The Heartbeat of National University Heart Centre, Singapore

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PULSE

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A Seamless Transition

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Tips from a Dietitian

The Rickshaw Run in India
A Fundraising Challenge

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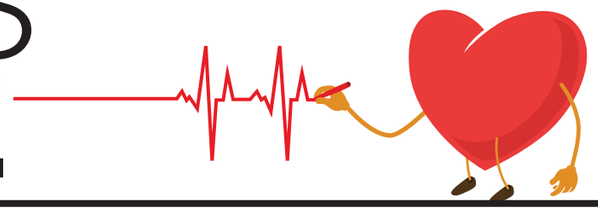

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For this issue, we witness how NUHCS delivers holistic care throughout a patient's entire life journey. This is made possible through continuous innovation and excellent inter-team collaboration.

EVENT

EDUCATION

CLINICAL

RESEARCH

ACCOLADES

What our readers have to say about the last issue of PULSE

To let us know what you think about this issue, email us at **nuhcs@nuhs.edu.sg.** The best entries will stand to win **two Mr Bean vouchers!**

"I like reading Pulse Issue 27 as it has varied content that caters to a wide range of readers. However, I hope that the editorial team will also create a Diet Column, which will be very useful for readers. I rate this magazine 8/10!"

Dr. Soh Choon Wee,
General Practitioner

We heard you and added a Diet Column on page 32!

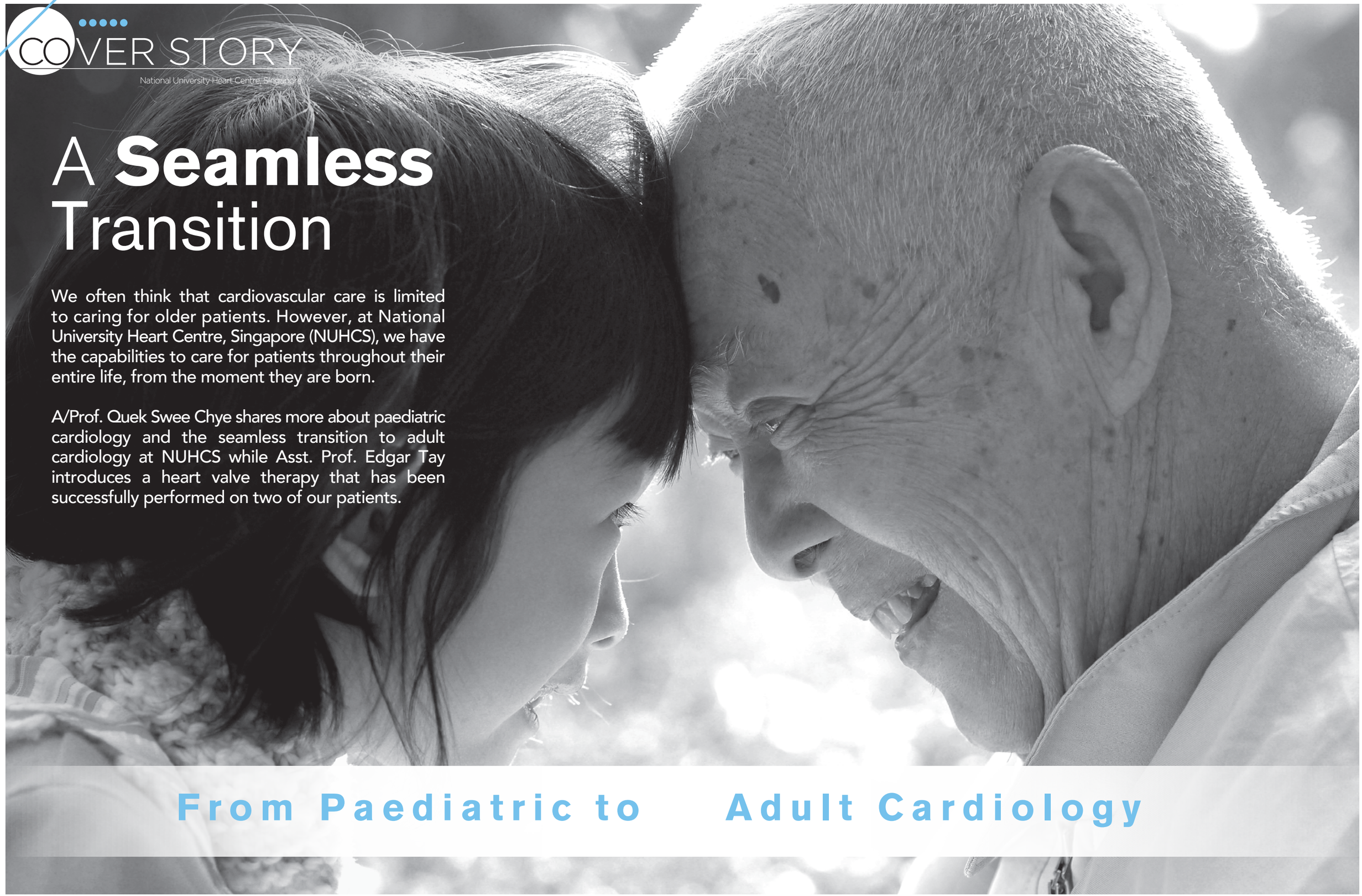
"The music performance by the Singapore Chinese Orchestra is the BEST! Please have more of such performances."

Annabel Goh Tianhui, Lim Hui Kian and Gloria Ma

A **Seamless** Transition

We often think that cardiovascular care is limited to caring for older patients. However, at National University Heart Centre, Singapore (NUHCS), we have the capabilities to care for patients throughout their entire life, from the moment they are born.

A/Prof. Quek Swee Chye shares more about paediatric cardiology and the seamless transition to adult cardiology at NUHCS while Asst. Prof. Edgar Tay introduces a heart valve therapy that has been successfully performed on two of our patients.



From Paediatric to Adult Cardiology

What is Paediatric Cardiology?
Paediatric cardiology is a unique subspecialty; while many patients are young, investigations and examinations related to heart conditions are similar to adult cardiology. Thus, it encompasses both major disciplines of paediatrics and cardiology. While most patients have heart defects since birth, there are now more heart conditions that develop after birth, including heart rhythm disorders and heart diseases affecting the heart muscles or entire body.

Diagnosis may begin as early as the fetal stage, where heart anomalies can be detected through a heart ultrasound. This allows for a team-based approach involving the obstetrician (a doctor specialising in pregnancy and childbirth), neonatologist (a doctor specialising in the medical care of newborn infants) and surgeon. **The use of early fetal detection of complex heart disease to early life-saving surgery and intensive neonatal care has enabled patients to survive and thrive in childhood and into adult life.**

Seamless Transition to Adult Cardiology

When a paediatric heart patient enters adulthood, he is referred to the adult congenital heart disease team. The management of the kid with heart disease is therefore seamless and continuous, and NUHCS is a place that affords such an opportunity.

Some patients who have been operated early on in life may have to undertake more surgeries when they get older as pulmonary valve regurgitation[1] or degeneration of their conduits[2] occur. However, such **repeated open-heart surgeries not only increase the risk of complications but they are also psychologically demanding for patients and their families.**

Doctors from paediatric cardiology attending a Paediatric Congenital Heart Conditions Support Group Party.

Docs here treat congenital heart defect sans open heart surgery

This minimally invasive procedure has been successfully carried out on two patients in Singapore since August

Carolyn Khew

For the first time in Singapore, doctors are able to treat a form of congenital heart defect without open heart surgery.

A specially designed heart valve is delivered into the patient via a leg vein near the groin instead to treat Tetralogy of Fallot, a defect that affects the functioning of the valve.

This procedure has been successfully carried out on two patients here since August by a team of congenital heart specialists from the National University Heart Centre, Singapore (NUHCS) and the department of paediatrics at National University Hospital (NUH).

As this minimally invasive procedure, doctors insert a thin, hollow tube containing the heart valve into the vein and push it up into the heart. The valve is crimped into a small size but expands with the help of a balloon once it is in the right position.

The procedure takes a few hours and helps to improve heart function so that the need for open heart surgery can be delayed.

Tetralogy of Fallot affects about two in 1,000 live births here. Among other problems, the defect affects the normal functioning of the pulmonary heart valve, which controls blood flow from the right chamber of the heart to the lungs.

While this defect can be picked up early during pregnancy, those born with the condition often have to undergo multiple surgical operations throughout their lifetime.

This is because a patient's valve is usually replaced by a synthetic tube or blood vessel from a human cadaver early on in life, but this is prone to become leaky or non-functional or wear out first.

As a result, patients typically have to undergo a repeat surgical operation every 10 to 12 years, said Dr Edgar Tay, senior consultant at the department of cardiology at NUHCS.

"A repeat surgery is almost one you'd table because this is not anyone's gift of a normal vessel," said Dr Tay, who added that the new procedure will reduce the risks of repeat surgery.

He said: "Parents/ families will tell you that it reduces the psychological stress of repeat surgery."

Otherwise, patients would have to undergo two open heart surgical operations with the uncertainty about the outcome of the surgery, he added.

While the new procedure was first done in Singapore only in August, it was first performed in London in 2000.

Studies so far have shown good results. For instance, the valves of almost all patients who went through the procedure were free of leakages for up to five years.

While the new device costs $30,000, Associate Professor Quek Swee Chye, head and senior consultant of the division of paediatric cardiology at NUH, said he hopes the new treatment will prove to be cost-effective in the long run.

"If you look at the total package – with a shorter hospitalisation and only device, it may still be cheaper than a long-term hospitalisation plus the expensive surgery and the manpower to look after the patient post-operatively," he said.

"Hopefully if proven to be good, some day there will be subsidy from the ministry," he added.

One patient who has tried the new procedure is Mr Gary Chang.

The 21-year-old underwent his first surgery to have his heart valve replaced when he was just two.

About a year ago, however, Mr Tay realised that his heart function had started to deteriorate.

As his parents were not keen for him to go for another surgery, he decided to go for the new procedure in August.

"The procedure wasn't painful and I can resume my normal activities now," said Mr Chang, who is a trainer at a sheltered workshop at voluntary welfare organisation Movement for the Intellectually Disabled of Singapore.

