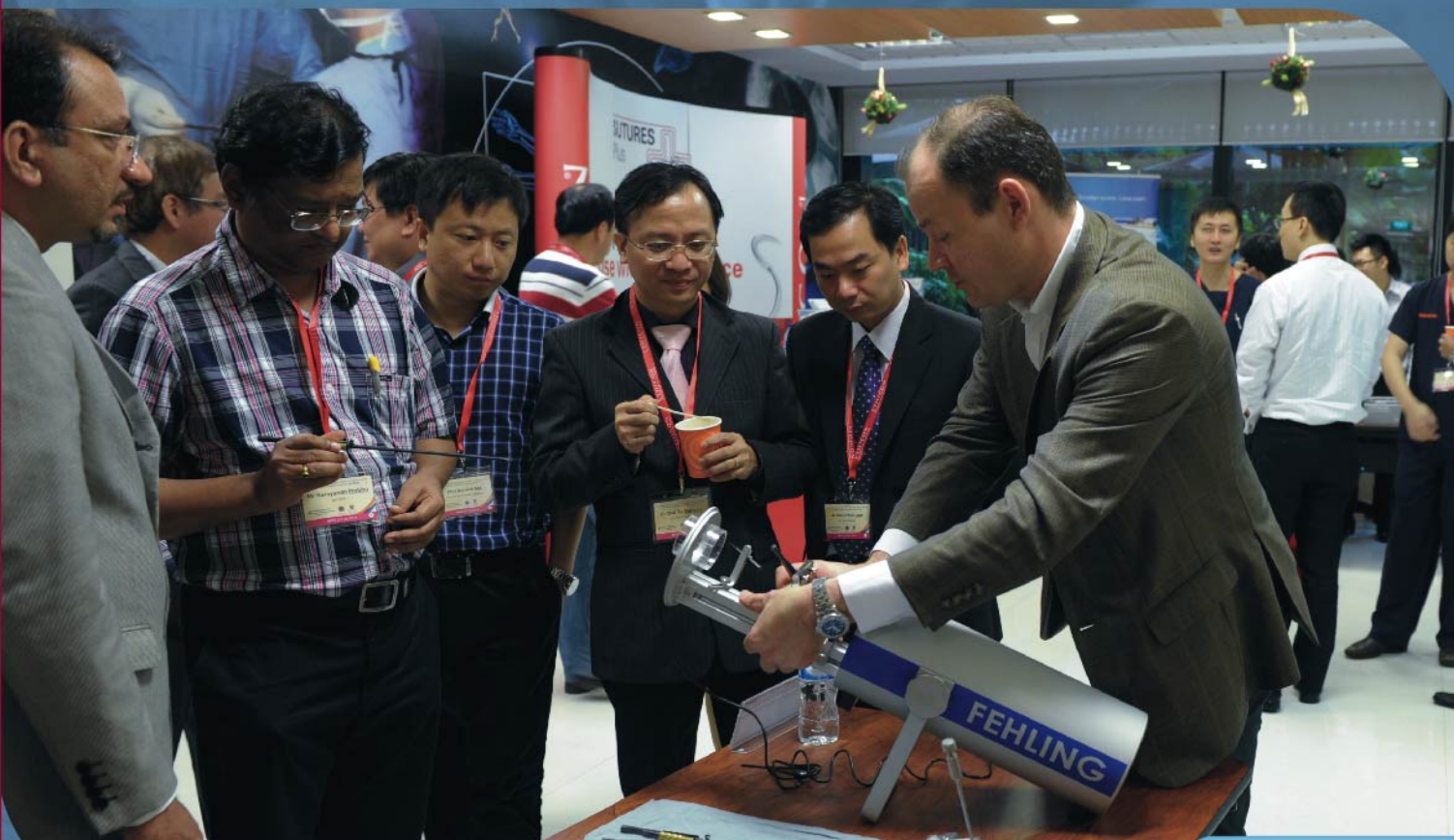
This year's course was especially successful. We attracted delegates from all around the world, including Australia, China, Hong Kong, India, Indonesia, Korea, Libya, Philippines, Qatar, Sri Lanka, Taiwan, and the UK, apart from the local delegates from Singapore and Malaysia. This course would not have been possible without the tremendous help and volunteerism of the entire CTVS department, from case managers, admin team, nurses and perfusionists to our doctors as well as both the other local and international faculties. We could not have done this without the expert support from ASTC and the NUS Department of Comparative Medicine. We specially thank our sponsors for the substantial support that made this event a reality. We are truly grateful for all your help and support in organising a rich and fruitful event. Thank you very much! We will endeavour to improve this course in the near future. •



(From left to right): Dr. Stephen J Rooney (UK), Dr. Timothy R Graham (UK), Dr. Timothy J Jones (UK), Dr. Jimmy Hon and Prof. Lee Chuen Neng. Dr. Graham from the United Kingdom, is the president-elect of the Society for Cardiothoracic Surgery in Great Britain and Ireland.



