

A SPECIAL TRIBUTE / Issue 30 • JAN 2018

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PULSE

Combing Forces to Enhance Heart Care

Integrated Cardiovascular Services

Turning Dreams into Reality

Supporting a Patient's Journey

An Accessible Asia

Access to Treatment and Care



REMEMBERING
**PROF. CHIA
BOON LOCK**
1939 - 2017

Farewell to Singapore's Father of Cardiology

Prof. Chia Boon Lock (1939 - 2017) left us on 27 December 2017.

“Cardiology is my life's passion and my hobby, and I've been very lucky to have chosen something that I love.”

A much loved and respected person at National University Heart Centre, Singapore (NUHCS), Prof. Chia Boon Lock can be described in so many ways: a courageous man who, in his battle with a life-threatening disease for 34 years, never wavered in the face of mortality; a brilliant doctor who devoted his entire life to the single-minded pursuit of excellence in cardiology; a selfless teacher who was ever so willing to share his knowledge with others; and a great mentor who was generous with his advice. He was the epitome of an honourable person who had led an honourable life.

Prof. Chia graduated from the University of Singapore in 1963. He was placed in charge of cardiology in Medical Unit II (later known as the University Department of Medicine II) at the Singapore General Hospital from 1975 - 1985 and later became Head of Department from 1981 - 1983. After joining National University Hospital (NUH), he became Head of the Division of Cardiology, Department of Medicine, from 1986 - 1989 and Chief of the Cardiac Department from 1996 - 1999.

Amongst his many achievements, he was the first to introduce ambulatory blood pressure monitoring, and one of the first two cardiologists to introduce echocardiography to Singapore. His leadership roles included the former President of the Singapore Hypertension Society, Chairman of the Ministry of Health Workgroup for the Clinical Practice Guidelines on Lipids and a Member of the Workgroup on Hypertension.

He was also President of the Singapore Cardiac Society, Chairman of the Chapter of Physicians, Academy of Medicine (now the College of Physicians, Singapore) and a Member of the 17th and 18th Council of the Singapore Medical Association (SMA). Prof. Chia was conferred Emeritus Professor, National University of Singapore in 2006, and Emeritus Consultant, NUHCS. He was an Honorary Member of SMA since 2008, and had won the Lee Foundation-National Healthcare Group Lifetime Achievement Award in 2005. He was also conferred the Dato Paduka Mahkota Brunei in 1984.

However, Prof. Chia's greatest contribution must be his lifelong commitment to the teaching and education of generations of medical students, doctors, cardiologists, nurses and allied health professionals in cardiology, especially in the field of electrocardiography. In his own unique and humorous way, he never failed to charm, endear and captivate his audience with his profound insights into issues pertaining to cardiology, and especially in his reading and interpretation of electrocardiograms (ECG).

Over the years, he had published 158 scientific papers in both local and international medical journals, and had written two books – the popular “Clinical Electrocardiography” (four editions), which is read by practically every medical student and doctor, and the “Atlas of Two-dimensional and Doppler Echocardiography”. This must surely be his true legacy to future generations. In addition, he had also published novel ECG findings in the diagnosis of acute inferior myocardial infarction, acute pulmonary embolism and heart failure.

In 1983, at the age of 43, Prof. Chia was diagnosed with stage 4 nasopharyngeal cancer when his two children were still very young (his elder son, who is now an oncologist in private practice, was only 7 years old then). That year, his arduous 34 years of personal battle against the disease began while at the same time bravely soldiering on in life to continue his medical career and bring up his family. At the time of his demise, Prof. Chia was the proud grandfather of two lovely grandchildren. Despite the many intolerable side-effects of radiotherapy, which included visual, hearing, swallowing and bleeding complications, Prof. Chia maintained his poise and composure throughout and did not succumb to despair.

“I was born to bear the unbearable. I had a good life. I want to have a good death. There will be no heroic treatment.”

That was so typical of Prof. Chia Boon Lock – he was so admirably strong.

Singapore's cardiology has been fortunate to have benefited from Prof. Chia's lifetime of contributions to the fraternity. Many of us have been fortunate to have him as a teacher, a mentor and as a friend. We will always hold him dearly in remembrance. May you rest in peace, Prof. Chia. •

Professor Tan Huay Cheem,
Director, National University Heart Centre, Singapore

www.nuhcs.com.sg 03

“ You made an impact on my cardiology training and you were willing to share your words of wisdom. No words can express my appreciation for you, for being my teacher and a fatherly figure. ”

Dr. Teo Swee Guan,
Consultant,
Raffles Heart Centre



“ I now understand what it means by the phrase ‘I can only see so far because I’ve stood on the shoulders of giants’. In cardiology, you were the giant to me. Thank you very much, Prof. ”

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



“ Thank you for the opportunity to serve you over the years, especially as a personal secretary. Your confidence in me has given me much encouragement. You’re kind and generous in sharing your advice and wisdom. ”

Ms. Christina Ng,
Senior Assistant Manager,
Department of Cardiology

FOR 2018
DIRECTOR'S MESSAGE

National University Heart Centre, Singapore

Continuing our mission to keep hearts beating

I am always amazed by how quick time flies whenever I start to write this traditional year-end message. Indeed, 2017 continues to see National University Heart Centre, Singapore (NUHCS) grow and develop in its clinical service, education, and research programmes. The most significant development must be the announcement by the Ministry of Health (MOH) in January 2017 of the new streamlining of healthcare services to give public healthcare institutions a fuller range of capabilities and network across primary care, acute hospital, and community hospital care.



Expanding our capabilities

In response to this, NUHCS, together with the six National University Polyclinics (NUP), now have the unique opportunity to develop our services for Western Singapore across the Jurong, Kent Ridge, and Alexandra campuses. Additionally, Asst. Prof. Pipin Kojodjojo, the appointed Head of the Cardiology Division at Ng Teng Fong General Hospital (NTFGH), and NUHCS Deputy Director, A/Prof. Yeo Tiong Cheng, have jointly worked to integrate our two institutions. This integration has seen the two teams working together to offer better services to patients with heart attacks at National University Hospital (NUH) after office hours. The NUH Extra-Corporeal Membrane Oxygenation (ECMO) team has also been mobilised to provide support for critically ill patients at NTFGH and other hospitals before transferring them to NUH. More services will be gradually set up at NTFGH. At the Alexandra campus, NUHCS will start new and innovative clinical models of care, with the creation of new programmes like palliative care, healthy heart lifestyle, women’s heart health programmes, and many more.

Pathing the way for new treatments

On the research front, our NUHCS clinicians and research scientists continue to do us proud with 117 publications in 2016. The impact of our publications is rising, with a prime example being A/Prof. Roger Foo’s research work where they discovered self-healing heart cells. This research, could potentially lead to new, groundbreaking treatments for heart disease. At the core of all our programmes are the people at NUHCS. Our staff members are frequent invitees to international meetings to present research work and to perform live demonstration of surgeries. Our senior residents also showed great enthusiasm and accomplishment at winning many local awards, engaging in community service, and fund raising. In fact, several of our medical professionals are currently raising donations for The Heart Fund – our charity fund that aims to help needy heart patients and support medical research and education in cardiology. You can support them by donating here: https://nuhsfund.give.asia/story/keep_the_beat

Grants Received and Renewed by Cardiovascular Research Institute /NUHCS

- Centre Grant Renewal - \$10M over 4 years
- Collaborative Centre Grant with NHCS - \$7M over 4 years
- Open Fund - Large Collaboration Grant - Potentially \$25M over 5 years

Increasing value for our patients

In keeping with the new MOH Healthcare Strategy, NUHCS has embarked on a number of initiatives which reduce costs and improve quality of care for patients. Spearheaded by A/Prof. James Yip and Dr. Devinder Singh, we completed a study for acute myocardial infarction (AMI) and will be continuing to study other procedures that will ultimately benefit patients.