He is now able to pursue recreational activities such as badminton, without worry that his heart might fail.

tcsweek@sph.com.sg

NUHCS and NUH's Division of Paediatric Cardiology were featured in The Straits Times on 22 November 2016 for treating Tetralogy of Fallot without open heart surgery for the first time in Singapore.

more surgeries when they get older as pulmonary valve regurgitation[1] or degeneration of their conduits[2] occur. However, such **repeated open-heart surgeries not only increase the risk of complications but they are also psychologically demanding for patients and their families.**

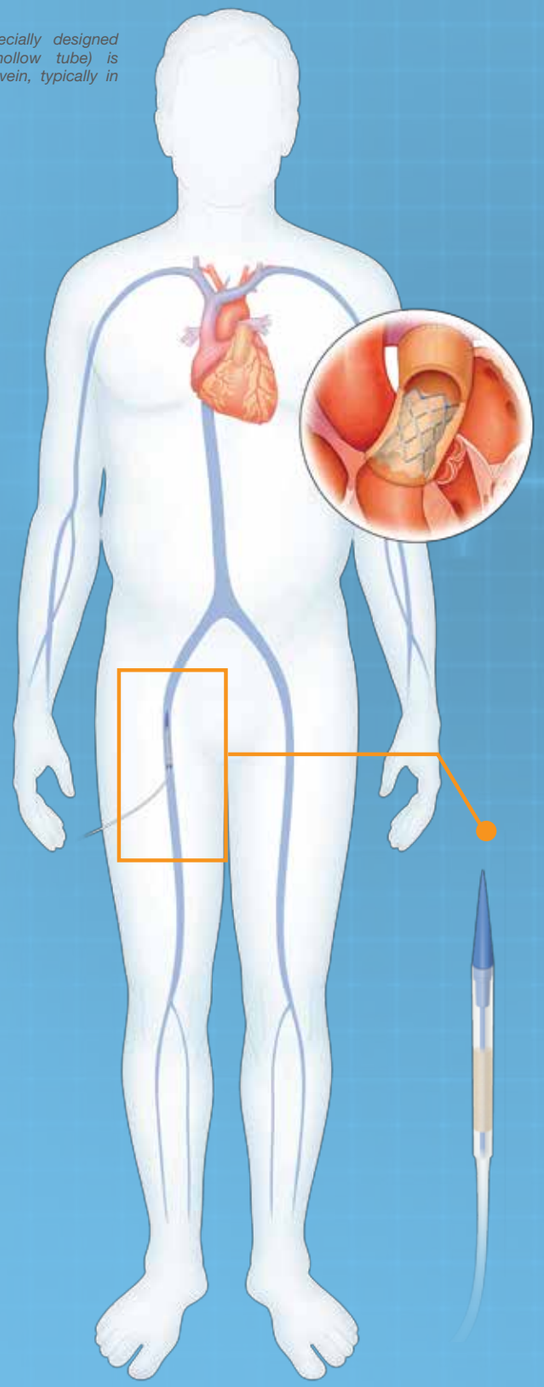
There is now an alternative treatment option available. Without requiring open-heart surgery, it treats narrowed or leaking pulmonary valve conduits between the pumping right side of the heart and lungs. A specially designed catheter (thin hollow tube) is inserted from a vein to the heart to replace the old valve with a new one, thus helping the heart to pump blood properly *(see figure 1)*.

Melody Transcatheter Pulmonary Valve (TPV) Therapy

The Melody TPV Therapy has been started since 2000 and has undergone rigorous scientific scrutiny before becoming approved by the US Food and Drug Administation (FDA), in which the FDA has decided that its benefits outweigh potential risks. It is now a recommended therapy for selected patients as it has shown to be safe and effective in restoring the function and increasing the lifespan of pulmonary valve conduits[3] or homografts[4]. In 2016, NUHCS successfully performed our first two Melody TPV Therapy procedures jointly with the Division of Paediatric Cardiology, National University Hospital.

One of the procedures involved treating a congenital heart defect called Tetralogy of Fallot without open heart surgery, a first in Singapore (featured in The Straits Times on 22 November 2016). This showcases the strength and depth of collaboration between our paediatric and adult congenital teams. Both patients have been discharged and are doing well. **We are immensely grateful to The Heart Fund donors for helping our patients defray the high cost of therapy** and are committed to scaling greater heights in patient outcome and experience.•

Figure 1: A specially designed catheter (thin hollow tube) is inserted from a vein, typically in the leg.



By **A/Prof. Quek Swee Chye**
Chairman,
Medical Board,
National University Hospital (NUH)

A/Prof. Quek is the head of the Division of Paediatric Cardiology, NUH, and is also the only Singaporean council member of the Adult Congenital and Paediatric Cardiology Section of the American College of Cardiology. His interest lies in congenital and acquired heart disease in children and his work has been extensively published in peer-reviewed journals.

By **Asst. Prof. Edgar Tay**
Senior Consultant,
Department of Cardiology

Asst. Prof. Tay co-leads the transcatheter aortic valve implantation (TAVI) and mitraclip mitral valve repair programme. He subspecialises in the field of adult congenital heart disease, pulmonary hypertension and structural intervention.

[1] Leakage of the valve that controls blood flow from the heart to the lungs.

[2] Deterioration and loss of function in the passages of fluids or air.

[3] Tubes that connect the flow of blood from the heart to the lungs.

[4] Tissues or organs obtained from members of the same species.

Uncovering The Heart Truth

NUHCS Biennial Chinese Symposium

In 2014, cardiovascular diseases including heart disease caused nearly 1 in 3 deaths in Singapore. To raise awareness on the risks of heart disease, National University Heart Centre, Singapore (NUHCS) organises a biennial Chinese Symposium.

On 16 July 2016, our doctors discussed about the symptoms, treatment, prevention and latest updates on heart disease with a special emphasis on heart disease in women and heart-healthy diet.

The interest of the audience towards learning about heart disease was piqued as our doctors spoke about interesting and thought-provoking issues related to heart disease.

The five distinguished speakers of the seminar were: Asst. Prof. Chan Wan Xian, Senior Consultant, Dr. Peter Chang, Consultant, Prof. Tan Huay Cheem, Director of NUHCS and Senior Consultant, Department of Cardiology; Ms. Rachel Ooi, Dietitian; and Asst. Prof. Jimmy Hon, Senior Consultant, Department of Cardiac, Thoracic and Vascular Surgery.

The Fight Against **Heart Diseases and Diabetes**

World Heart Month 2016

As diabetes increases the risk of heart diseases, it is important to understand their correlation. In conjunction with World Heart Month in September 2016, the National University Heart Centre, Singapore (NUHCS) held a series of outreach programmes to educate the public on heart diseases and diabetes. The programme included a lunchtime talk, live demostrations and an interactive display.

By **Mr. Lee Ren Wei**
Senior Executive
Communications & Development, Ops & Admin, NUHCS

Ren Wei is a member of the NUHCS Communications & Development team, which is responsible for organising all internal and external communications and events. Ren Wei focuses on web and social media strategies for NUHCS.

During the lunchtime talk, NUHCS doctors interacted with the audience through hands-on activities such as feeling their own heartbeats.

Adeline Teo, Nurse Clinician, NUHCS (left), giving a live cardiopulmonary resuscitation (CPR) demonstration with assistance by Asst. Prof. Chan Wan Xian, Senior Consultant, NUHCS.

At the annual Singapore Heart Foundation's World Heart Day celebration, next to Yishun MRT Station, an overjoyed participant posing with NUHCS's Plinko Game Machine and the grand prize she won. Attendees had the chance to play the Plinko Game and challenge themselves with a Heart Quiz!

Members of the public having fun at the interactive display that aimed to provide educational information on heart wellness and diabetes. The interactive display was showcased at one-north Connexis, Yishun Hard Court and National University Hospital.

National University Heart Centre, Singapore (NUHCS) in 2016

Message from the Centre Director

Dear Friends,

2016 was a fruitful year. I looked back with immense pride on the many innovative and critically important work done in the pursuit of our tripartite mission – patient care, research and education.

Our Commitment to Patients

Led by Dr. Yeo Tee Joo, NUHCS launched our Sports Cardiology programme in 2016. We work closely with National University Hospital's Sports Centre to provide **cardiology assessment and multidisciplinary care for athletes and active individuals.**

Our Heart Failure Transitional Care programme continues to help patients transit from hospital to home, thus significantly **reducing their hospital re-admission rate and length of stay.**

Our paediatric cardiologists collaborated with us for two percutaneous implantations of Melody pulmonary valves.

> This marks the first in Singapore, doctors are able to treat Tetralogy of Fallot, a form of congenital heart defect, without open heart surgery.

We also have established a dedicated Aortic Centre that provides a **Multidisciplinary, Multispecialty and Multimodality approach** to meet the nation's continued rise of patients suffering from aortic disease.

A new portable heart lung assist machine was introduced to **improve the survival rate of patients needing extended respiratory and/or circulatory support.**

Advancing Care through Research

Our clinician and research scientists worked hard to produce more than 60 publications in 2016 and had more than 30 abstracts accepted at international meetings.

We were awarded the Best Basic Science and Clinical Research Young Investigators' Awards at the Singapore Cardiac Society Annual Scientific Meeting. Additionally, our doctors A/Prof. Ronald Lee, A/Prof. Mark Chan and A/Prof. Poh Kian Keong received the National Medical Research Council Awards, **reflecting an advanced standing of our research arm to bring about better care and outcomes for our patients.**

Our People – The Core of NUHCS

We were proud of our first batch of graduates from the new Accreditation Council for Graduate Medical Education senior residency programme. Placing equal emphasis on our nursing and allied health professionals, we aim to increase our Advance Practice Nurses by 50% over the next three to five years. NUHCS groomed the most number of cardiology clinician-scientists in Singapore and continues to **provide a comprehensive development programme to nurture and mentor clinician-scientists.**

A Promising New Year

The year ahead promises to be an exciting one for NUHCS as we seize new opportunities to develop our upstream programmes in the new Alexandra Campus. I am thankful for the continuous support of my colleagues and partners as we move forward together to meet the challenges to provide the best care for our patients. On behalf of the NUHCS family, I wish everyone a healthy and blessed year ahead.•

Professor Tan Huay Cheem
Director

Where the World of Cardiology Comes Together

Actively supporting and cultivating a culture of research, especially among our young clinicians, enables us to continuously find better treatments for our patients. Dr. Sim Hui Wen recaps on the European Society of Cardiology (ESC) Congress 2016, where NUHCS not only gained knowledge from worldwide clinicians but also achieved recognition for our research work.