Senior perfusionist, Ms. Patsy Ong, guiding one of the attendees of the ECMO workshop.



Mr. Gerald Fehling, founder of Fehling Instruments, and one of the sponsors of ACSSUC, doing a demonstration.



By  
Dr. Jimmy  
Hon

# THE HEART TRUTH SYMPOSIUM

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The truths about your heart – that was the message we wanted to convey. The English public symposium was held on 21<sup>st</sup> September 2013, at The Joyden Hall, Bugis+ and had a lovely turnout of about 400 staff, patients and the general public.

**Our director of the National University Heart Centre, Singapore (NUHCS), A/Prof. Tan Huay Cheem, led a team of inspiring and charismatic speakers – A/Prof. Carolyn Lam, Dr. Pipin Kojodjo and A/Prof. Theodoros Kofidis – to deliver a holistic overview on the truth about our heart while dissipating some common myths about the important organ.**

The audience was intrigued throughout the talk and they were further engaged through a web-based Q&A tool, called Pigeonhole, which allowed them to post questions at any time during the symposium. Even if they did not have any questions in mind, they could still vote for the most interesting questions. Pigeonhole was introduced for the first time at our symposium and it had undoubtedly increased the interactivity between the speakers and the audience. Popular questions were later identified during the Q&A session by the emcee-cum-moderator

of the event, Ms. Maddy Barber, who incidentally is also one of Singapore's most established female presenters.

Ending the symposium on a sweet note, each attendee was given two packets of full-sized Nutrisoy in their take-home goodie bags. It was great to see everyone pleased and we look forward to reaching a wider audience for another interactive and fun-filled symposium! •



By  
**Ms. Angeline Tan**

Stay tune for more information on our 2014 chinese symposium (《心脏“真相”你知多少?》), which will be held on 12<sup>th</sup> July 2014, Saturday, at NUHS Tower Block.

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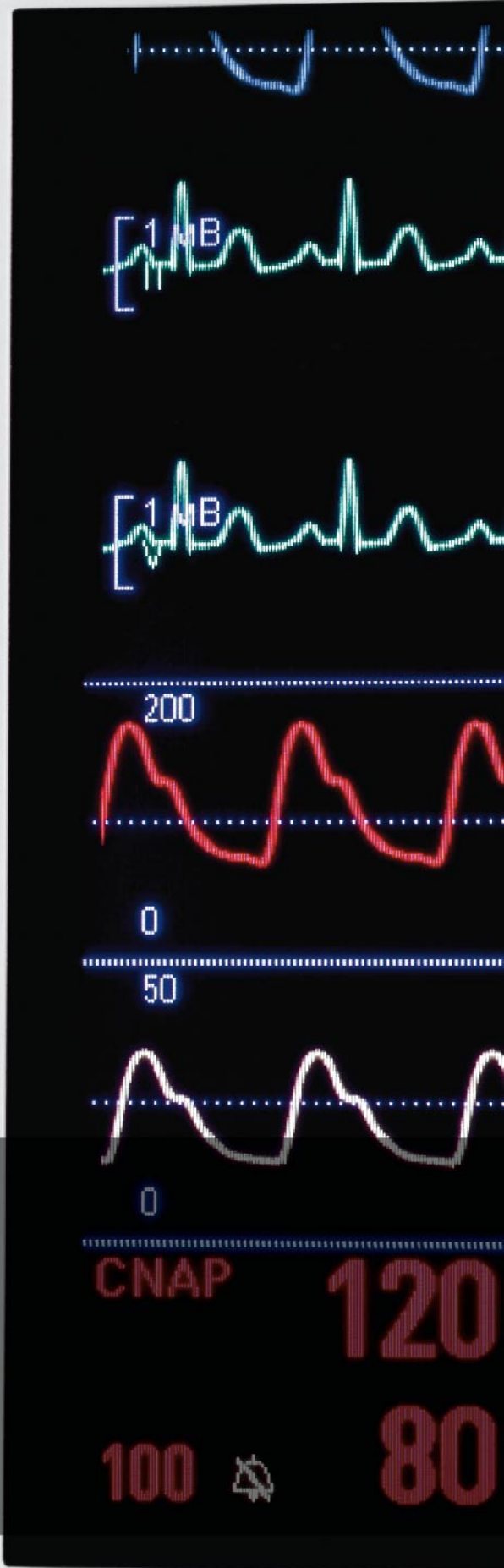
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# SLEEP AND STENT STUDY

A multicentre study investigating the relationships between obstructive sleep apnoea and clinical outcomes after percutaneous coronary intervention.