We also presented at the Paris EuroPCR and the Orlando C3 meeting in the USA in front of global audiences. Cardiac surgery at NUH also continues to make its mark with more than 200 minimally invasive valve surgeries performed to-date. These have firmly established us as a centre of excellence.

NUHCS continues to reach out to the community with the “GoRed@Clementi” campaign of health screening, led by Asst. Prof. Chan Wan Xian. We also held our annual “The HEART Truth” public symposium in July 2017, which was sold out (as usual!). We have officially launched our Facebook page last year as well.



We have seven certified Advanced Practice Nurses in NUHCS. Our NUHCS nursing team started on TeamSTEPPS in CCU and CICEM initiatives in CTICU to equip nurses and the team with handling emergency situations in a simulated environment. Nurse Clinician Florence Ang won the Healthcare Humanity Award while SSN Jessica Gan won the Teaching Excellence prize.

NUHCS’s strategy is currently on track. We will continue to build our reputation as a renowned centre of excellence to provide quality value-added services, train people to be future-ready health professionals, and create new knowledge in shaping medicine of the future. Together with your support, we will stay the course to achieve our vision of being an institution which we all can be rightly proud of.



Professor Tan Huay Cheem,
Director, National University Heart Centre, Singapore

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Last issue, we asked our readers what they would like to see for the special edition of Pulse. Here's what some of them had to say.

"I would love to see a photograph montage of the cardiologists after a makeover and in their casual attires to lighten up the anniversary edition!"
- Dr. Leong Seng Keen

"Thanks for the good work in providing regular and wonderful information! Could we have a story on innovative technologies used for heart transplantation or cutting-edge surgeries for valve replacement?"
- Ms. Sophie Zhou

"I would like to read about the changes in epidemiology of cardiovascular conditions in Singapore; changes in the medications used to treat common conditions; and the costs of treating them in our region."
- Mr. Sean Chua

Check out page 19 for our pharmacist's reply!

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(L-R) Asst. Prof. Chan Wan Xian, Senior Consultant, NUHCS in conversation with Guest of Honour, Dr. Tan Wu Meng, Member of Parliament for Jurong GRC; Prof. Tan Huay Cheem, Director, NUHCS; and Mdm. Tan Lee Jee, Chairman, Clementi Health Task Force.



Go Red@Clementi

Bringing Heart Health Awareness and Screenings to the Community

National University Heart Centre, Singapore (NUHCS) organised an inaugural heart health carnival for Clementi residents! Graced by Guest of Honour, Dr. Tan Wu Meng, Member of Parliament for Jurong GRC, Go Red@Clementi was held on 5 November 2017 at Clementi Community Centre. Residents gained practical tips on how to manage stress, joined in family-oriented workshops such as baking heart-healthy desserts together, and were empowered with information to stay heart-healthy!

Numerous games and activities educated residents on heart health in a fun way.



The health checks included oral and eye screening as well as blood pressure check.



Residents participated in a fun dance exercise led by Ms. Cammy Tsa, Physiotherapist, Women's Heart Health Clinic.

THE TEAM

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Combining Forces to Enhance Heart Care

Integrated Cardiovascular Services between National University Heart Centre, Singapore and Ng Teng Fong General Hospital.

In January 2017, the Ministry of Health announced the regrouping of Singapore's six Regional Health Systems (RHS) into three integrated clusters. This brought on a closer partnership between NUHCS's and NTFGH's cardiology teams, which are part of the National University Health System (NUHS) cluster. Read on to find out more about the integration and how it aims to enhance the services for our patients.

The newly integrated team includes (L-R):

- Dr. Kua Jieli, Associate Consultant, Medicine, Cardiology
- Mr. Ang Soon Hock, Executive, Clinical Operations
- Ms. Lee Wei Lin, Assistant Director, Allied Health
- Ms. Veronica Kwok, Nurse Manager, Cardiovascular Lab
- Dr. Min Min Myo Lwin, Resident Physician, Medicine, Cardiology
- Asst. Prof. Pipin Kojodjojo, Director/Senior Consultant, Medicine, Cardiology
- Mdm. Loke Wai Chan, Deputy Director, Nursing, Nursing Administration
- Ms. Clary Bell Fernandez, Deputy Director, Nursing, Nursing Administration
- Ms. Lim Jia Min, Staff Nurse, Cardiovascular Lab
- Ms. Goh Cheng Huang, Senior Principal Cardiac Technologist, Cardiac Diagnostic Lab
- Ms. Nur Safurah Binte Ridzwan Wee, Executive, Cardiovascular Lab
- Mr. Leonard Goh Kang Liak, Manager, Specialist Outpatient Clinic





Integrating Two Cardiology Teams

With the reorganisation of Singapore's public healthcare system into three integrated clusters, NTFGH became a member of NUHS.

The expansion of NUHS created a more comprehensive healthcare network for the Western region, ranging from primary care in the community to specialised care in national centres.

Together, the institutions offer a full spectrum of services including health promotion, disease prevention, curative care and rehabilitative care. Across NUHS, every clinical discipline is reconfigured to ensure patient-centred care that leverages on the clinical expertise of the group.

More Seamless Services

In the field of cardiovascular medicine, the regrouping has led to an integration

“Through the integration, I hope to see greater connection such as smoother workflow when a patient goes for an operation. This would make it more efficient and effective for patients.”

Hazel Chin, Staff Nurse, NTFGH



of NUHCS's and NTFGH's cardiology divisions. Prior to this, NTFGH cardiologists were participating in the primary Percutaneous Coronary Intervention (PCI) roster as part of the Western ST-elevation myocardial infarction (STEMI) network and some cardiologists from NUHCS had been conducting monthly sub-specialty clinics at NTFGH. The integration increased the level of cross-site activities with interventional colleagues from NUHCS now providing 40% of coverage at NTFGH's cardiac catheterisation laboratories. Sub-specialty services such as the pacemaker and arrhythmia clinic also began to offer weekly sessions.

With the support of the Cardiac, Thoracic and Vascular Surgery (CTVS) team from NUHCS, NTFGH is now capable of handling emergency cardiac surgery. NUHCS's Extra-Corporeal Membrane Oxygenation (ECMO) team can also be rapidly mobilised to provide on-site circulatory support for critically-ill patients at NTFGH before transferring them to the Cardiothoracic Intensive Care Unit (CTICU) in NUHCS. Similar cross-site collaborations are occurring for virtually every cardiac sub-specialty such as cardiac rehabilitation, heart failure and non-invasive cardiac imaging.

The expansion of cardiology services at NTFGH was made possible with the



“I think that the integration would definitely provide our cardiology service with a clear direction and the opportunity to learn from NUHCS. It would be good to see greater synergy within our team.”

Ang Soon Hock, Executive, Clinical Operations, NTFGH

This ethos of close collaborations extends to care in the community with heart failure team members from both hospitals working with primary care physicians and community stakeholders to provide intervention and reduce unplanned hospitalisations.

addition of four Associate Consultants in 2017.

Enhanced Cross-Learnings

The integration also provided a broader platform for professional development through cross-learnings. For example, NTFGH nurses from outpatient clinics and cardiac catheterisation laboratories are now rotating to Kent Ridge Campus for clinical attachments whilst associate consultants gain experience in complex PCI and device implantation by undergoing training at NUHCS. Such cross-learnings aid in the transfer of skills, team-building and harmonisation of clinical practices across both campuses.



By Asst. Prof. Pipin Kojodjojo
Director & Senior Consultant, Cardiology, NTFGH
Senior Consultant, Department of Cardiology, NUHCS

Asst. Prof. Kojodjojo is actively involved in clinical research with an emphasis on applying novel techniques and therapies to optimise catheter ablation and device-based treatment of complex cardiac arrhythmias. He has been awarded several nationally competitive research grants. Having attained a PhD in clinical cardiac electrophysiology (EP) for his research on atrial fibrillation, he performs EP procedures that includes catheter ablation and device implantation.