By **Dr. Sim Hui Wen**
Senior Resident, Department of Cardiology

Dr. Sim is in her second year of cardiology training. Her current research focus areas are on medication adherence, aortic stenosis and heart failure. She believes that scientific research is the fundamental key to staying in the forefront of medicine.

The ESC Congress, first held in 1988, is the world's largest and most influential cardiovascular meeting. It is a platform for cardiologists to share the latest advances in heart disease treatments.

The latest ESC Congress was held in Rome, Italy on 27-31 August 2016 and was attended by some 32,000 cardiovascular professionals from around the world. His Holiness Pope Francis also graced the congress to address his high regard for scientific research.

Dr. William Kristanto, Senior Resident, Department of Cardiology, NUHCS, is part of the NUHCS team that showcased their research work at the congress.

Boosting Cardiology Research

The highlights of the congress include 'The Heart Team' which emphasised on the importance of teamwork across all specialties; the ESC Clinical Practice Guidelines sessions; and the presentation of 30 novel clinical trials. NUHCS's Prof. Tan Huay Cheem also chaired a session on transcatheter mitral intervention[1], alongside Prof. Jeroen Bax, President-elect of ESC. Together, they provided valuable insights into the role of mitral clip in current clinical practice and novel transcatheter mitral valve surgery techniques.

NUHCS Gains Recognition

The congress received a total of 11,000 abstracts from 106 countries. **NUHCS's Dr. Yeo Tee Joo won the best moderated poster presentation award for his work on young athletes and bicuspic aortic valve disease,** in collaboration with St George's, University of London. Several of our clinicians also showcased their research works across different areas of cardiology.•

[1] A minimally invasive technique that treats mitral regurgitation, a condition in which the heart's mitral valve doesn't close tightly, causing blood to flow backward in the heart.

Enhancing Strategic Plans

International Advisory Panel 2016

An International Advisory Panel (IAP) is useful in obtaining strategic advice from an external team of distinguished experts from around the world. Prof. Tan gives an outline of the third IAP session as we aim to align our strategies and bring NUHCS to greater heights.

By **Prof. Tan Huay Cheem**
Director, NUHCS
Senior Consultant, Department of Cardiology

Prof. Tan is a Professor of Medicine, Yong Loo Lin School of Medicine, National University of Singapore and has a Masters of Medicine in Internal Medicine. He is an active clinical researcher, visiting professor at several hospitals in China and invited speaker at many international cardiology meetings.

Presenting the IAP Team

NUHCS welcomed the IAP team at our Centre on 29-30 September 2016 for a two-day discussion on our clinical and research strategies. The team comprised:

- Prof. Judith Swain, Senior Fellow, A*STAR and Professor of Medicine, Yong Loo Lin School of Medicine, National University of Singapore;
- Prof. Charanjit Rihal, Chair, Department of Cardiovascular Diseases, Mayo Clinic, USA;
- A/Prof. Terrence Yau, Associate Professor of Surgery, University of Toronto, Director of Research, Division of Cardiovascular Surgery, Toronto General Hospital, Canada; and
- Prof. Henry Dargie, Emeritus Professor in Cardiology and Honorary Senior Research Fellow, University of Glasgow, Scotland.

Review and Recommendations

They engaged in intensive meetings and discussion with NUHCS and National University Health System's senior leaders, members of its clinical and research faculties, trainees and nurses to review the Centre's broad strategies, including the Centre's clinical programmes, research directions and outcomes, staff training and education, and so on.

The intensive meeting culminated with constructive recommendations from the IAP team, which will **help us with our continuous efforts and commitment in clinical research and excellence** and will be important in our quest to become one of the world's leading heart centres.•

Prof. Arthur Mark Richards (third from the left) showing the panel around NUHCS and explaining work processes.

Driving **Better Care** for Patients

12th Asian Interventional Cardiovascular Therapeutics Congress

Back again at the 12th Asian Interventional Cardiovascular Therapeutics (AICT) Congress, we support the goal of advancing cardiovascular care and gaining new knowledge so we can better deliver patient care. Prof. Tan Huay Cheem brings us the highlights.

The 12th AICT Congress was held in Taipei, Taiwan from 23-25 September 2016 and attracted 159 faculty members and 739 delegates from 25 countries. Jointly organised by Asia-Pacific Society of Interventional Cardiology (APSIC) and the Taiwan Society of Cardiac Intervention, Mr. Jeng-Jiann Chiu, Deputy Minister of the Ministry of Science and Technology, Taiwan, and Mr. Ke Wenzhe, Mayor of Taipei City, graced the occasion.

Sharing Knowledge

The three-day meeting focused on endovascular therapies that included coronary, structural and peripheral interventions. It also featured high-quality transmissions of live demonstrations from various hospitals, joint sessions with international societies, and meetings such as EuroPCR and our new partner, the World Association of Chinese Cardiologists.

Shining at AICT

Our doctors were also given recognition during the meeting. Asst. Prof. Edgar Tay and Asst. Prof. Joshua Loh from NUHCS were both accepted as full Fellows of APSIC at the traditional APSIC Fellows' convocation ceremony. I was also re-elected as President of APSIC for a second term.

In my welcome address, I reiterated AICT's vision to be the pivotal representative meeting in Asia-Pacific and the platform to share knowledge, techniques and expertise in catheter-based treatments.

I also emphasised the importance of bringing excellent scientific content to AICT participants, regardless of societies or geographic boundaries.•

By **Prof. Tan Huay Cheem**
Director, NUHCS
Senior Consultant,
Department of Cardiology

Prof. Tan is a Professor of Medicine, Yong Loo Lin School of Medicine, National University of Singapore and has a Masters of Medicine in Internal Medicine. He is an active clinical researcher, visiting professor at several hospitals in China and invited speaker at many international cardiology meetings.

EDUCATION
National University Heart Centre, Singapore

New Knowledge, **Better Lives**

Vascular Interventional Fellowship in Taiwan

The National University Heart Centre, Singapore (NUHCS) regularly offers training opportunities for our medical professionals so they can sharpen their saw and bring better care to patients. Dr. Peter Chang shares his experiences during a Vascular Interventional Fellowship at National Taiwan University Hospital (NTUH).

By **Dr. Peter Chang**
Consultant,
Department of Cardiology

Dr. Chang is board certified in internal medicine and was a hospital medicine specialist before completing his cardiology fellowship. He is also trained in vascular medicine and focuses on an integrated and interdisciplinary approach to vascular conditions with an emphasis on non-invasive diagnosis and management.

The title "Tai Da Yi Shi (臺大醫師)", literally translated as a doctor from NTUH, is highly regarded by the people of Taiwan as it expresses a doctor's superior intellect and outstanding capabilities.

Established in 1895, NTUH is a renowned medical centre in Taiwan and sets the benchmark for other medical centres there. It has nurtured numerous clinicians who have gone on to serve internationally.

Advancing Vascular Knowledge

In Spring 2016, I spent more than three months advancing my knowledge in endovascular therapy for peripheral vascular disease (PVD)[1]. I attended to patients with various vascular diseases at the NTUH Cardiovascular Centre catheterisation suites and performed minimally invasive, catheter-based procedures on their upper and lower limbs.

Learning from the Experts

Under the mentorship of Prof. Hsien-Li Kao and Dr. Jen-Kuang Lee, I developed minimally invasive skills to reconstruct lower-extremity arteries and treat critical limb ischemia[2]. **Together, we helped patients with non-healing wounds avoid the dire outcome of amputation and preserve their limbs for better quality of life.**

I believe that providing the best PVD treatment requires a collaborative and multidisciplinary approach. Thus, I hope to bring my new knowledge to the NUHCS vascular team and work closely with them to enhance care for patients.•

[1] A blood circulation disorder that causes the blood vessels outside the heart and brain to narrow, block or spasm.

[2] A severe obstruction of the arteries that reduces blood flow to the hands, feet and legs.

Having a classical European facade with Japanese colonial influence, the whole NTUH building is alive with the hustle and bustle of medical affairs.

Making **New Strides**

Cardiac Rehabilitation, Sports Cardiology and Preventive Cardiology

Following Dr. Yeo Tee Joo's last cardiac rehabilitation training stint in Toronto, Canada two years ago (featured in Pulse Issue 25), once again he sought to broaden his expertise at the St. George's, University of London (SGUL). Get a peek into Dr. Yeo's most recent learning journey.

Relatively New Field

My year in London was spent gaining fascinating knowledge on various aspects of Sports Cardiology under the mentorship of Prof. Sanjay Sharma, Professor of Cardiology, SGUL. These include physiological cardiac adaptations to intense exercise; the grey area where cardiac physiology and pathology overlap; the differences and impact ethnicity, gender and age have on athletes' hearts; eligibility and disqualification criteria for competitive athletes with cardiovascular disease; prevention of sudden cardiac death through pre-participation screening; and many more. During this period, I screened hundreds of individuals, participated in multiple research projects and even rubbed shoulders with elite athletes!

Development in Sports Cardiology

Applying what I have learnt, I am working closely with the National University Hospital (NUH) Sports Medicine Centre to establish seamless multidisciplinary care for athletes and active individuals. **We are expecting to receive our first batch of athletes from the Football Association of Singapore for a pre-participation screening soon.** Potential collaborations with the Singapore Sports Institute and other sporting associations are also in the pipeline.