**Coronary artery disease** is the leading cause of mortality and morbidity in developed countries. In the United States, it affects almost 17 million people. In the United Kingdom, it is the largest cause of death and disability, with 94,000 deaths each year impacting around one in five men and one in seven women. **In Asia, its prevalence has increased considerably over the past several decades as a result of shifts towards a more “westernised” lifestyle. Accordingly, percutaneous coronary intervention (PCI) with stents has become a common procedure in Asia, with over 300,000 cases performed each year.**

**PCI** is an accepted standard revascularisation for patients with symptomatic coronary artery disease. Worldwide, over 75% of revascularisation cases are performed using PCI and more than one million patients undergo PCI annually. Since its inception almost 40 years ago, there has been significant refinement in the PCI devices and technology. Meanwhile, drug-eluting stents are the most commonly used vascular scaffolding device. **In randomised clinical trials with stringent inclusion and exclusion criteria, drug-eluting stents are more effective in preventing restenosis and repeat revascularisation than bare metal stents. In the National University Heart Centre, Singapore (NUHCS), the**

**usage of drug-eluting stents have increased from 28% in 2003 to 84% in 2013.**

Although data in randomised clinical trials show low rates of adverse cardiovascular event, studies on real-world practice revealed that the long-term clinical outcomes of the patients treated with PCI remain suboptimal. For instance, in the Sweden Coronary Angiography and Angioplasty Registry (SCAAR), 19.2% of the 28,953 Swedish patients who underwent coronary stent implantation, suffered from death or myocardial infarction at a median follow-up period of 2.7 years. In a Korean multicentre real-world PCI registry with over 9,153 patients, the incidence of death, myocardial infarction and target lesion revascularisation was 13.1. There might be an unmet need to further improve the clinical outcomes of real-world patients who undergo PCI for coronary artery disease.

**Obstructive sleep apnoea (OSA), an emerging cardiovascular risk factor**, is a respiratory disorder of sleep characterised by recurrent episodes of complete or partial upper airway obstruction, resulting in intermittent oxygen deprivation. Airway collapse in patients with OSA generally occurs posterior to the tongue, uvula, and soft palate or some combination of these structures. This portion of the pharyngeal airway (from the posterior nasal septum to the epiglottis) has relatively little bony or rigid support and is therefore largely

dependent on muscle activity to maintain patency. Adult patients with OSA have an anatomically abnormal small pharyngeal airway resulting from obesity, bone and soft tissue structures.

The breathing disturbances and intermittent hypoxia result in sympathetic activation, surges in blood pressure, production of vasoactive substances, and activation of inflammatory and procoagulant pathways. Severely affected patients have neurocognitive and neurobehavioural impairment, and are at risk of adverse cardiovascular outcomes.

Since the 1980s, OSA has been well recognised in the Western countries. In Singapore, the first household survey was conducted in the 1990s. Symptoms of snoring and sleep disturbances, hypertension, weight and height, as well as objective measurement of neck circumference were recorded. **The minimum whole population prevalence of OSA, defined by a diagnostic triad of symptoms, neck circumference and witnessed apnoea/hypertension, was 0.43%, nearly 22,000 of the population. Epidemiological evidence indicates that the prevalence of OSA is greater in patients with coronary artery disease than in the general population. Using the Berlin Questionnaire, our group has identified that 44% of the hospitalised cardiac patients are at high-risk for OSA. Furthermore, we reported that**

*Meeting between the Sleep and Stent Study Data Management Team and co-investigators from the Shanghai Chest Hospital in September 2013.*



**66% of Singapore patients admitted with acute myocardial infarction had previously undiagnosed OSA (AHI  $\geq 15$ ).**

#### **OSA and coronary atherosclerosis.**

Elucidating the mechanisms underlying the association between OSA and coronary artery disease is crucial in developing an effective therapy. Our group was awarded the Academic Research Fund from the Ministry of Education, Singapore, to study the association between severe OSA and coronary plaque volume and composition using virtual histology-intravascular ultrasound (VH-IVUS). A total of 118 patients were recruited in two University-affiliated centres. Among the 93 patients who completed the study, 32 (34.4%) had OSA (AHI  $\geq 15$ ). Compared to the non-OSA patients, the OSA patients had a larger total atheroma volume ( $461.3 \pm 250.4 \text{ mm}^3$  versus  $299.2 \pm 135.6 \text{ mm}^3$ ,  $p < 0.001$ ), and the association remained after adjustment for age, body mass index, hypertension, diabetes mellitus, smoking, and hyperlipidaemia (relative mean difference 1.73, 95% CI 1.38 – 2.15). These data raise the possibility that OSA may influence the volume of coronary atherosclerotic plaque, making patients with OSA possibly at risk for aggressive progression of coronary artery disease and a worse prognosis.

**OSA and adverse cardiovascular outcomes.** There is growing interest in the

In 10 years, the usage of drug-eluting stents increased by

**56%**

More than **800** patients have been recruited for the study as of August 2013



**7** established centres are participating in the Sleep and Stent Study



adverse cardiovascular consequences of OSA. In the otherwise healthy general population, untreated OSA is independently and strongly associated with adverse long-term clinical outcomes. In patients with acute coronary syndrome treated with PCI, OSA was independently associated with a higher incidence of cardiac death, reinfarction, and target vessel revascularisation. In our own data, OSA was associated with higher adverse event rates at an 18-month follow-up after acute myocardial infarction. Therefore, OSA may represent a novel risk factor and therapeutic target in the prevention and treatment of cardiovascular disease.