NUHCS is home to a comprehensive MICS Programme, with increasing presence nationally and internationally.



A Journey to Innovation

Minimally Invasive Cardiac Surgery Programme

National University Heart Centre, Singapore (NUHCS) is home to a comprehensive Minimally Invasive Cardiac Surgery (MICS) Programme. This is the result of years of time and effort, investments, envisioning, faith and teamwork.

Minimally Invasive Cardiac Surgery

Seven years ago, NUHCS's Division of Adult Cardiac Surgery piloted the MICS Programme – an enhanced technique of using smaller incisions and tools for heart surgery. We have now accumulated more experience, which enables further expansion and presentation of a valid platform to treat both coronary and structural heart disease.

After collectively reaching specific key milestones in infrastructure, team training at the Department of Cardiac, Thoracic and Vascular Surgery (CTVS), routine cases and achievements in Southeast Asia, we are now offering a solid and reproducible platform for the treatment of surgical heart disease, be it single or multiple.

Our MICS Programme and its positive clinical outcomes are backed by a clinical and basic research team, which reviews data and helps further advance MICS technologies in the lab, with funding support from National Medical Research Council. For instance, it was found that patients stay in the hospital for a significantly shorter period after mitral valve or aortic valve surgery.

The MICS Bypass Programme is now expanding, as more surgeons in the Department of CTVS are being trained to offer this technique.

To reach here, it took us years of training, both individually and as a team, and substantial financial investments to become what we are today with well-equipped operating theatres for MICS in the region.

Our centre also has existing and upcoming scientific publications, some of which have garnered international recognition including the World Society of Cardiovascular & Thoracic Surgeons in 2017.

Benefits of MICS

In a recent study, it was reported that patients who underwent MICS have a faster recovery compared to traditional surgeries. Due to smaller incisions, there is less trauma to the body and less



blood loss, which leads to decreased length of hospital stay. As a result, patients are able to return to their daily activities and mobility sooner.

These results are truly encouraging! However, not every patient is suitable for MICS. Therefore, we provide detailed consultation, assessment and scans before recommending patients for the programme.

A Centre for Training and Education

Our MICS programme has since achieved an international presence and is serving as a pillar for structured training and education. We have organised workshops, wet-labs, boot-camps, and even ran entire chapters of international conferences.

Over the years, we have also made developments such as introducing technologies in Singapore and Asia, thereby underscoring our position as a dedicated heart centre.

In the meantime, interest in sending doctors for training at our centre is growing internationally, while the industry is in pursuit of a joint educational project based in our institution, to help bring

about progress in the field. Conclusively, we wish to reach and inform the public in Singapore and beyond on the option to have their heart surgery done in MICS fashion, and understand the benefits, inclusion and exclusion criteria of this platform.

As the saying goes, "When we share, the rice bowl does not diminish; it actually doubles". Let's share our knowledge and skills in our pursuit of innovation and progress. •



By A/Prof. Theodoros Kofidis
Head,
Division of Adult Cardiac Surgery
Senior Consultant,
Department of Cardiac, Thoracic & Vascular Surgery

A/Prof. Kofidis is the driver of the MICS programme over the last few years, which has developed to become a major CTVS differentiator in NUHCS and Singapore.

Procedures offered by MICS Programme:

- ▶ Minimally Invasive Bypass Surgery
- ▶ Minimally Invasive Aortic Valve Surgery
- ▶ Minimally Invasive Mitral Valve Surgery
- ▶ Minimally Invasive Tricuspid Valve Surgery
- ▶ Minimally Invasive ASD Closure
- ▶ Minimally Invasive Tumour Extraction
- ▶ Minimally Invasive Atrial Ablation for Arrhythmia and combinations of the above



An Accessible Asia

Access to Treatment and Care

Across Asia Pacific, what remains a common challenge is the lack of quick, efficient access to quality healthcare at a time when patients need it most. Asst. Prof. Winn Maung Maung Aye and the congenital surgical team regularly travels to provide surgical treatments and support in developing countries in Asia. He shares how the team goes beyond the call of duty through this voluntary endeavour.

The effort to support surgical teams in the region was initiated by Singapore's, USA's, Europe's and Australia's cardiac surgical teams in early 2000. The aim is to guide and mentor local surgeons in performing complex cardiac surgical procedures. Currently, our surgical team makes regular trips to Defense Service General Hospital and Yankin Children Hospital in Yangon, Myanmar to perform cardiac surgery on paediatric patients.

The Singapore Team

Our self-funded surgical team consists of one to two cardiac surgeons, an anaesthetist, one to two operation theatre nurses and a perfusionist to manage the heart-lung machine. The team would supply the instruments and some surgical consumables, and take personal leave for a five to seven days' trip.

During the trip, the team would gather a list of paediatric patients who need cardiac surgeries, including those who travel from miles away to be assessed. Priority would be given to patients who are suitable for surgery and require more urgent treatment, as we are only able to perform two to three surgeries a day.



Dr. Sar Vuthy (centre left) from Angkor Hospital for Children took on the role of main surgeon while surgeons from Singapore, Asst. Prof. Maung (centre right) and Dr. Sriram Shankar (far right), were the first and second assistant respectively.

At times, we have to reject patients who require extended post-surgery support. It is heartbreaking to turn them away but it is unavoidable as we are only there for a short time and the local medical support team (ICU Team) may not be experienced enough to manage the patients.

Other Voluntary Surgical Trips


Before venturing into Yangon, I had also made similar trips to Angkor Hospital for Children in Siem Reap, Cambodia and Nhi Dong 1 Children Hospital in Ho Chi Minh City, Vietnam.

These voluntary efforts are truly rewarding experiences as we are able to provide medical services to people in need.


We also feel encouraged when we witness the improvements of local surgeons as they progressively perform more complex cardiac surgical procedures independently. •

Asst. Prof. Maung's Voluntary Initiative

Started in




2000



5-7 days' trip

2-3 surgeries a day





By Asst. Prof. Winn Maung Maung Aye
Consultant,
Department of Cardiac, Thoracic & Vascular Surgery

Asst. Prof. Maung specialises in congenital cardiac surgery. He is also currently involved in three-dimensional printing of hearts with congenital defects for pre-operative planning, education (medical professionals and patients) and surgical simulation. He is working closely with National University of Singapore Centre for Additive Manufacturing.

Quality Care through INTEGRATION

Newly appointed Deputy Director of National University Heart Centre, Singapore (NUHCS), A/Prof. Yeo Tiong Cheng, shares more about the integration of clinical services and how it aims to provide a comprehensive and seamless healthcare network for patients.

A Singapore's six Regional Health System (RHS) were regrouped into three integrated clusters in January 2017. With this, National University Hospital (NUH), Ng Teng Fong General Hospital and the upcoming Alexandra Campus (AH) are now one family under the new National University Health System (NUHS) group.

The buzzword since then has been 'integration' – aiming to provide a more comprehensive, seamless healthcare network for residents in the Western region. Integration of health services is not new in the local healthcare landscape. However, our past attempts at integration, such as the collaboration between NUH and AH as well as the formation of a virtual heart institute by NUH and Tan Tock Seng Hospital, did not pan out as envisioned.

Despite this, I am confident that we now have a good chance of success. Reasons for my optimism include clear directions from the Ministry of Health; strategic close proximity of the three institutions under NUHS; and a new group of polyclinics under NUHS which complete our comprehensive healthcare network ranging from primary to specialised care.

With my appointment as Deputy Director of NUHCS from 1 September 2017, I have been tasked to oversee the clinical services integration within the centre. Over the past few months, I have had discussions with our team and will continue to seek inputs from the ground about integration.