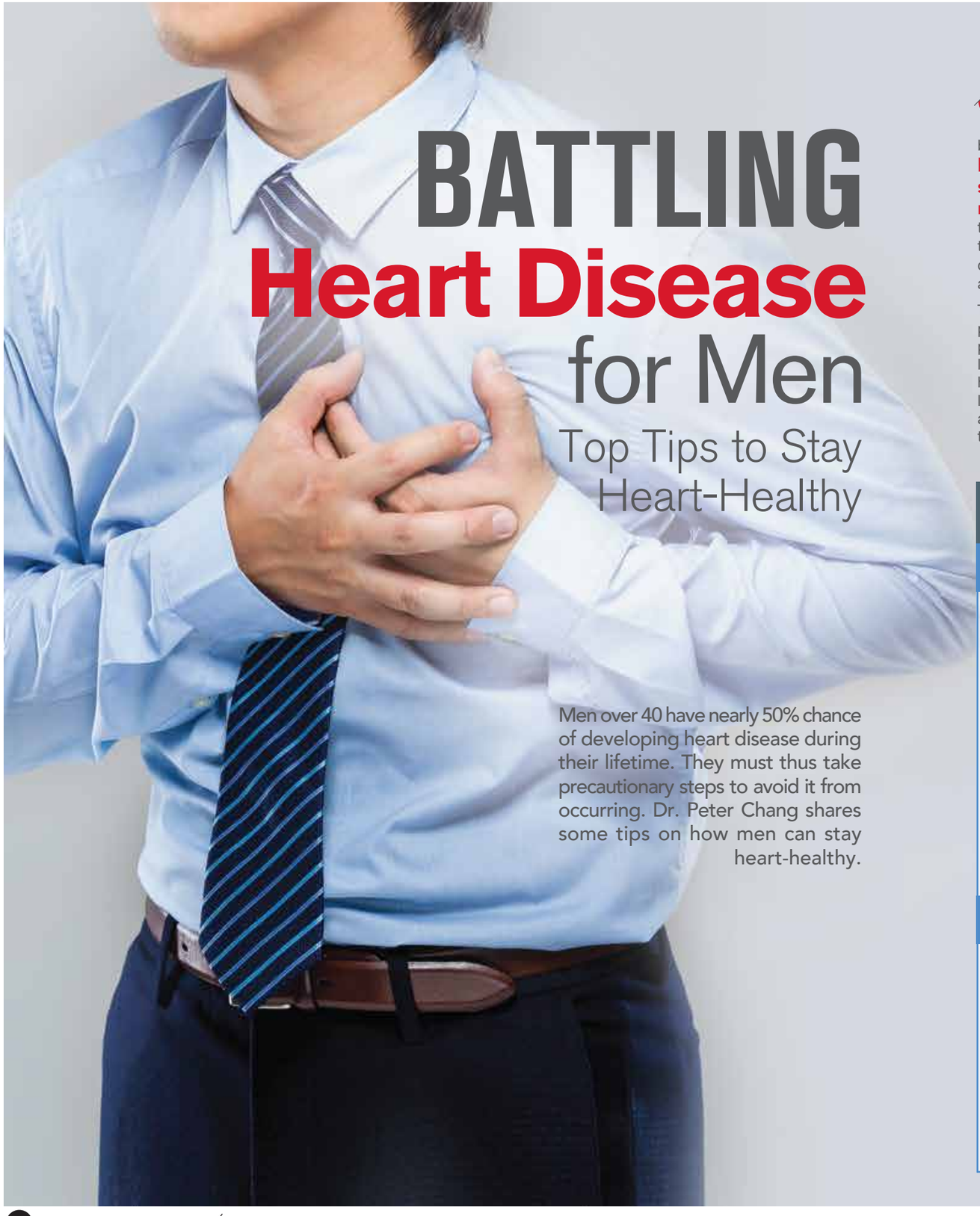
Leaving no stone unturned, NUHCS is also involved in primary prevention where community-based individuals with high cardiovascular risk are identified and referred to us for further management. This includes a customised exercise-based cardiac rehabilitation programme launching soon. It utilises the successful framework built by our renal specialists who won the National Clinical Excellence Team Award 2016.

With so many new and upcoming projects, I am excited to share my knowledge and skills to anyone who is interested to learn more about cardiac rehabilitation, sports cardiology and peventive cardiology.•

By **Dr. Yeo Tee Joo**
Consultant,
Department of Cardiology

Dr. Yeo completed subspecialty fellowship trainings in Cardiovascular Prevention and Rehabilitation at the Toronto Rehabilitation Institute and Sports Cardiology at St George's, University of London. He is now focused on improving the NUHCS Cardiac Rehabilitation experience for patients and establishing the Sports Cardiology service in NUHCS.

Dr. Yeo Tee Joo with actor-host Paul Foster (far left) who commended the doctors at the NUH Sports Centre for organising pre-participation screenings.



BATTLING Heart Disease for Men

Top Tips to Stay Heart-Healthy

Men over 40 have nearly 50% chance of developing heart disease during their lifetime. They must thus take precautionary steps to avoid it from occurring. Dr. Peter Chang shares some tips on how men can stay heart-healthy.

While men are so focused on their career and juggling work and family, heart disease could be building undetected. **Although heart disease is not gender specific, it is particularly a male problem.** Studies have shown that men under 65 are about four times more likely to die from heart disease as women in the same age group.

Their increased risk is due to multiple reasons such as high blood pressure and cholesterol, unhealthy lifestyle, smoking and stress. These harmful habits are often ignored, leading to undetected blood vessel ageing and accelerated increase in the risk of stroke or heart attack.

As a man, I know we are not always the best at caring for ourselves. We are lax about our diet and find excuses for not exercising and paying more attention to our body. But **research has shown that smoking and avoiding exercise can raise the chances of sudden cardiac arrest by 12%!** So every man should get serious about heart health. Many risk factors for heart disease are preventable.

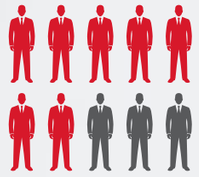
We recently conducted a Men's Health Public Forum on 19 November 2016, where I had the privilege of giving a talk on this very same topic, providing an overview of ways to prevent, diagnose and treat heart disease in men. We hope to conduct more of such initiatives to educate men on heart disease prevention.•

By **Dr. Peter Chang**
Consultant,
Department of Cardiology

Dr. Chang is board certified in internal medicine and was a hospital medicine specialist before completing his cardiology fellowship. He is also trained in vascular medicine and focuses on an integrated and interdisciplinary approach to vascular conditions with an emphasis on non-invasive diagnosis and management.

HOW CAN YOU BE SMART ABOUT YOUR HEART?

1. Visit the Doctor Regularly



>50%
of men do not get regular check-ups

It is recommended to get a check-up **once a year.**

High blood pressure and diabetes often surprise even the healthiest of men. Regular screening can tell you what your numbers are and whether you need to take action. It also gives men the opportunity to discuss with their doctor about other healthcare concerns such as sexual or psychological issues.

2. Maintain a Healthy Diet

Engage in cardiovascular exercises for

30-45 minutes a day

Exercises include brisk walking, jogging, or biking, to be done as many times a week as possible. A balanced diet of whole grains, fruits, vegetables and white meat with less saturated and salt intake will go a long way to keeping trim and healthy.

3. Quit Smoking

Take a multi-modality approach including:
- Medication
- Nicotine patches/gum

Tobacco is a major risk factor and cause of heart disease. Despite the public's unfavourable opinion of smoking, many men still smoke.

4. Cope with Stress Healthily

Try stress-reducing techniques such as:
- Meditation
- Doing a hobby
- Listening to music
- Relaxation exercises

Chronic stress can affect health negatively and excess stress is related to high blood pressure and unhealthy habits. These techniques can help prevent serious mental conditions like anxiety or depression which will lead to heart disease.

The **Future** of Cardiac Devices

Leadless Pacemakers

National University Heart Centre, Singapore (NUHCS) constantly seeks innovation and technology so that our patients can continue to lead quality lives. Asst. Prof. Seow Swee-Chong updates us on the latest leadless pacemaker.

By **Asst. Prof. Seow Swee-Chong**
Director,
Cardiac Electrophysiology and Pacing
Heart Rhythm Programme
Senior Consultant,
Department of Cardiology

Asst. Prof. Seow's sub-speciality interests include heart rhythm disorders; pacemaker, loop recorder and cardiac defibrillator implants; and cardiac resynchronisation therapy for heart failure. He runs the Heart Failure Clinic and performs angiograms, catheter ablations and diagnostic studies.

Every year, nearly 1,000 cardiac devices (including pacemakers) are implanted in Singapore. A cardiac pacemaker is a small device that helps to regulate the heart rate. The usual pacemaker has a pulse generator (battery) implanted in the chest wall with pacing leads (or wires) introduced through blood vessels and attached to the heart muscle. Though uncommon, pacing leads can cause swelling or bleeding, damage to blood vessels, and a collapsed lung. They can also be affected by infection. Another difficulty is the absence of vascular access to place these leads in some patients.

Reducing Complications

To potentially eliminate many of these complications, leadless pacemakers that are much smaller in size have been recently developed. With an estimated longevity of 10 years, these devices are implanted directly into the heart where they emit an electrical impulse to control the heartbeat.

Further Developments

Initial studies have shown that leadless pacemakers can be implanted safely with stable pacing parameters over the short term. However, it is currently only limited to single chamber pacing. Research is ongoing to develop leadless systems in two chambers coordinating wirelessly.

Another exciting development is the possibility of using kinetic energy from cardiac motion to fuel the pacemakers, thus eliminating the issue of battery depletion and device replacement. •

Led by Asst. Prof. Seow Swee-Chong, the team is preparing to implant a leadless pacemaker into a patient.

EVOLUTION OF PACEMAKERS

Catch our video on Cardiac Implantable Electronic Devices on NUHCS's YouTube channel!

YouTube www.youtube.com/user/NUHCS

THE HEART FUND
SPECIAL
National University Heart Centre, Singapore

The RICKSHAW RUN
3,000km across India

A *doctor's* fundraising challenge to help needy patients

Patient care is no longer limited to clinical care. We have a doctor who goes as far as to personally fundraise for his patients' treatments. Ms. Angeline Tan of The Heart Fund column finds out from Dr. Lim Yinghao, on what motivated him and his teammates to participate in this charity event to raise funds for needy patients.

My friends and I decided to do something different this year. In a fit of madness, we signed up for The Rickshaw Run which, contrary to its name, does not involve pulling a rickshaw or running on foot. What it does involve, however, is manoeuvring a dinky auto rickshaw (tuktuk in local parlance) all the way from Kochi, South West India, to Jaisalmer, Rajasthan in Northern India, covering a total distance of 2,800km. This is not quite a guided tour, if you can imagine.

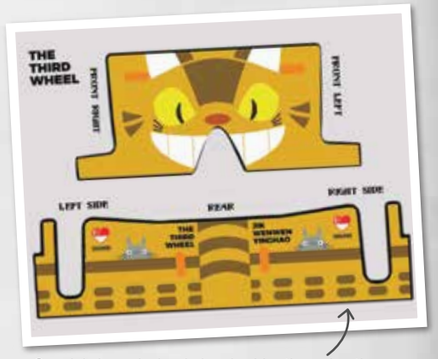
The best way of expressing the essence of The Rickshaw Run is perhaps with this description by the organisers:

"The Rickshaw Run is easily the least sensible thing to do in two weeks. No set route, no back-up, no way of knowing if you're going to make it. The only certainty is that you will get lost, you will get stuck and you will break down. It's just you and your mates in a wholly unsuitable vehicle, traversing the subcontinent enduring whatever the road throws at you."