**Based on the aforementioned studies, there is preliminary evidence that OSA could lead to adverse cardiovascular outcomes after PCI. So far, the data were generated from small-scale, single-centre studies. In the Sleep and Stent Study, the investigators aim to conduct a large-scale observational study involving multiple centres to define the association between OSA and incidence of adverse cardiovascular outcomes in a long-term follow-up.**

The Sleep and Stent Study is a multicentre

study initiated by the NUHCS. Participating centres include Tan Tock Seng Hospital (Singapore), Nanjing First Hospital (China), Shanghai Chest Hospital (China), CSM Medical University (India), Heart Institute, University of Sao Paulo Medical School (Brazil), Defense Services General Hospital (Myanmar), and The Grantham Hospital (Hong Kong, China). The Sleep Disorder Unit at the Singapore General Hospital will be the core laboratory for the Sleep Tracing Analysis. The team recruited their first patient in the NUHCS in December 2011. From then till August 2013, more than 800 patients have been recruited and the recruitment target is expected to reach 1600 in June 2014. In August 2015, data of all the outcomes will be collected and analysed. The Sleep and Stent Study investigator team hopes that this multicentre study will provide valuable scientific information on the relationships between OSA and coronary artery disease. •



By  
**A/Prof.  
Ronald Lee**

By  
Ms. Elynn  
Phang



*Mr. Kenneth Chan, Ms. Rachel Hong,  
Prof. Lee Chuen Neng, Assistant Prof. Leo Hwa Liang,  
Dr. Jimmy Hon and Ms. Elynn Phang.*

# BIOMEDICAL ENGINEERING PROGRAMME GRANT AWARD FOR PERCUTANEOUS MITRAL VALVE REPLACEMENT

## Background

Mitral regurgitation (MR) is a serious condition that occurs when the heart's mitral valve fails to close tightly, resulting in the backflow of blood from the left ventricle into the left atrium during ventricular systole. This affects the heart's pumping efficiency, causing it to work harder and potentially leading to congestive heart failure. In the United States alone, about 1.6 million patients suffer from acute MR. Due to co-morbidities and age-related issues, millions of MR patients globally are not eligible for open-heart surgery, the standard treatment for MR today.

## The Team

To meet this clinical need, a team led by Dr. Jimmy Hon, Consultant Surgeon with the Department of Cardiac, Thoracic and Vascular Surgery (CTVS), the National

University Heart Centre, Singapore (NUHCS), and Dr. Leo Hwa Liang, Assistant Professor of the Department of Bioengineering, National University of Singapore (NUS), has developed a novel percutaneous mitral valve with funding from the Biomedical Engineering Programme (BEP), under the Science and Engineering Institutes (SCEI) of the Agency for Science, Technology and Research (A\*STAR). By collaborating with Medical Engineering Research and Commercialization Initiative (M.E.R.C.I) of the Department of Surgery, NUS and Institute of High Performance Computation (IHPC), A\*STAR, the team has produced a working prototype of the device and secured intellectual property protection.

## The Device

The novel percutaneous mitral valve comprises of a self-expanding nitinol stent

with atrial and ventricular anchoring elements, and a bioprosthetic valve. Implantation of the valve can be achieved via a transcatheter, off-pump approach. The design and performance evaluation of the valve was realised through both computational simulations and rigorous bench-testing. For instance, the hemodynamics properties of the valve were assessed in a left heart simulator under physiological flow conditions.

Recently, the team has attained a second Proof-of-Concept (POC) grant from the BEP. The team is awarded a total funding of S\$431,033 for further development of the prototype device. In the upcoming project phase, the valve will be implanted in live animal models to acquire *in vivo* data on the technical performance of the device. •



# A SEASON OF GIVING TO THE HEART FUND -

## SCHRODERS SINGAPORE CHRISTMAS EVENT, JACK & THE BEAN-SPROUT!



By  
A/Prof.  
Tan Huay Cheem

**THE NATIONAL UNIVERSITY HEART CENTRE, SINGAPORE (NUHCS) RECEIVED A GENEROUS DONATION OF \$100,000 FROM SCHRODERS SINGAPORE FOR ITS HEART FUND.**