Some possible areas of integration include the credentialing and clinical privileging of doctors and allied health professionals as well as common clinical protocols and IT platforms such as 4D database, human resource and financial integration. I hope to have the support of our team and encourage them to keep an open mind as we roll out new initiatives. •

A/Prof. Yeo Tiong Cheng,
Deputy Director,
National University Heart Centre,
Singapore



“ Let us work together to build our future. More importantly, let us build a fully integrated NUHCS which will better serve the needs of our patients. ”

Introducing OUR HEART TEAM

In hospitals around the world, doctors perform skillful feats that save lives, but they cannot do it alone. They are supported by a whole team of healthcare professionals, each with a critical role to play in treating patients. Some of the most important roles on this team include the cardiopulmonary perfusionist and heart pharmacist.

Due to the nature of a cardiac surgery, the surgeon needs to work on a still heart, and it is necessary to temporarily replace the patient's circulatory and respiratory functions. It is the responsibility of the perfusionist, a specialised healthcare professional, to assume the function of the heart and/or lungs during these medical procedures.

“The job of perfusionists may be challenging but we achieve great satisfaction when we see patients make a full recovery.”

Ms. Nancy Huang,
Senior Perfusionist

A perfusionist operates a heart-lung machine, an artificial blood pump that propels oxygenated blood to the patient's tissues while the surgeon operates on the heart. The perfusionists manage the patient's blood flow and gas exchanges by monitoring the parameters on the machine as it draws blood from the patient, adds oxygen, removes carbon dioxide and then pumps the blood back into circulation.

During the process, the perfusionists have to be alert and be able to make rapid decisions in critical situations. We must also work well with surgeons, anaesthetists and nurses in the operating theatre. It seems like a heavy responsibility to have a patient's life in our hands. But we take it all in our stride.

Content produced by
Mr. Goh Si Guim,
Principal Perfusionist



Perfusionists of the NUHCS heart team include Mr. Muhammad Fadhil and Ms. Nancy Huang.

As a pharmacist, I ensure the use of appropriate medicines to achieve optimal clinical outcome. I find it very rewarding when I am able to put patients' anxieties to rest and improve their medication knowledge.

My day-to-day work also involves patient education, liaising with doctors on treatment-related issues and managing patients on Anticoagulation therapy. At the Smoking Cessation Clinic, I provide health advice and be-

havioural support through motivational interviewing¹ as well as recommend appropriate products to prepare patients on their journey to a smoke-free life.

Patients are thankful for every help received, even if it is as small as writing indications on their medication labels. In the near future, pharmacists will be able to practise non-medical prescribing for selected specialties. Through this, I will be empowered further to maximise my role in direct patient care.

¹A counseling approach that motivates people to make positive decisions.

To address a reader's query on the changes in the medications used to treat common conditions, our pharmacist shares her insights!

Benefits of evolution of medication

- ▶ Reduced side effects while retaining the efficacy of medicines. May also treat certain resistant conditions more effectively and this potentially increases the life expectancy of the population at large.
- ▶ The use of sustained-release formulation helps to reduce dosing frequency, thus improving compliance rate to achieve better health outcomes.
- ▶ More convenience for patients who are on certain newer generation of medications, as the frequency of laboratory monitoring is lower.



“Every patient interaction is memorable especially when I am able to put a smile on their faces.”

Ms. Ang Lee Jing,
Pharmacist @ Heart Clinic

Live Procedure across International Borders

13th Annual Complex Cardiovascular Catheter Therapeutics: Advanced Endovascular and Coronary Intervention Global Summit (C3) Conference

The cardiology team at National University Heart Centre, Singapore (NUHCS) performed a complex rotational atherectomy¹ and stenting² procedure 'live' to an international audience at the conference. Prof. Tan Huay Cheem shares more about the experience.



C3 Meeting in Orlando, USA

Following our maiden transmission of percutaneous coronary intervention at the world's largest interventional cardiology meeting – EuroPCR 2017 – in Paris, France, NUHCS once again successfully transmitted a 'live' case demonstration at the C3 meeting held in Orlando, USA on 28 June 2017.

C3 is an annual meeting that provides live case demonstrations in the field of interventional cardiology, interventional radiology and vascular surgery to an international audience.

¹ Procedure to remove plaque in a blocked or narrowed artery due to a large amount of calcium build-up.
² Small mesh tube used to treat narrow or weak arteries.

Road to a PhD

Greater Knowledge, Better Patient Care

Continuous learning is important for healthcare practitioners as technologies and treatments are constantly evolving. Clinicians at National University Heart Centre, Singapore regularly enhance their knowledge to strengthen care for patients. One such clinician, A/Prof. Mark Chan, tells more about his journey to obtaining a Doctor of Philosophy (PhD).



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.

A Lifetime of Continuous Learning

For those who are aspiring to pursue a PhD programme, I would say to choose one that emphasises on practice-based learning rather than theory-based learning as it is a more effective method in learning how to apply knowledge to real-life situations occurring in daily medical practice.

In addition, a PhD is a key milestone in a lifetime of continuous learning.

The overall journey and process of learning are far more important for success than the PhD title itself.

A big thank you to my mentor, Prof. Dominique de Kleijn, for this wonderful opportunity.



In 2015, I embarked on a two-year journey pursuing a PhD in Risk Stratification of Acute Coronary Syndromes at the University of Utrecht, the Netherlands. Although I had to be based in the Netherlands, I was allowed to continue my work in Singapore and Durham, North Carolina.

Enhancing Critical Thinking
Throughout the two-year programme,

I acquired advanced knowledge in key areas such as Biostatistics, Bioinformatics, ELISA¹ assays, MicroRNA² sequencing and Real-time Polymerase Chain Reaction³ (PCR).

I personally feel that the programme has enhanced my critical thinking and trained my ability to juggle both my work and studies as I had to complete the research work and thesis while managing my full-time day job.

¹ An enzyme-linked immunosorbent assay test that detects and measures antibodies in the blood.
² A small non-coding RNA molecule that regulates gene expression.
³ Used to amplify a single copy or a few copies of a segment of DNA.



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 Master 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.

Live Case Demonstration by NUHCS Team

Led by Prof. Tan Huay Cheem and Asst. Prof. Edgar Tay, Senior Consultant, Department of Cardiology, our team performed a complex rotational atherectomy and stenting procedure which was well-received by approximately 1,200 audience members.

Although the transmission was carried out in the late evening due to the difference in time zones, our team had an enriching experience working together to create another milestone in the interventional cardiology history of NUHCS.

C3 Meeting 2017

Held in Orlando, USA
on 28 June 2017

Saw approximately
1,200
attendees



Turning Dreams into REALITY

When Training Consultant Ms. Ean Yeo was suddenly diagnosed with a heart disease, she immediately stopped working to seek treatment at National University Heart Centre, Singapore (NUHCS). Ean Yeo shares how the NUHCS team played a key role in empowering her to fulfil her dreams and hopes that her story will inspire other heart patients to pursue and achieve their dreams too.

“Whenever I stepped out of the clinic, I saw the “DREAM” sculpture. I was determined that despite my health challenges, I wanted to continue my dream and even fulfil new dreams.”



I had to drop all my work, plans and dreams when I was diagnosed with severe heart illness in 2015. For two weeks, I had flu and cough so I consulted a General Practitioner. When I had breathing difficulty and felt weak, I visited a hospital and that saved my life. Since then, I have been going to NUHCS once or twice a month for blood tests, ultrasounds and doctor reviews.

At the Coronary Care Unit, I saw the professional teamwork of the doctors and nurses, who, despite their workload, patiently explained the treatments and options for my quality of life and longevity. I'm glad that I was given time to pray and make informed decisions with peace. During every visit to NUHCS, I was greeted by kind nurses, helpful pharmacists and friendly staff, who eased my journey.