This promises to be a great journey of discovery for us. We foresee thrills and spills, a touch of adventure, and a chance to experience beautiful India from deep within. Beyond that, we also hope to bring attention to some charities that are close to our heart.

In our attempt to save the world, we will first fix our environment (climate change is real!) with CoolEarth, which works with indigenous people to conserve rainforests; help patients who are unable to afford medical care through The Heart Fund; and bring a little joy to the needy with The Arts for the Community by Esplanade. All funds donated will go to charity. **This trip is entirely self-funded.•**

The rickshaw travels at a maximum speed of 40-50km/h. Some cynics claim that its top speed is only reachable downhill as it tumbles down. It is also apparently fond of flipping itself on its side when made irate with moderate corners, and occasionally stalls when the headlights are turned on.



Our rickshaw design is inspired by the animation 'My Neighbour Totoro', which portrays Catbus, a large grinning, twelve legged cat with a hollow body that serves as a bus. The Catbus is seemingly able to take its passengers to any destination they desire, even if the passenger himself does not know how to get there.

Total distance

2,500km - 2,800km

The total distance we are covering is approximately equivalent to travelling from Singapore to Hanoi!

By **Dr. Lim Yinghao**
Senior Resident, Department of Cardiology

Dr. Lim is a cardiologist-in-training who dedicates himself to providing the best possible care for his patients. When he is not studying or attending to patients, he is often seen buried in his guitars and drums. Dr. Lim also occasionally practises Muay Thai.

By **Ms. Angeline Tan**
Senior Assistant Manager, Communications & Development, Ops & Admin, NUHCS

Angeline's key roles involve partnerships, fundraising and video production. As a team lead, she works hand in hand with her team to raise the profile and publicity of NUHCS through communications, campaigns and events. Believing that content is king, Angeline embodies this mantra as the editor of Pulse magazine.

Adventure Timeline

28 Dec
Get our collective three-wheeled butts to Kochi.

29-30 Dec
Practise driving the three-wheeled monster and get a working mobile Internet connection so that we can provide a live feed of us gloriously adventuring and/or suffering.

2-14 Jan
Weave through the perilous Indian traffic. Soak in the rich culture of India, all the while questioning our life decisions.

15 Jan
Safely and successfully complete the drive. Time to savour our sweet victory!

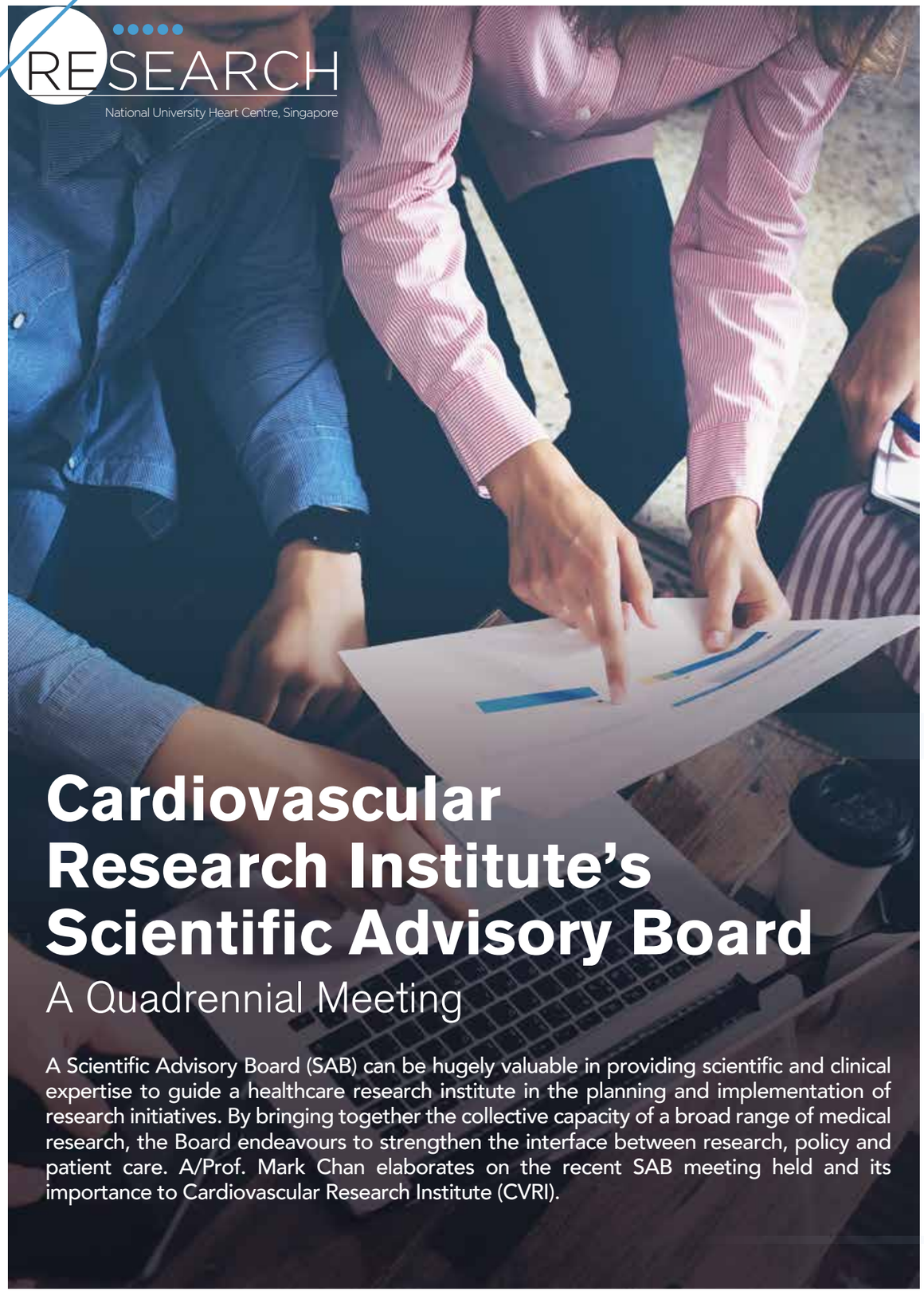
We are about to depart to Kochi, where our fundraising adventure begins.

Why The Heart Fund?

"There are many needy patients that we meet every day. Some of them even turn down good treatment that they cannot afford despite heavy subsidies. I recall one patient who once verbalised that he would be happy to pass on rather than pay for further treatment. **We hope to be able to raise funds for all such patients.**"

Find out more about our charities and how to contribute at **https://give.asia/movement/rickshaw_run_-_driving_for_charity.**

Follow us on our YOLO adventure at **http://thethirdwheelrickshawrun.blogspot.sg.**



Cardiovascular Research Institute's Scientific Advisory Board

A Quadrennial Meeting

A Scientific Advisory Board (SAB) can be hugely valuable in providing scientific and clinical expertise to guide a healthcare research institute in the planning and implementation of research initiatives. By bringing together the collective capacity of a broad range of medical research, the Board endeavours to strengthen the interface between research, policy and patient care. A/Prof. Mark Chan elaborates on the recent SAB meeting held and its importance to Cardiovascular Research Institute (CVRI).

What is a SAB?

A SAB is an external group of scientific and medical thought leaders who come together to provide advice and insights to healthcare organisations. It is especially beneficial for a number of reasons:

1. **It provides an external and objective perspective through constructive criticism, problem solving and sharing on areas of improvement.**
2. **An eminent group of SAB members can enhance the prestige of a start-up by raising its credibility to the scientific world.**
3. **It is a platform for the exchange of information and may even bring about cutting-edge ideas.**

Progressing Research at NUHCS

With just seven years in the making, the research team at NUHCS is like a biomedical start-up. All biomedical start-ups need SABs to advise them on the right direction. Held every four years, our last SAB meeting was conducted on 15-16 August 2016. The two-day closed-door event was held to provide CVRI leaders and principal investigators with insights on its research activities.

The SAB was chaired by three senior international clinician-scientists (see profiles below). They were appointed based on the relevance of their research to NUHCS. Moreover, just like NUHCS, they had built institutions from the ground up.

Receiving Valuable Advice

The insights from the SAB members were both candid and tremendously useful. I felt that we received the best insights during informal discussions with the SAB members. In particular, I found Prof. David Newby to be very generous with his ideas; he even shared his unpublished data and scientific protocols with me. Indeed, they were like the friend you would ask for feedback on your research paper even though they did not work on it.•

By **A/Prof. Mark Chan**
Senior Consultant,
Department of Cardiology, NUHCS

A/Prof. Chan is an interventional cardiologist and holds an NMRC-funded Clinician Scientist Award. He is the principle investigator of multiple large outcomes studies in acute coronary syndrome. He also supervises acute coronary syndrome and thrombosis research at Cardiovascular Research Institute (CVRI) and the high-risk acute coronary syndrome clinic at NUHCS.

Members of Cardiovascular Research Institute's Scientific Advisory Board

Prof. Tom Marwick,
Director and Chief Executive,
Baker IDI Heart and Diabetes Institute, Australia

Prof. Marwick was trained at Melbourne University, the University of Louvain and Harvard University. As a cardiologist, he focuses on health outcomes and specialises in cardiac imaging in heart failure and coronary disease, and the detection of early stages of cardiac dysfunction.

Dr. John Burnett,
Marriott Family Cardiovascular Research Professor, Mayo Clinic, US

Dr. Burnett held various positions at Mayo Clinic including Director for Research. He and his team are focused on developing new drugs for heart failure, hypertension and myocardial infarction (heart attack). To date, they have developed three novel designer peptides[1] that target heart failure and resistant hypertension[2], and are currently in clinical trials.

Prof. David Newby,
Consultant Interventional Cardiologist,
Royal infirmary of Edinburgh, UK

Prof. Newby is the British Heart Foundation John Wheatley Chair of Cardiology at the University of Edinburgh. His interest includes the advanced imaging of cardiovascular disease (e.g. heart failure). Prof. Newby was awarded the British Association of Pharmaceutical Physicians' Prize and the BUPA research award for the best emerging clinical researcher in the UK, among others.