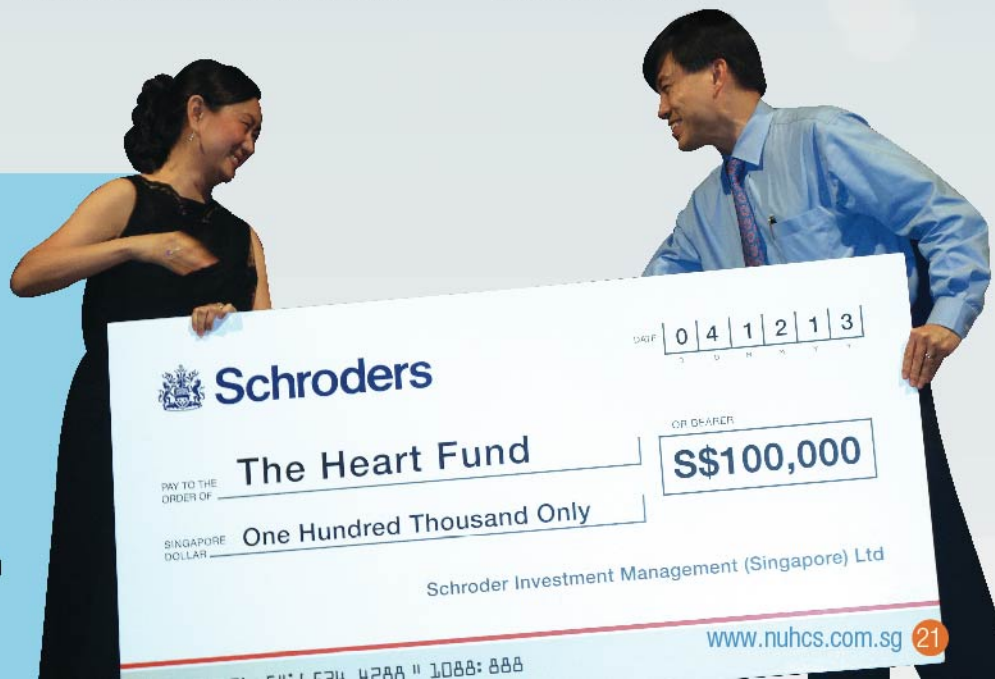
Ms. Susan Soh, Country Head of Schroders Singapore, presented the cheque to A/Prof. Tan Huay Cheem, Director, the NUHCS. The ceremony was held at the start of a full-house staged musical pantomime, "Jack and the Bean-Sprout!", produced by WILD RICE Production, and directed by 2013 National Cultural Medallion winner, Mr. Ivan Heng.

At the event, A/Prof. Tan shared that the fund was set up to help patients requiring

complex, costly treatment and help with their medical expenses. Often, these are patients who are unable to access established government funding or subsidies, as they do not fulfill all the prescribed eligibility criteria. **"To be able to give what we have to help others is an act of kindness and compassion. To be able to give and save someone's life is a blessing"**, said A/Prof. Tan at the event. Another thousand dollars were also raised on-site as the audience donated generously. •



Make a donation to the Heart Fund today and support the patients in need! Log on to [www.nuhcs.com.sg/about-us/make-a-gift.html](http://www.nuhcs.com.sg/about-us/make-a-gift.html) for more details.



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# NUHCS FAMILY DAY 2013



By  
Dr. Atasha  
Asmat

The National University Heart Centre, Singapore (NUHCS) Family Day was held on 9<sup>th</sup> November 2013 at the Entrance Square of River Safari, Singapore. The Department of Cardiac, Thoracic & Vascular Surgery (CTVS) hosted the event for the first time with a record attendance of over 500 employees and their family members. We were also honoured to have Adj. A/Prof. Joe Sim, CEO, National University Hospital (NUH), and A/Prof. Aymeric Lim, CMB, NUH, joined us for the event together with their families.

The staff and their families also received complimentary tickets to River Safari and most of them visited the park before the NUHCS Family Day programme commenced at 2pm. Despite the heavy rain, staff continued to arrive and began participating in the numerous organised activities.

After the opening speeches by A/Prof. Tan Huay Cheem and Adj. A/Prof. Michael Caleb, the event was officially launched by our invited VIP guests – A/Prof. Yeo Tiong Cheng, Adj. A/Prof. Joe Sim, A/Prof. Aymeric Lim, Ms. Chia Lay Hoon, Ms. Nancy Yeo, and Dr. Daniel Tan.

The guests enjoyed the various game stalls and indulged in "kacang puteh" and ice-cream. Four teams with participants from different divisions competed in an exhilarating telematch tournament before a short tea break. A large crowd gathered to cheer and root for the participants.

Once tea was served, a Parent Child lookalike contest was held on stage followed by an Irish Dance performed by Dr. Rustem Khamitov, Clinical Fellow, CTVS, and his wife, Natalie. They have been practising Irish Dancing for 6 years and wowed the crowd with their agility and grace.

The highlight of the event was the Grand Lucky Draw, with a top prize of \$1000 worth of travel vouchers. Winners squealed for joy and excitedly ran up the stage to collect their prizes and posed for photographs. The stage programmes ended and guests were then free to indulge in the game stalls and fringe activities.