Over the last three years, I felt like I was running a marathon with the NUHCS team. They gave me care and encouragement that helped me continue running the race. In addition to the physical limitations and discomfort, it was painful for me to change my activities. However, I felt complete peace knowing that I am well taken care of.

After a year's break, I rolled out a new workshop to empower working women and mothers. I also launched gigtaps.com, a portal for freelancers, last year. Each visit to NUHCS reminds me to persevere as there is a team supporting my journey. Even with an impaired heart, dreams can continue and new dreams can be fulfilled when done wholeheartedly. •



Ean (centre in black and red) celebrating the 6th Anniversary of her non-profit organisation, Women Empowered for Work And Mothering (WEWAM), with the participants and volunteers of a WEWAM workshop in October 2017.

2017 National Day Awards Investiture

Long Service Awardees

Three staff from National University Heart Centre, Singapore (NUHCS) were presented the Long Service Award on 21 November 2017 for their loyalty and dedication to the organisation. They share their motivations and what keeps them going at work.

The satisfaction of seeing Cardiac Rehabilitation (CR) patients make remarkable improvements and continue to lower their risk of chronic illness is my primary motivation at work.

“I am truly inspired by our oldest CR patient who, at above 90, values exercise and even played golf once a week with her senior friend prior to her recent admission.”

I especially enjoy my work in the CR Programme, which educates patients on how to restructure their lifestyle so that they are able to live in a heart-healthy manner.

I hope more patients will consider participating in the CR Programme as it aims to help them regain strength, prevent their conditions from worsening and reduce their risk of future heart problems.

Ms. Lai Shuet Ming

Manager, Cardiac Rehabilitation Programme
Years of service: 29 years

I enjoy interacting with patients and providing them the encouragement to persevere on their treadmill procedure, which is used to determine how well their heart responds when it is working the hardest.

My work also involves making all the necessary preparations for the arrival of patients.

I attended to a patient who came to the diagnostic cardiac lab for her procedure. She was undergoing a turbulent time because of her illness, and broke down while sharing with me the struggles that she faced. I listened to her, and encour-

aged her to be strong and persevere on for her family.

“Before leaving the lab, she expressed her gratitude as she felt happier that someone had taken the time to lend a listening ear and talk to her.”

I was glad that she felt better through my small actions.

Ms. Jeevaratnam D/O Sinnappan

Medical Technologist,
Diagnostic Cardiac Lab
Years of service: 29 years

My work involves caring for cardiac patients.

I achieve great satisfaction when I see my patients recovering well and when providing emotional support to them and their loved ones.

I had a patient who had advanced heart failure and was waiting for a transplant.

She was admitted to the CCU after a cardiac arrest but her stay was complicated by low blood pressure and multiple organs failure. At that point, I knew that death was imminent. Knowing the grave prognosis and after obtaining consent from her husband, I offered her teenage son to see a crisis counsellor but he politely declined.

“A week later, the patient passed on peacefully. After her body was transferred to the mortuary, her son returned to the ward to thank me. I was surprised by his gesture but it warmed my heart.”

Ms. Lo Chew Yong

Advanced Practice Nurse (Acute Care),
Coronary Care Unit, Ward 28
Years of service: 25 Years

Preventing Secondary Stroke

A Study on Implantable Loop Recorders

Occult Atrial Fibrillation¹ (AF), which increases the risk of secondary stroke, is commonly found in Asian cryptogenic stroke patients. Cardiologists are therefore exploring the use of Implantable Loop Recorders² (ILRs) to remotely monitor cardiac activity and prevent the recurrence of stroke. Asst. Prof. Seow Swee-Chong presents his recent research study.

An Innovative Device
Stroke remains a major killer worldwide and is the fourth leading cause of death in Singapore. Patients with stroke also commonly present with occult AF and will need anticoagulation treatment to prevent secondary stroke.

The reason for the high incidence of occult AF among Asian cryptogenic stroke patients as well as the use of ILRs for AF diagnosis remain unclear.

Effectiveness of ILRs
To prove the effectiveness of ILRs, we conducted a trial on 71 patients with cryptogenic stroke between August 2014 and February 2017. Most of the patients were males (77.5%), aged 62 years (+/-13.5 years). When AF episodes of more than two minutes were detected using proprietary algorithms, clinicians and patients would be alerted via remote

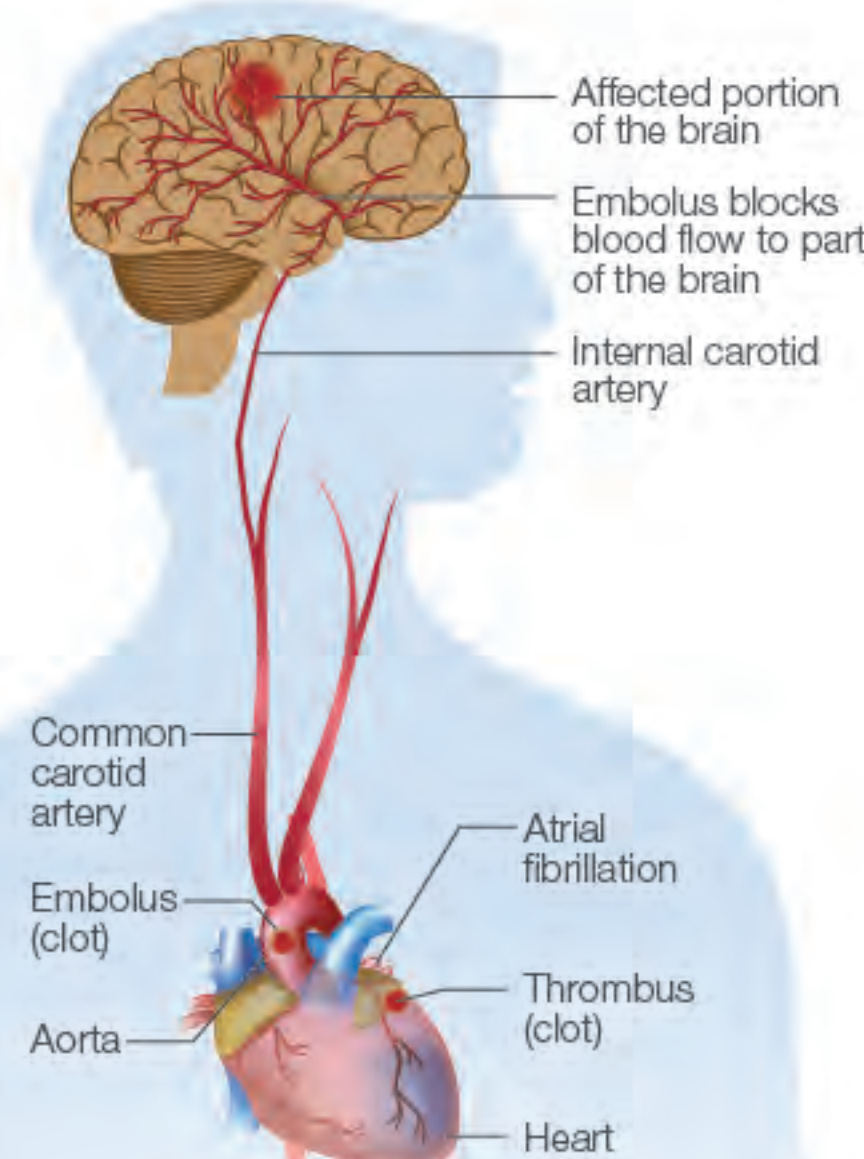
monitoring. The AF episodes were then adjudicated using recorded electrograms and patients were counselled for anticoagulation treatment.

It was found that all AF episodes were asymptomatic and lasted an average of 77 minutes. Anticoagulation treatment was also initiated in all but one patient.