[1] *Genetically engineered variants of natural proteins.*
[2] *Blood pressure that remains high despite receiving a 3-drug regimen at optimal doses.*

Our **Care Heroes**

Outstanding Nurse Leader Award

The Outstanding Nurse Leader Award is presented each year to honour nurse leaders who play a pivotal role in guiding other nurses to deliver excellent patient care. National University Heart Centre, Singapore (NUHCS) is proud to have nurses winning the award for two consecutive years and we are excited to anticipate another NUHCS winner next year. Read on as 2016 award winner, Ms. Oon Siow Eng, recounts her nursing journey.

2015
Award Winner

Ms. Doreen Chew
Acute Care Advanced Practice Nurse,
Cardiothoracic Intensive Care Unit (CTICU)

2016
Award Winner

Ms. Oon Siow Eng
Nurse Clinician,
Cardiothoracic Intensive Care Unit (CTICU)

"To me, nursing is not just a job. It requires patience, passion, commitment and motivation. I remember when I had just started working in the CTICU, I was shocked when a 19-year-old patient who had undergone a heart operation suddenly collapsed. I then realised that learning in theory was very different from applying to real-life situations, and that I had to bridge the theory-practice gap.

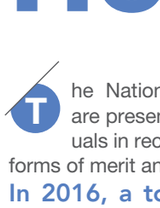
Throughout my 12 years in CTICU, I have delved into various areas so I could learn more things and take on additional roles as a leader. Achieving this award motivates me to continue developing my leadership roles by actively participating in NUHCS's projects. Currently, I am majorly involved in my pet project, healthcare simulation, to help improve healthcare workers' clinical experience without compromising patients' safety. Although Nursing can be unpredictable, continuously gaining new knowledge makes it such an enriching and fulfilling career. Seeing my patients' smiles and their family members' gratitude, I know I have chosen the right profession – a path I will not regret."

Honouring Our Public Service Stars

The National Day Awards (NDA) are presented annually to individuals in recognition of their various forms of merit and service to Singapore. **In 2016, a total of 3,961 individuals in 19 award categories received National Day honours, among those are members of NUHCS.**

The NDA has stringent criteria and an elaborate system of nomination and shortlisting award winners. The process usually begins by April each year and takes around four to five months of nomination, consideration and approval by the President before the award winners are announced. The criteria for the different awards differ from medal to medal *(see criteria listed on the right)*.

The National University Heart Centre, Singapore is proud to have five leaders and colleagues who are amongst the recipients of the National Day Awards 2016 in appreciation of their outstanding service to our nation.•



By **Ms. Angeline Tan**
Senior Assistant Manager,
Communications & Development, Ops & Admin, NUHCS

Angeline's key roles involve partnerships, fundraising and video production. As a team lead, she works hand in hand with her team to raise the profile and publicity of NUHCS through communications, campaigns and events. Believing that content is king, Angeline embodies this mantra as the editor of Pulse magazine.

Prof. Tan Huay Cheem

Director and Senior Consultant
National University Heart Centre, Singapore
The Public Administration Medal (Bronze)
The Long Service Medal
Years in service: 25

Mdm. Elisdawatinizam Bte Mahat

Management Assistant Officer
Department of Cardiology
National University Heart Centre, Singapore
The Long Service Medal
Years in service: 27

Ms. Kalaivani Ramiah @ Priya

Senior Service Team Leader
Ward 20, Cardiothoracic Intensive Care Ward (CTICU)
National University Heart Centre, Singapore
The Long Service Medal
Years in service: 31

Ms. Christina Ng Kew Tiang

Senior Assistant Manager
Department of Cardiology
National University Heart Centre, Singapore
The Long Service Medal
Years in service: 26

A/Prof. Yeo Tiong Cheng

Head and Senior Consultant
Department of Cardiology
National University Heart Centre, Singapore
The Long Service Medal
Years in service: 25

Awards criteria:

The Public Administration Medal

Instituted in 1963, the Public Administration Medal may be awarded to any of the following persons for outstanding efficiency, competence and industry:

a. any person who is or has been a public officer;
b. any person who is or has been an officer employed by any statutory authority (other than a Town Council);
c. any person who is or has been in the service of any organisation, association or body rendering services in the field of education; or
d. any person who is or has been employed in any company which is wholly-owned by the Government and which is carrying on business mainly as an agent or instrumentality of the Government.

The Long Service Medal

Instituted in 1962, the medal may be awarded to any person who is of irreproachable character and whom the President is satisfied, and has completed at least 25 years in the service of:

a. the Government;
b. any statutory authority (other than a Town Council);
c. any organisation, association or body rendering services in the field of education;
d. any company which is wholly-owned by the Government and which is carrying on business mainly as an agent or instrumentality of the Government; or
e. any 2 or more of the bodies referred to in sub-paragraphs (a) to (d).

CNY Feasting SURVIVAL GUIDE

8 Tips to Enjoy Heart-Healthy Festive Treats

While the Chinese New Year may be a time for celebration and feasting, we have to beware of overindulging in decadent treats and calorie-heavy dishes. Ms. Tricia Teo, our senior dietitian from the Department of Dietetics, shares tips on how to maintain a healthy and balanced diet while enjoying the festive spread.

1. Healthier Reunion Dinner Options

Instead of dining out for your reunion dinner, why not organise one at home? Here are some ways you can prepare a healthy meal using fresh and wholesome ingredients:

Tip 1

Choose healthier cooking methods such as boiling, steaming, grilling and stewing.

- ☑ Reduce fat consumption by using less oil when stir-frying, choosing lean meat and removing any visible fat and skin.
- ☑ Cook soups or stews in advance and let it cool before skimming away the fat.

Tip 2

Opt for fibre-rich whole-grain products including unpolished red or brown rice and brown rice beehoon. End your dinner with fresh fruits instead of dessert.

Tip 3

Make your steamboat dinner healthier by:

- ☑ Including a variety of colourful vegetables such as carrots, radishes, green leafy vegetables and cabbages as they are rich in dietary fibre and phytonutrients[1].
- ☑ Consuming white meat such as fish, skinless chicken and vegetarian protein sources (e.g. tofu).
- ☑ Limiting high cholesterol foods such as egg yolks, organ meats and seafood.

Tip 4

Make Yu Sheng healthier by reducing the amount of sweet sauce, oil and fried crackers.

2. Guilt-free treats

Most festive treats are high in sugar and fat content, with minimal nutritional value. Here is how you can choose healthier and Health Promotion Board approved options which contain less saturated fat, trans fat, sugar and salt:

Tip 5

Buy beverages with the "reduced sugar" or "sugar-free" label.

- ☑ Opt for Chinese tea, diet soft drinks, or unsweetened green or oolong tea.
- ☑ Sip slowly between meals to prevent yourself from snacking.

Tip 6

Control your portion: Sample two or three types of goodies and limit yourself to one or two pieces each.

BEWARE

3 pieces of Pineapple Tarts

or

1 slice of *Bak Kwa*

or

5 pieces of Love Letters

is approximately equal to

1 bowl of Rice

Tip 7

Healthier snack options include:

- ☑ Unsalted nuts such as almonds and cashews or sunflower and melon seeds. However, you should still limit the intake to not more than 10 pieces of nuts or half a cup of seeds as they also have a high fat content.
- ☑ Sugar-free sweets
- ☑ Fresh fruits or small amounts of dried fruits with no added salt or sugar (e.g. apple rings, raisins or apricots), providing good sources of fibre.

Tip 8

Bake your own goodies.

- ☑ Reduce butter or replace it with unsaturated soft margarine or oils (e.g. rice bran oil).
- ☑ Add ground oats or substitute a portion of the plain flour with wholemeal flour to increase the amount of fibre.

[1] Nutrients that are found in plants and provide health benefits.

Other Practical Tips

Be realistic! Trying to lose weight during the holiday season may be challenging. Aim instead to maintain your weight.

Have healthy and balanced meals three times daily to prevent overeating. Pile your plate with vegetables to fill you up.

Take 10-15 minute walks in between visiting and meals to relieve the holiday stress.

By **Ms. Tricia Teo**
Senior Dietitian,
Department of Dietetics

Tricia graduated from Flinders University of South Australia with a Bachelor of Nutrition and Dietetics, and is a member of the Dietitians Association of Australia (DAA). She has been with the NUH Dietetics Team since 2012 and is part of a team of dietitians that manages patients in the cardiac wards. Her other clinical interests include critical care and paediatric nutrition.

HAPPENINGS at NUHCS


A


B


C

A – C

NUHCS organised our **7th Undergraduate Cardiology Review Course** on 22 and 23 October 2016 to help medical students prepare for their exams. It comprised lectures delivered by 13 NUHCS specialists as well as an extensive simulated examination carousel with real-life patients. The review course is just one of many Medical Education initiatives by NUHCS as we recognise the importance of guiding and instructing our future generation of young doctors.

D – G

Donors of **The Giving Tree** were honoured at a cocktail event held on 18 December 2016 to show appreciation for their continued support. The donors include Schroders Singapore ($20,000 donation) and its Managing Director, Susan Soh ($10,000 donation). Their contributions will go towards helping needy patients of The Heart Fund. It was truly an incredible evening filled with engaging performances, sumptuous food and drinks, and great company.


E


F


G


D


H


I


J


K


L

H – O

Our big NUHCS family gathered for an afternoon of fun, food and activities at **NUHCS Family Day 2016**. Certificates were also awarded to our Patient Support Group members for helping with our patients' rehabilitation. We also composed a 'new' NUHCS anthem with lyrics penned by our very own staff. NUHCS thanks our doctors for successfully organising this event, showing their appreciation for our staff who work tirelessly to ensure the smooth running of our services.