**This event would not have been possible without the generous contributions from the NUHCS doctors and the support of A/Prof. Tan Huay Cheem and Adj. A/Prof. Michael Caleb. The organising committee, comprising Jolane, Gladys, Jacqueline, Nava and Mervyn, also worked tirelessly to ensure the success of the event. We hope that NUHCS Family Day 2013 was memorable and enjoyable for all!•**



By  
Ms. Christina  
Ng



By  
Ms. Karen  
Koh

## NATIONAL DAY AWARDS 2013 – THE COMMENDATION MEDAL

It was indeed an honour for me to be a recipient of the Commendation Medal at the Ministry of Health (MOH) National Day Awards 2013 Investiture Ceremony held on 19<sup>th</sup> November. While waiting for the ceremony to commence, I reflected on the criteria of this prestigious award, which includes providing consistent good service, special performance under difficult circumstances, significant efficiency, competence and devotion to duty. The last one is personally striking to me.

During my younger days in nursing, I had always envied nurses who had stories of “the noble calling” with inspiring passion in their everyday work and a caring touch for their patients. The truth is I did not have that very “noble calling” or passion to enter nursing. I chose nursing because of the opportunity to obtain tertiary education with full sponsorship. From that day onwards, being grateful for the education I had received, I made a conscious effort to be

committed to my work as well as to contribute back to society by providing quality patient care.

James Womack once said,

**“ Commitment unlocks the doors of imagination. ”**

The National University Hospital (NUH) has given me multiple opportunities to grow both personally and professionally through the last thirteen years and has helped cultivate my love for nursing and more importantly, devotion to patient’s care.

I am truly thankful that the NUH and my amazing colleagues have nominated me for this commendation award to inspire and motivate me to continue to strive for the motto, “THE BEST IS YET TO BE”. •

## NATIONAL DAY AWARDS 2013 – THE EFFICIENCY MEDAL

It was unfathomable that the National Day Award would be given to an administrative staff, a role other than nurses, allied health and many others who have direct contact with patients.

Thus, I am very honoured to be nominated for the National Day Awards 2013 – The Efficiency Medal. I am truly grateful to NUHCS for recognising the efforts put in by all staff alike.

This would not have been possible without the constant encouragement and support from my bosses, doctors, colleagues, and in particular, the team of secretaries. All staff within the department rely on one another to get our work done and no single person can achieve effective results alone.

**Together, we contribute to the success of the department and the NUHCS as a whole. It has always been my pride and joy to be a part of the organisation.**

This recognition of effort serves as an inspiration for me to continue to do my best and strive hard for excellence so that the organisation too will benefit from the award. •





# MINISTRY OF HEALTH NURSES' MERIT AWARD 2013

I am very grateful to receive the Ministry of Health (MOH) Nurses' Merit Award. It represents the recognition and affirmation from my fellow nurses, supervisors and organisation for my work. My supervisor, Ms. Chia Lay Hoon, Deputy Director of Nursing, and my mentor Ms. Karen Koh, Assistant Director of Nursing, are my pillars of support and inspiration in my role as a Nurse Manager. Through my journey in nursing, I have received many blessings from various people around me. They are not limited to the blessings from other nurses but also from doctors, allied health professionals and even patients. I learn and grow everyday from them and I will not take these blessings for granted. I will be committed to do my best to provide safe and good care to the patients, and to lead and guide nurses to achieve excellence. I will continue to build and maintain strong team spirit and good collaboration with others.

Compassion is the key value that drives me to persevere through the hardships and to do my best in nursing. I truly thank God for planting the compassion in my heart. I always remember the quote from the great missionary Mother Theresa:

**“Not all of us can do great things, but we can do small things with great love.”**

By doing one little thing with compassion and love, it can make that moment in time easier for someone. It may even fill the biggest part of his or her heart. The satisfaction is indescribable. That is the greatest joy that makes me love nursing more each day. •



By  
Ms. Susan  
Lam

# APPOINTMENT OF NEW ASIA-PACIFIC SOCIETY OF INTERVENTIONAL CARDIOLOGY PRESIDENT



By  
A/Prof.  
Tan Huay Cheem

**A/Prof. Tan Huay Cheem was officially appointed as the new President of the Asia-Pacific Society of Interventional Cardiology (APSIC) in an unanimous decision at the 9<sup>th</sup> Asian Interventional Cardiovascular Therapeutics (AICT) held in Bangkok, Thailand, on 15<sup>th</sup> November 2013.**

AICT meeting is the official scientific meeting of the APSIC society. The appointment is for a period of 3 years.