The study showed that the combination of ILRs and remote monitoring is highly effective in screening AF episodes, enabling timely intervention and prevention of secondary stroke in patients. •

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.



¹ Common arrhythmia which significantly increases stroke risk.
² Small device implanted under the skin of the chest for cardiac monitoring.
³ A clinical prediction rule for estimating the risk of stroke in AF patients.

Results of the ILR Study

Time from stroke to the ILR implant was a median of **66** days

Mean CHA₂DS₂-VASc score³ was **4.2 ± 1.3**

Duration of ILR monitoring was **345 ± 229** days

Primary endpoint of AF detection

At 6 months

At 12 months

Median time to detection of AF was **50** days

12.9% **15.2%**

Heart Support Group's (HSG) CPR/AED Training

A CPR/AED training course was held to equip family members of heart patients with life-saving skills.



A participant learning how to perform CPR by applying compressions on a "chest".



National University Heart Centre, Singapore organised a non-certification CPR/AED training course on 18 November 2017. The 1.5-hour course was an overwhelming success, attracting 32 participants comprising 14 HSG members and 18 family members, relatives and friends.

Staff from the Ministry of Health's (MOH) Unit for Pre-hospital Emergency Care (UPEC) led the Dispatcher-Assisted first Responder or DARE programme, which aims to make learning CPR and using AED easy, even for children. Through a video, participants learnt to dial 995, follow the medical dispatcher's instructions to perform CPR, and operate an AED with voice prompts.

We received very positive feedback about the course. Most of the participants found it very useful and well-organised. 88% of them gave high scores in the "satisfaction of programme and instructors" category. •

By **Ms. Ng Hsuen Nin**
Case Management Officer,
Department of Cardiology

Celebrating World Heart Day

In celebration of National Heart Week/World Heart Day 2017, heart health awareness was brought to both the young and old.



National University Heart Centre, Singapore (NUHCS) held an event on 30 September 2017 at Bedok Town Square, in collaboration with Singapore Heart Foundation, to celebrate National Heart Week/World Heart Day 2017.

Attendees had the chance to enjoy an array of fun activities including a basic cardiac risk assessment screening, heart health quizzes and games, and heart healthy products at various booths.

NUHCS nurses from Team EX3DIP, the winning team of the Nurses' Day Dance Challenge 2017, also put up their first public dance performance to welcome Guest of Honour, Mr. Lee Yi Shyan, Member of Parliament for East Coast GRC. •

Advances in Cardiac Rehabilitation

Discover the main highlights of the Singapore Prevention and Cardiac Rehabilitation Symposium (SPCRS) 2017.



Organised by the Singapore Heart Foundation and MIMS Singapore, last year's SPCRS played host to over 300 local and regional delegates under the theme "Advances in Cardiac Rehabilitation (CR) for Improved Health", with a special focus on e-health. Over two days, participants were kept enthralled through workshops and talks led by international and local CR experts.

National University Heart Centre, Singapore contributed significantly to the symposium. Prof. Tan Huay Cheem was Chair and Asst. Prof. Raymond Wong was Co-chair of the organising committee while our team and I were members and Chair of the scientific committee respectively.

A big thank you to everyone who made last year's SPCRS a success!•

By **Asst. Prof. Yeo Tee Joo**
Consultant,
Department of Cardiology



Developing Cardiovascular Care

As the official meeting of the Asian Pacific Society of Interventional Cardiology (APSIC), the Asian Interventional Cardiovascular Therapeutics (AICT) Congress strives to be the representative annual interventional cardiology meeting of Asia-Pacific. Find out the key features of the 13th AICT Congress.

The 13th AICT Congress was held in Melbourne, Australia from 23 - 25 November 2017. Hosted by the Australia-New Zealand committee, the congress was held in conjunction with the Australian-New Zealand Complex Cardiovascular Therapeutics (ANZ CCT) meeting.

As the president of APSIC and organising chair of the 13th AICT Congress, National University Heart Centre, Singapore (NUHCS) Director, Prof. Tan Huay Cheem, emphasised AICT's role in advancing the field of cardiovascular intervention in Asia-Pacific. NUHCS doctors - A/Prof. Adrian Low, Asst. Prof.

Edgar Tay and Asst. Prof. Joshua Loh - were among the international faculties while Dr. Sim Hui Wen and Dr. Gavin Ng were poster presenters.

The congress featured the recent intervention technique and treatment approach in coronary intervention and structural heart disease through many interactive workshops and a variety of challenging live cases transmitted from The Prince Charles Hospital, Brisbane, Australia and National Heart Foundation Hospital, Dhaka, Bangladesh. Guests also gathered to dine and drink at the unforgettable traditional gala evening.•

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

A Meeting of the European Society of Cardiology

NUHCS showcased our work internationally at the European Society of Cardiology (ESC) Congress 2017.

Held in Barcelona, Spain from 26 - 30 August 2017, ESC Congress 2017 provided exciting educational resources through 500 scientific sessions and exclusive opportunities to interact with global cardiovascular experts. It specially featured 59 Percutaneous Coronary Intervention (PCI) spotlight sessions to mark the 40th anniversary of the first PCI procedure performed by German Cardiologist, Andreas Roland Gruntzig, in 1977.

The ESC Congress also served as a platform for our NUHCS clinicians and researchers to exhibit and discuss their studies in the international scene. Asst. Prof. Yeo Tee Joo, Dr. Sim Hui Wen and Dr. Jason Chen presented their posters, which were among the 4,000 abstracts accepted.



Additionally, A/Prof. Poh Kian Keong participated in ESC activities as the American College of Cardiology (ACC) chapter governor while Asst. Prof. William Kong received his ESC fellowship and was invited as faculty of ESC for 2017. Our NUHCS team looks forward to ESC 2018 in Munich, Germany.•

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

Treating 100 Patients in 7 Years

Initiated in 2010, the transcatheter aortic valve implantation¹ (TAVI) programme has reached its first milestone of treating 100 patients.



In a video about The Heart Fund, a TAVI patient, Teo Ah Per (right), 82, shared about his experience with NUHCS.

Over the years, our team has achieved a few milestones including treating a patient with severe valve dysfunction and introducing an adjunct cerebral protection device to prevent stroke during TAVI. Restoring the health of elderly TAVI patients remains a great source of motivation for us. Many remain to lead a productive and fulfilling life with some working at the age of 80 and others enjoying grandparenthood.

Our team has grown with the return of Dr. Ivandito Kuntjoro and Asst. Prof. William Kong from their overseas training. We are very grateful to our leaders and colleagues, The Heart Fund and, above all, our patients who place their trust in us. We will build on what we have achieved and continue this incredible journey.•

¹TAVI is performed by placing a catheter (tube) through the femoral (leg) artery. This tube allows the delivery of a new synthetic/man-made valve so that blood is able to flow through.