M

N


O

P – T

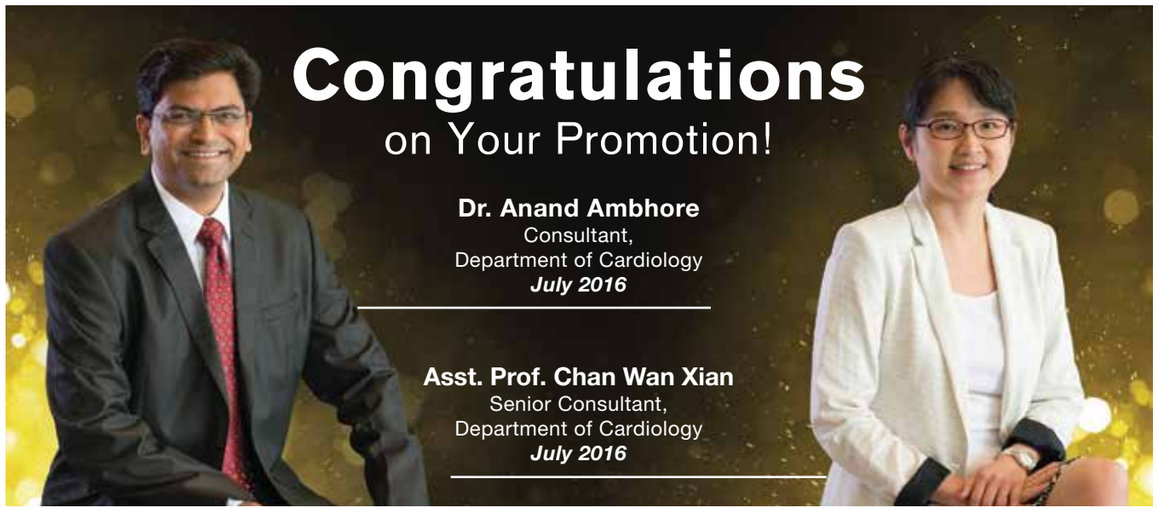
'Tis the season to rejoice and celebrate! The NUHCS family gathered on 13 and 14 December 2016 for two marvellous Christmas parties. Staff were treated to delicous food and loads of fun and laughter.

U

To educate our patients on the benefits of healthcare monitoring from home, a **Grand Round Session on telemedicine** was conducted on 3 June 2016. A/Prof. James Yip, Senior Consultant, Department of Cardiology, NUHCS, spoke about the challenges, use, protocols and value of the integrated telehealth monitoring service to our patients.

V – X

The **7th ECHO Singapore** was held on 3 and 4 August 2016 with the theme "Cardiovascular Ultrasound in Practice", focusing on cardiac functional assessment, cardio-oncology, and echocardiography (sonogram) of the right heart. We were privileged to host an illustrious panel of echocardiography experts who shared their unique insights through didactic lectures, case-based interactive presentations, and analyses of challenging clinical scenarios.



Publications

By doctors of the **National University Heart Centre, Singapore**

"Why are the saturations dropping?" The Blalock-Taussig shunt revisited. J Cardiothorac Vasc Anesth. 2016 Jun; 30(3):753-5. Merchant-Soomar S, Grignani R, Aye WM, Shankar S, Quek SC.

A D-shaped bileaflet bioprosthesis which replicates physiological left ventricular flow patterns. PLoS One. 2016 Jun 3;11(6):e0156580. Tan SG, Kim S, Hon JK, Leo HL.

A high-dimensional atlas of human T cell diversity teveals tissue-specific trafficking and cytokine signatures. Immunity. 2016 Aug 16;45(2):442-56. Wong MT, Ong DE, Lim FS, Teng KW, McGovern N, Narayanan S, Ho WQ, Cerny D, Tan HK, Anicete R, Tan BK, Lim TK, Chan CY, Cheow PC, Lee SY, Takano A, Tan EH, Tam JK, Tan EY, Chan JK, Fink K, Bertoletti A, Ginhoux F, Curotto de Lafaille MA, Newell EW.

A score for predicting acute kidney injury after coronary artery bypass graft surgery in an Asian population. J Cardiothorac Vasc Anesth. 2016 Oct;30(5):1296-301. Mithiran H, Bonney GK, Bose S, Subramanian S, Ng ZZY, Yeak SZE, Papadimas E, Chauhan I, MacLaren G, Kofidis T.

A simplified, langendorff-free method for concomitant isolation of viable cardiac myocytes and nonmyocytes from the adult mouse heart. Circ Res. 2016 Sep 30; 119(8): 909-20. Ackers-Johnson M, Li PY, Holmes AP, O'Brien SM, Pavlovic D, Foo RS.

A systematic review of transcatheter aortic valve implantation via carotid artery access. Int J Cardiol. 2016 Sep 15;219:41-55. Stonier T, Harrison M, Choong A.

Aortic wall extracellular matrix proteins correlate with syntax score in patients undergoing coronary artery bypass surgery. Open Cardiovasc Med J. 2016 Apr 27;10:48-56. Chiong T, Cheow ES, Woo CC, Lin XY, Khin LW, Lee CN, Hartman M, Sze SK, Sorokin VA.

Atrial fibrillation ablation by single ring isolation versus wide antral isolation: Effects on left atrial size and function. Int J Cardiol. 2016 Mar 1;206:1-6. Lee A, See VA, Lim TW, Descallar J, Chik W, Ross DL, Thomas SP, Thomas L.

Burden and outcomes of severe pertussis infection in critically ill infants. Pediatr Crit Care Med. 2016 Aug;17(8):735-42. Straney L, Schibler A, Ganeshalingham A, Alexander J, Festa M, Slater A, MacLaren G, Schlapbach LJ; Australian and New Zealand Intensive Care Society Centre for Outcomes and Resource Evaluation and the Australian and New Zealand Intensive Care Society Paediatric Study Group.

Comparison of quantity of calcific deposits by multidetector computed tomography in the aortic valve and coronary arteries. Am J Cardiol. 2016 Aug 23. Van Rosendael PJ, Kamperidis V, Kong W, Van Rosendael AR, Marsan NA, Bax JJ, Delgado V.

Comprehensive comparison of the performance of autogenous brachial-basilic transposition arteriovenous fistula and prosthetic forearm loop arteriovenous graft in a multiethnic Asian hemodialysis population. Biomed Res Int. 2016;2016:8693278. Chue KM, Thant KZ, Luo HD, Soh YH, Ho P.

Computed tomography for planning transcatheter tricuspid valve therapy. Eur Heart J. 2016 Oct. van Rosendael PJ, Kamperidis V, Kong W, van Rosendael AR, van der Kley F, Ajmone Marsan N, Delgado V, Bax JJ.

Dual delivery of VEGF and ANG-1 in ischemic hearts using an injectable hydrogel. Acta Biomater. 2016 Oct 15. Rufaihah AJ, Johari NA, Vaibavi SR, Plotkin M, Thien DTD, Kofidis T, Seliktar D.

Echocardiographic quantification of pulmonary artery systolic pressure in ventricular septal defect: Do calculations from Doppler interrogation across tricuspid regurgitation and ventricular septal defect correlate? Int J Cardiol. 2016 Jan 1;202:100-102. Panday V, Tay E, Chan PF, Yip JW, Poh KK.

ECLS in Pediatric Cardiac Patients. Front Pediatr. 2016 Oct 7;4:109. Di Nardo M, MacLaren G, Marano M, Cecchetti C, Bernaschi P, Amodeo A.

Failure to shock due to misdiagnosis of polymorphic ventricular tachycardia: To bin or not to bin? Europace. 2016 Jun;18(6):887. Lim TW, Kojodjojo P, Seow SC.

Impact of different iterations of devices and degree of aortic valve calcium on paravalvular regurgitation after transcatheter aortic valve implantation. Am J Cardiol. 2016 Aug 15; 118(4):567-71. Kong W, van Rosendael PJ, van der Kley F, de Weger A, Kamperidis V, Regeer MV, Marsan NA, Bax JJ, Delgado V.

Increasing experience with melioidosis and critical care: Medical and military implications. Crit Care Med. 2016 Aug;44(8):1608-9. MacLaren G, Lye DC, Lee VJ.

Lies, statistics, and ECMO data mining: Digging dirt or striking gold? Pediatr Crit Care Med. 2016 Aug;17(8):799-802. MacLaren G, Fortenberry JD, Dalton HJ.

Mid-term study of transcatheter aortic valve implantation in an Asian population with severe aortic stenosis: two-year valve academic research consortium-2 outcomes. Singapore Med J. 2016 Aug 12. Chew N, Hon JK, Yip WL, Chan SP, Poh KK, Kong W, Teoh KL, Yeo TC, Tan HC, Tay E.

Natural myocardial ECM patch drives cardiac progenitor based restoration even after scarring. Acta Biomater. 2016 Oct 15;44:209-20. Sarig U, Sarig H, de-Berardinis E, Chaw SY, Nguyen EB, Ramanujam VS, Thang VD, Al-Haddawi M, Liao S, Seliktar D, Kofidis T, Boey FY, Venkatraman SS, Machluf M.

Prevalence, clinical and echoca rdiographic characteristics of various flow and gradient patterns in mild or moderate aortic stenosis with normal left ventricular ejection fraction. Int J Cardiol. 2016 Oct 15; 221:1107-15. Tan YQ, Ngiam JN, Kong W, Yeo TC, Poh KK.

Quantitative accuracy and lesion detectability of low-dose FDG-PET for lung cancer screening. J Nucl Med. 2016 Sep 29. Schaefferkoetter JD, Yan J, Soderlund TA, Townsend DW, Conti M, Tam JK, Soo R, Tham I.

Refractory septic shock in children: a European Society of Paediatric and Neonatal Intensive Care definition. Intensive Care Med. 2016 Oct 5. Morin L, Ray S, Wilson C, Remy S, Benissa MR, Jansen NJ, Javouhey E, Peters MJ, Kneyber M, De Luca D, Nadel S, Schlapbach LJ, Maclaren G, Tissieres P; ESPNIC Refractory Septic Shock Definition Taskforce the Infection Systemic Inflammation Sepsis section of ESPNIC.

Revealing maximal diameter of upper limb superficial vein with an elevated environmental temperature. Int J Chronic Dis. 2016; 2016: 8096473. Irfan H, Ooi GS, Kyin MM, Ho P.

Simulated bench testing to evaluate the mechanical performance of new carotid stents. Artif Organs. 2016 Jun 30. [Epub ahead of print]. Kumar GP, Kabinejadian F, Liu J, Ho P, Leo HL, Cui F.

The impact of education reform: An Asian medical school's experience. Ann Acad Med Singapore. 2016 May;45(5):198-204. Koh GCh, Lee JN, Agrawal N, Tam JK, Samarasekera D, Koh DR, Wong JE, Tan CH.