The APSIC was first formed on 17<sup>th</sup>

November 2000 and comprises member societies from 20 different Asia-Pacific countries. It aims to promote the field of catheter-based therapies in the region, not just in the area of

technical expertise development, but also in education, research and advocacy. As the second Singaporean cardiologist to lead the society after founding member Dr. Richard Ng in 1994, A/Prof. Tan immediately set out

the vision of growing APSIC/AICT into a leading global player in the interventional cardiology arena. He has appointed A/Prof. Lim Soo Teik from the National Heart Centre, Singapore, to be his Secretary General, and formed various subcommittees in charge of scientific programmes, research and credentialling. A/Prof. Tan is keen on inviting the Middle East Gulf state members to join the Society and look forward to closer cooperation with international bodies such as EuroPCR, Transcatheter Therapeutics (TCT) and Society for Cardiovascular Angiography & Intervention (SCAI). •



# PRESIDENT AWARD



By  
Ms. Chia  
Lay Hoon

The President Award for Nurses is a public recognition for the nursing profession. I am humbled and honoured to represent this recognition of the nurses' hard work. Nursing is a team effort and I would not have achieved this award without my colleagues who have helped and supported me throughout my career.

**Thus, it is with a grateful heart that I would like to dedicate and share this award with my colleagues.**

The award ceremony took place on 31<sup>st</sup> July 2013 at the Istana, followed by a reception in conjunction with the Singapore Nurses' Day. Hundreds of nurses and members of the healthcare family from various hospitals and healthcare institutions gathered to witness the joyous occasion. This warmed my heart and I was greatly heartened to see how nursing as a profession has brought us all together as one big family with common goals.

I started my nursing career in 1975 after completing my GCE 'O' Level Examination. The past 38 years have been an amazing

journey for me – from learning the most fundamental skills and knowledge of nursing to learning management principles and concepts, with the opportunity to guide, nurture and develop future nurses. This journey marked many milestones – from a bedside nurse to a nurse-teacher, and now a nurse administrator who has to be tough-minded yet tender-hearted. In the course of my nursing career, I have made many friends, many of whom are my role models – inspiring and encouraging me as well as keeping me grounded in my belief as a nurse. Some were instrumental in my growth and development and their guidance have moulded and shaped who I am today.

Once again, I extend my sincerest gratitude to all who have helped, guided and shared my walk with me. A big Thank You to those who have been my source of strength – holding my hands and lending me a shoulder to lean on in times of need and those who have tirelessly motivated and spurred me on. Nursing has given me many opportunities and countless invaluable experiences and I will continue to strive to do my best! •



## NEW COLLEAGUES

**Dr. Arati Rai**  
Joined as  
**Clinical Fellow,**  
Department of  
**Cardiac, Thoracic  
& Vascular Surgery**  
August 2013

**Dr. Choy Chun Ngok**  
Joined as  
**Clinical Fellow,**  
Department of  
**Cardiology**  
August 2013

**Dr. Dennis Chiu Ung**  
Joined as  
**Clinical Fellow,**  
Department of  
**Cardiac, Thoracic  
& Vascular Surgery**  
August 2013

**Dr. Alaskar  
Emad Mohammad**  
Joined as  
**Honorary Fellow,**  
Department of  
**Cardiac, Thoracic  
& Vascular Surgery**  
October 2013

**Dr. Poorna  
Madhusudan**  
Joined as  
**Clinical Fellow,**  
Department of  
**Cardiac, Thoracic  
& Vascular Surgery**  
October 2013

**Dr. Japheth  
Carlos Tan Uy**  
Joined as  
**Clinical Fellow,**  
Department of  
**Cardiac, Thoracic  
& Vascular Surgery**  
November 2013

## PROMOTIONS

**Dr. Matthew  
Edward Cove**  
Promoted to **Consultant,**  
Department of  
**Cardiac, Thoracic &  
Vascular Surgery**  
July 2013

**Dr. Anand Ambhore**  
Promoted to  
**Associate Consultant,**  
Department of  
**Cardiology**  
November 2013

**Dr. Lim Shir Lynn**  
Promoted to  
**Associate Consultant,**  
Department of  
**Cardiology**  
November 2013

**Dr. Shyam Sundar  
Ayyachamy**  
Promoted to  
**Associate Consultant,**  
Department of **Cardiac,  
Thoracic &  
Vascular Surgery**  
November 2013

**SNAPSHOTS**



NUHS Dinner & Dance 2013, held on 31 August 2013 at Resorts World Convention Centre, Sentosa, was a fun-filled event graced by Mr. Gan Kim Yong, Minister for Health, and co-hosted by A/Prof. Carolyn Lam.



**Take the Road to a Healthy Heart**  
Together, we can build a heart healthier nation!



A/Prof. Tan Huay Cheem was awarded Honorary Membership of the Yunnan Medical Doctor Association at a meeting together with other members held in Kunming City on 28 September 2013.

NATIONAL UNIVERSITY HEART SINGAPORE (NUHCS)



NUHCS celebrated the Singapore Heart Foundation National Heart Week & World Heart Day 2013 on 28-29 September 2013 at Toa Payoh HDB Hub Mall with the largest Singapore map made up of little red acrylic hearts!



The World Heart Day Carnival at NUH on 18 September 2013 was a hearty occasion as visitors learnt interesting facts and did their part for charity.