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

A Cost-Saving Tool

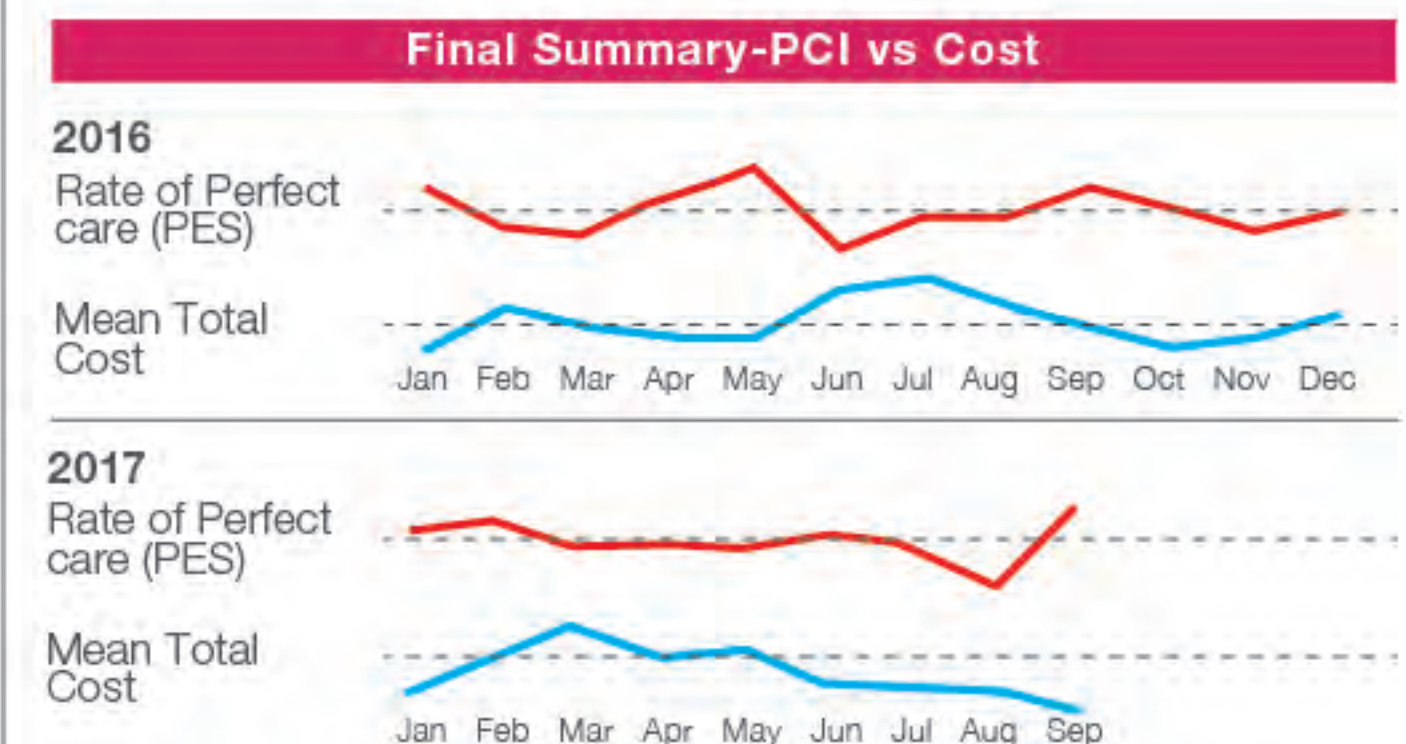
What if a physician could see the quality, cost, and experience of individual patients?

Value driven outcome (VDO) is a reporting tool developed by The University of Utah, USA, in 2012. It allocates clinical care costs and quality measures at the level of individual patient encounters, and by department, physician, diagnosis, and procedure.

National University Health System is the first local hospital to adopt this tool. As part of a hospital-wide initiative to improve clinical outcomes and reduce costs, we started VDO in ST elevation myocardial infarction (STEMI) patients. Through the insights gained, it has helped us to:

- Improve perfect care index;
- Decrease total cost for STEMI patients; and
- Initiate a quality improvement project to discharge STEMI patients early.

VDO is an ongoing process and we look forward to providing quality and affordable care to our patients.•



By **Asst. Prof. Devinder Singh**
Senior Consultant,
Department of Cardiology

17 Doctors Run 170KM to Raise Money for The Heart Fund

National University Heart Centre, Singapore (NUHCS) aims to raise S\$50,000.

To raise S\$50,000 for needy heart patients, 18 staff members from NUHCS clocked a combined distance of 180km at the Standard Chartered Singapore Marathon as part of the NUHCS 'The Heart Fund - Keep the Beat' fund-raising campaign, to rally Singaporeans to donate generously.

NUHCS aims to bridge unmet gaps to ensure needy heart patients receive financial assistance to allay the costs of medical treatment and long-term rehabili-

tation. The unmet gaps in government and community assistance schemes are most apparent when patients require newer and more advanced life-saving procedures after exhausting other treatment methods. As of January 2018, the campaign has raised more than S\$33,020.18.

Between October 2016 and September 2017, 51 needy patients have benefited from generous donations by people from all walks of life. •



M5 Cardiology Review Course

The 8th edition of the cardiology review course is back again to support medical students with their exam revision.

270 phase V students attended National University Heart Centre, Singapore's M5 Cardiology Review Course on 18 - 19 November 2017. Consisting of morning lectures and afternoon clinical stations, the course was well received.

Almost all students felt that the lecture topics were relevant and had an appropriate depth, and that there was an adequate variety of clinical cases for the



To keep more hearts beating, visit https://nuhsfund.give.asia/story/keep_the_beat

Make a donation and help us continue the fight for every heart-beat! •



The group of medical students were glad to receive support and advice from their helpful lecturers and tutors.

afternoon stations. Some even commented that they were able to examine conditions not seen in the wards.

Encouragingly, all students felt that the course was well-organised, and would not hesitate to recommend this to their juniors. We would like to thank everyone for their help and participation in this course and look forward to the 9th edition. •

Visit of the President of European Society of Cardiology to NUHCS

National University Heart Centre Singapore (NUHCS) cordially received a visiting professor from the Netherlands.



Prof. Bax (centre) enjoyed an authentic Chinese cuisine dinner at Majestic Bay Seafood Restaurant, Gardens by the Bay at the end of his visit to NUHCS.

Forging Ahead in Our Mission

National University Heart Centre, Singapore (NUHCS) held the annual Workplan Seminar to celebrate the centre's achievements as well as align staff on future plans.



Various departments attended NUHCS's annual workplan meeting on 30 June 2017. Prof. Tan Huay Cheem, Director, NUHCS, began by sharing our achievements in FY 2016, specifically highlighting the continued growth of outpatient volume and encouraging clinical outcomes.

He also congratulated our centre for producing 117 publications in 2016, in which many were published in high-impact journals such as Circulation Research and European Heart Journal. Prof. Tan went on to outline the strategic plans for the centre, which includes:

- Integrating cardiovascular services;
- Driving value-driven outcomes (VDO); and
- Developing impactful clinical programmes.

A/Prof. James Yip, Senior Consultant, NUHCS, then explained the ongoing VDO initiatives while Prof. A. Mark Richards, Director, Cardiovascular Research Institute (CVRI), updated on the progress of its flagship Centre Grant project on heart failure, and other developments of the centre. •

NUHCS was honoured to host a visit from Prof. Jeroen J. Bax, President, European Society of Cardiology (ESC) on 13 July 2017. Prof. Bax delivered a 60-minute lecture titled "Imaging in Transcatheter Heart Valve", which received positive response.

He also discussed about the research collaboration and two heart valve disease registries between Leiden University Medical Centre (LUMC), the Netherlands, and NUHCS. During his visit, Prof. Bax was also invited as an honorary faculty member for the Asia Pacific Society of Cardiology (APSC). •

About Prof. Jeroen J. Bax

Prof. Bax is a Professor of cardiology and Director of non-invasive cardiac imaging, Department of Cardiology, LUMC. He is currently Associate Editor of the European Heart Journal and has co-authored numerous scientific articles.