Transcather aortic valve replacement with early- and new-generation devices in bicuspid aortic valve stenosis. J Am Coll Cardiol. 2016 Sep 13;68(11):1195-205. Yoon SH, Lefèvre T, Ahn JM, Perlman GY, Dvir D, Latib A, Barbanti M, Deuschl F, De Backer O, Blanke P, Modine T, Pache G, Neumann FJ, Ruile P, Arai T, Ohno Y, Kaneko H, Tay E, Schofer N, Holy EW, Luk NH, Yong G, Lu Q, Kong W, Hon J, Kao HL, Lee M, Yin WH, Park DW, Kang SJ, Lee SW, Kim YH, Lee CW, Park SW, Kim HS, Butter C, Khalique OK, Schaefer U, Nietlispach F, Kodali SK, Leon MB, Ye J, Chevalier B, Leipsic J, Delgado V, Bax JJ, Tamburino C, Colombo A, Søndergaard L, Webb JG, Park SJ.

Transcatheter aortic valve implantation: from revolution to evolution. Singapore Med J. 2016 Jul;57(7): 406-7. Tay E, Poh KK, Yip JW, Kong W.

When atrial fibrillation co-exists with coronary artery disease in patients with prior coronary intervention – Does ablation benefit? Heart Lung Circ. 2016 Jun; 25(6):538-50. Chong E, Chang YY, Poh KK, Chung FB, Chang SL, Lo LW, Hu YF, Chao TF, Tuan TC, Chen SA, Lin YJ.•

Abstracts

By doctors of the **National University Heart Centre, Singapore**

European Society of Cardiology 2016, Rome, Italy, 27 – 31 August 2016

A novel alternative splicing isoform promotes proteasomal degradation of L-type CaV1.2 calcium channels in the hypertrophic heart
Wang JW, Hu Z, Yu D, Soon JL, de Kleijn D, Liao P, Colecraft HM, Soong TW.

An age old problem: Screening asymptomatic veteran athletes for coronary artery disease
Merghani A, Maestrini V, Rosmini S, Cox AT, Dhutia H, Yeo TJ, Narain R, Malhotra A, Papadakis M, Wilson M, Tome M, Moon JC, Alfakih K, Sharma S.

Assessment of mitral inflow and annular velocities using cine cardiovascular magnetic resonance imaging
Marchesseau S, Parknezhad M, Richards AM, Ling LH, Totman JJ.

Bariatric surgery improved plasma NTproANP natriuretic response, endothelial progenitor cells and myocardial strain in response to BNP infusion in morbid obese
Lee PS, Shabbir A, Yeo TC, Tan HC, Richards AM, Poh KK.

Cardiac magnetic resonance imaging T1 mapping: possible indices of degenerative mitral valve regurgitation
Marchesseau S, Richards AM, Totman JJ, Ling LH.

Circulating toll-like receptor 2 deficiency reduces cardiac dysfunction in mice subjected to pressure overload
Wang JW, Wang XY, Chong SY, Zhang Y, Arslan F, Lam SP, de Kleijn D.

Cross-sectional 3-dimensional TEE for aortic annular sizing in TAVR
Kong W, Yip J, Tay E.

Ethnic and regional variation in diabetes among Asian patients with heart failure
Teng KT, Tay WT, Yap J, Anand I, Zhang S, Shimizu W, Narasimhan C, Park SW, Yu CM, Ngarmukos T, Omar R, Reyes EB, Siswanto B, Hung CL, Ling LH, Richards AM, Lam SP.

Human pluripotent stem cells derived cardiomyocyte progenitors improve myocardial ischemia reperfusion injury in mice
Yap L, Wang JW, Wang XY, Chong LY, de Kleijn D, K Tryggvason.

Influence of the left ventricular measurements for right ventricular analysis
Ho XM, Totman JJ, Chan MY, Richards AM, Marchesseau S.

Lean diabetic phenotype of heart failure in Asia
Teng KT, Tay WT, Yap J, Anand I, Zhang S, Shimizu S, Narasimhan C, Park SW, Yu CM, Ngarmukos T, Omar R, Reyes EB, Siswanto B, Hung CL, Ling LH, Richards AM, Lam SP.

Liposome-encapsulated berberine treatment reduces adverse ventricule remodeling after myocardial infarction
Wang JW, Allijn IE, Czarny B, Wang XY, Chong SY, Pastorin G, de Kleijn D, Storm G, Schiffelers R.

LDL extracellular vesicle coagulation protein levels change after initiation of statin therapy in healthy individuals
Zhang YN, Gijsberts CM, Schoneveld AH, Wang JW, Vernooij F, Bots ML, Crouse Iii JR, Evans GW, O'Leary DH, Grobbee DE, Raichlen JS, de Kleijn D.

Relationship between visit-to-visit variability of LDL cholesterol and clinical outcomes after primary percutaneous coronary intervention: A 7-year follow up study
Boey E, Gay GM, Poh KK, Yeo TC, Tan HC, Lee R.

Short and medium-term outcomes after primary percutaneous coronary intervention in an Asian elderly population
Chen R, Chan SP, Loh PH, Loh J, Chan MY, Lee R, Low A, Tan HC, Chan KH.

Standardized reporting of right heart strain parameters of computed tomographic angiography: a quality improvement program to enhance risk stratification of patients with pulmonary emboli
Kristanto W, Kojodjojo P, Ong CC, Teo L, Ying JW, Leong J, Goh V, Pei BC.

The cardioprotective effects of miRNA-125b in ischemia/reperfusion(I/R) reflect inhibition of autophagy through targeting tp53inp2 but not Tp53inp1
Chen Q, Zhou Y, Richards AM, Wang P.

The effect of exercise on the aortic root diameter in young elite athletes with bicuspid aortic valve disease
Yeo TJ, Malhotra A, Dhutia H, Prakash K, Keteepe-Arachi T, D'silva A, Finnochiaro G, Steriotis A, Papatheodorou S, Millar L, Dassanayake S, Ensam B, Papadakis M, Tome M, Sharma S.

6th University Surgical Cluster Undergraduate Research Week, NUHS Tower Block, 19 – 24 September 2016

3D printing in vascular surgery: A systematic review
Ko R, Yeong XL, Choong A.

Discrepancies between autopsy reports and clinical findings in patients who underwent extracorporeal membrane oxygenation (ECMO)
Jia D, Neo R, Lim E, Tan CS, Maclaren G, Ramanathan KR.

Sodium hydrosulfide (NaHS) in the setting of cardioplegia and cardiopulmonary bypass (CPB) in the rat model reduces ischemia-reperfusion injury
Ong Y, Ong CS, Vu DT, Min ZO, Ocampop EM, Jalil RA, Kofidis T.

American Heart Association Scientific Sessions 2016, New Orleans, Louisiana, United States, 12 – 16 November 2016

Bicuspid aortic valve: Inter-ethnic differences in valve morphology, valvular dysfunction and aortopathy from a large multi-center international registry
Kong W, Regeer MV, Poh KK, Yip JW, van Rosendael PJ, Vollema M, Yeo TC, Ling LH, Kamperidis V, Marsan NA, Delgado V, Bax JJ.

Circulating glycosphingolipids primarily correlate with LDL-C but not HDL-C or TG and are associated with disease severity in acute myocardial infarction
Tan SH, Ow GS, de Carvalho LP, Ching J, Poh SC, Chin CT, Richards AM, Troughton R, Fong AY, Yan BP, Seneviratna A, Yang X, Kuznetsov VA, Kovalik JP, Summers SA, Chan MY.

Circulating nucleoside and bile acid intermediary metabolites are associated with recurrent ischemic events in acute coronary syndrome
Coulter-Kwee L, Morningstar J, Grass E, Gregory SG, Neely ML, Fox KAA, White H, Armstrong P, Ohman EM, Roe M, Gerszten RE, Chan MY, Shah SH.

Circulating thymosin beta-4 is elevated in women with heart failure
Tan W, Chan SP, Pakkiri LS, Chong J, Chen Z, Liew OW, Ng TP, Ling LH, Sim D, Leong G, Yeo D, Ong HY, Jaufeerally F, Wong R, Chai P, Low A, Davidsson P, Liljeblad M, Soderling AS, Gan LM, Ratan B, Purnamawati K, Lam SP, Richards AM, Drum CL.

Effect of weight loss intervention program on cardiac function, endothelium progenitor cells and microparticles in mildly obese Asians
Lee S, Naseer F, Lim SL, Khoo E, Yeo TC, Richards AM, Poh KK.

Impaired global load-independent left ventricular contractility index across different severity of aortic stenosis with preserved left ventricle ejection fraction
Sim HW, Boey E, Tan B, Lin WQ, Zhong L, Tan RS, Kong W, Poh KK.

MicroRNA sequencing highlights regulatory networks upstream of osteopontin and B-type natriuretic peptide in acute coronary syndrome
Coulter-Kwee L, Grass E, Neely ML, Gregory SG, Haas JV, Laska DA, Kowala M, Michael LF, Wetterau JR, Duffin KL, Roe M, Ohman EM, Fox KAA, White H, Armstrong PW, Chan MY, Shah SH.

Mortality outcomes at 30 days and 1 year after primary percutaneous coronary intervention for acute myocardial infarction due to unprotected left main coronary artery occlusion
Chen R, Chan SP, Loh PH, Loh J, Tay E, Chan MY, Lee CH, Low A, Tan HC, Chan KH.

Novel left ventricle contractility index as a marker of left ventricular function in aortic stenosis
Boey E, Sim HW, Tan B, Lin WQ, Zhong L, Tan RS, Kong W, Poh KK.

Regulation of platelet reactivity identified through microRNA profiling in acute coronary syndrome
Becker KC, Coulter-Kwee L, Neely ML, Grass E, Jakubowski JA, Fox KAA, Armstrong PW, White H, Roe M, Ohman EM, Gregory SG, Shah SH, Chan MY.

Sodium hydrosulfide (NaHS) in the setting of cardioplegia and cardiopulmonary bypass (CPB) in the rat model reduces ischemia-reperfusion injury
Ong Y, Ong CS, Vu DT, Min ZO, Ocampop EM, Jalil RA, Kofidis T.

Time-dependent association of circulating microRNAs with death and myocardial infarction after non-ST elevation acute coronary syndrome
Chan MY, Neely ML, Coulter-Kwee L, Fox KAA, Burns E, Gregory SG, Armstrong PW, Ohman EM, White H, Roe M, Shah SH.

Whole-genome microRNA sequencing reveals circulating microRNAs as high-tisk markers in non-ST-elevation acute coronary syndrome
Wang A, Coulter-Kwee L, Grass E, Gregory SG, Armstrong PW, Fox KAA, Ohman EM, Roe M, Shah SH, Chan MY.•