Views of the Himalayan mountain from Dr. Yeo Tee Joo's trip to Everest Base Camp from 12-28 October 2012.



Staff from various departments in NUHCS organised their very own activities as part of Active Month 2013.



A/Prof. Tan Huay Cheem warmly welcomed the visiting delegates from Chengdu and Xinjiang Hospitals.



# PUBLICATIONS

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Cardiogenic Shock Post-percutaneous Coronary Intervention for Myocardial Infarction. *Ann Acad Med Singapore*. 2013 Sep. 42(9):485-7. Lin W, Yeo TC, Poh KK.

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# ABSTRACTS

## Annual Combined Surgical Meeting 2013. Singapore. 12 – 13 October

Does pre-operative anti-platelet therapy reduce complications after Coronary Artery Bypass Grafting? A systematic review, meta-analysis and meta-regression.  
Ho CM, Chang M, Goh Z, Kang ML, Soon G, Mak A, Fu E, Ho P.

Successful endovascular repair of two patients with aorto-esophageal fistulas secondary to thoracic aneurysms.  
Chen MQ, Ho P.

Staged revascularization procedures for treatment of critical limb ischemia (CLI) with multi-level arterial chronic total occlusion (CTO) and management of iatrogenic arterio-venous fistula (AVF) and pseudoaneurysm.  
Tay KV, Ho P.

## American Heart Association Scientific Sessions 2013. Texas, United States of America. 16 – 20 November

Autologous, non-cell based compound restores left ventricular structure and function and ameliorates adverse remodeling in a minimally invasive large animal myocardial ischemia model; a translational approach.  
Vu DT, Pal S, Ti LK, Ling LH, Lee CN, Richards AM, Kofidis T.

Predictors of progression of aortic valve stenosis in medically treated patients with

low-flow significant aortic stenosis.

Lee GK, Lim V, Kuntjoro I, Tay EL, Yeo TC, Poh KK.

Improvement of endothelial progenitor cell number and function in obesity and diabetes with Thymosin Beta-4.

Lee PS, Ye L, Yeo TC, Richards AM, Poh KK.

Short term hyperglycaemia impairs endothelial progenitor cells with improvement after Thymosin Beta-4 treatment.

Lee PS, Ye L, Yeo TC, Richards AM, Poh KK.

Contrasting circulating endothelial progenitor cell number and function in patients admitted for acute dyspnea.

Lee PS, Yeo TC, Lam C, Richards AM, Poh KK.

Clinical and echocardiographic predictors of deterioration in left ventricular ejection fraction in patients with low-flow significant aortic stenosis.

Lee GK, Lim V, Kuntjoro I, Tay EL, Yeo TC, Poh KK.

Valvular arterial impedance and systemic arterial compliance are associated with changes in flow category in severe aortic stenosis with preserved left ventricular ejection fraction on medical therapy.  
Kuntjoro I, Lee GK, Tay EL, Yeo TC, Poh KK.

Expression Profiles Of Circulating MicroRNA In Heart Failure With Reduced And Preserved Ejection Fraction In Asia Population.

Wong LL, Chen YT, Lim JY, Michelle Chan MY, Lam CS, Richards AM.

## American Society of Echocardiography 24<sup>th</sup> Annual Scientific Sessions. Minnesota, United States of America. 29 June – 2 July

Impaired Left Atrial Function despite Sinus Rhythm and Normal Left Atrial Volume in Patients with a History of Atrial Fibrillation.  
Santos A B, Gupta D, Zile M, Lam CS, Anand I, Asirvatham S, Koren A, Shah A, Solomon S.

## European Society of Cardiology Congress 2013. Amsterdam, Netherlands. 31 Aug 2013 - 04 Sep 2013

Moderate endurance exercise is associated with an abnormal cardio-renal response in recreational runners.

Yeo TJ, Ling LH, Lam CS, Chong JP, Liew OW, Richards AM, Chan MY.

## Transcatheter Cardiovascular Therapeutics 25<sup>th</sup> Annual Scientific Symposium. California, United States of America. 27 October - 1 November

Redo mitral valve clipping after single leaflet detachment.

Kong WK, Tay EL.



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The advanced technology in the Electrophysiology (EP) Robotic Catheter system provides unique enhanced navigational precision and stability to manoeuvre a percutaneous catheter. It provides a degree of control which is not possible with a standard manually operated catheter. Additionally, it allows for direct measurement of the force applied to the heart surface through the ablation catheter. This feature is crucial to the efficacy and safety of the procedure. The robotic navigation system enhances speed, safety, precision and efficacy for percutaneous EP ablation procedures.

**The EP Robotic Catheter system is the first such system to be used in South East Asia. Its introduction in the NUHCS will greatly benefit heart patients in Singapore and the region, offering them a more advanced and precise treatment option for patients.**

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# ROBOTIC CATHETER ABLATION SERVICE