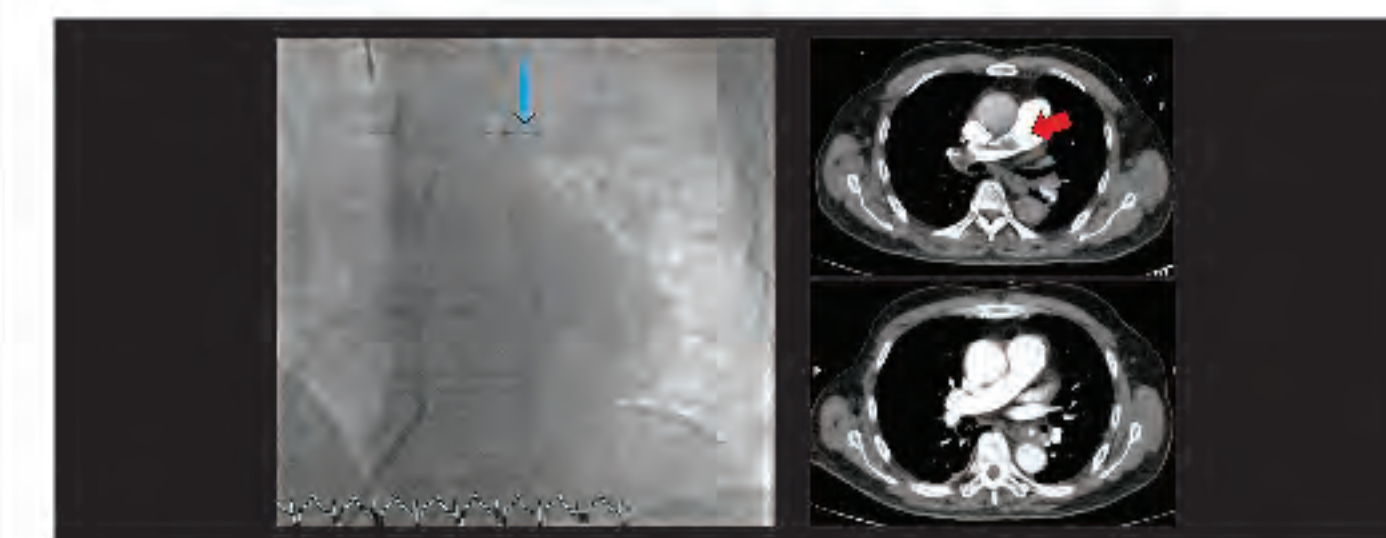
By **Asst. Prof. William Kong**
Consultant,
Department of Cardiology

Asia Pacific's First Pulmonary Embolism Response Team (PERT)

A multidisciplinary team works around the clock to provide a full range of pulmonary embolism (PE) therapies.

Formed in 2015, the National University Heart Centre, Singapore (NUHCS) PERT is a multidisciplinary team of cardiologists, emergency and intensive care physicians, haematologists and radiologists, which can be activated 24/7 to deliver timely, individualised care for PE patients.

Since its introduction, length of stay in the intensive care unit has reduced and the delay of reperfusion therapies has shortened from 763 to 181 minutes. In addition, Senior Consultants Asst. Prof. Joshua Loh and Asst. Prof. Pipin Kojodjojo from the NUHCS PERT perform percutaneous pulmonary thrombectomy – the only life-saving option for patients with massive PE. To date, seven patients have successfully received treatment. •



Pulmonary thrombectomy using the Angiojet Catheter (blue arrow) in a patient with massive PE. CT pulmonary angiogram before and after the thrombectomy confirms the successful removal of PE (red arrow).

By **Asst. Prof. Pipin Kojodjojo**
Director & Senior Consultant,
Cardiology, NTFGH
Senior Consultant,
Department of Cardiology

NUHCS Family Day 2017

Staff and their family members were treated to a day of fun and frolic to unwind at the end of the year!

National University Heart Centre, Singapore (NUHCS) Family Day was held on 4 November 2017 at Sentosa Pavilion @ Sentosa Golf Club. Close to 500 staff and family members from NUHCS and Ng Teng Fong General

Hospital's Department of Cardiology were treated to performances, games and delicious treats.

Four dance teams comprising staff from the different wards and our Operating Theatre Staff Nurse, Divina, gave spectacular performances! The defending champion, Team NURSECISTIC from Ward 28, Coronary Care Unit, was once again crowned the champion. Other stage performances (KPOP Mass Dance, Magic Show and Emcee Games) also received overwhelming response.

The main highlight of the event, the Grand Lucky Draw, garnered much anticipation from the crowd, as the top prize was a \$1,800 cruise voucher for two. A mystery prize was also given to a lucky winner who completed all the game stations!

All in all, the day was filled with fun and joy, with much food and game stalls for everyone!•



Meeting Former Interventional Cardiology Fellows in Jakarta

Prof. Tan Huay Cheem had the opportunity of meeting interventional cardiologists who were once fellows at National University Heart Centre, Singapore (NUHCS).

As a centre for education, NUHCS opens its doors to cardiologists who choose to complete their fellowships with us. In October 2017, Prof. Tan reunited with former NUHCS interventional cardiology fellows in Jakarta, Indonesia.

It is certainly heartwarming to meet all of the past fellows who have benefited from their training at NUHCS and progressed well in their respective cities and roles. They are now respected interventional cardiologists and opinion leaders in Indonesia. NUHCS looks forward to welcoming more cardiologists in the future.•



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

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Abstracts

By doctors of
National University
Heart Centre, Singapore

American College of Cardiology 2017, Washington, DC, United States, 17 - 19 March 2017

The prescribing of antiplatelet therapy only in patients with nonvalvular atrial fibrillation: Results from the GARFIELD-AF registry. *Freek W.A. Verheugt, Wael Al Mahmeed, Giuseppe Ambrosio, Pantep Anchaisuksiri, Dan Atar, Jean-Pierre Bassand, A. John Camm, Frank Cools, John Eikelboom, Haiyan Gao, Gloria Kayani, Lim TW, Frank Misselwitz, Martin van Eickels, Ajay K. Kakkar for the GARFIELD-AF Investigators.*

Singapore Cardiac Society 29th Annual Scientific Meeting, Singapore, 1 - 2 April 2017

Impaired global load-independent left ventricular contractility index across different severity of aortic stenosis with preserved left ventricle ejection fraction. *Sim HW, Boey Elaine CC, Tan Benjamin YQ, Ngiam JN, Lin WQ, Kong WKF, L Zhong, Tan RS, KK Poh.*

7th World Congress of Pediatric Cardiology and Cardiac Surgery, Barcelona, Spain, 16 - 21 July 2017

A 6-year single centre experience on the use of extracorporeal membrane oxygenation in paediatric myocarditis patients. *Matingal J, Ong JSM, Aye WMM, Shankar S.*

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Comparison of electrocardiographic criteria for detection of left ventricular hypertrophy in a young, multi-ethnic male Asian population during pre-participation screening. *Sia CH, Lee ECY, Tan BYQ, Wang KJ, Shen XY, Dalakoti M, Chow WE, Arulanandam S D/O, Chua TSJ, Chong DTT, Tan RS, Lam CS.*

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COR-KNOT, an automated knot-tying device: First experience in Asia. *Papadimas E, Wadud MA, Hu P, Kofidis T.*

CT guided microcoil localization followed by fluoroscopically guided uniportal VATS resection of small lung lesions, a single center experience. *Li Y, Tam JKC, Wee BBK, Muthiah HM.*

Minimally invasive coronary artery bypass grafting surgery increases postoperative haemoglobin levels and reduces postoperative blood transfusion. *Tham SYY, Chew YJ, Chan SP, Chen JY, Leow LCK, Kofidis T.*

Sutureless aortic valve implantation: First Asian experience. *Tan JW, Chen JY, Bose S, Vu DT, Kofidis T.*

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Minimally invasive coronary artery bypass grafting reduces postoperative serum lactate level and its associated complications. *Chew YJ, Tham SYY, Chan SP, Chen JY, Leow LCK, Kofidis T.*

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31st European Association For Cardio-Thoracic Surgery Annual Meeting, Vienna, Austria, 7 - 11 October 2017

On-pump trans-apical cardioscopic mitral valve replacement with cardiac arrest: Short-term results in a porcine survival-model. *Vu DT, Nguyen DV, Win PW, Oo MZ, Ocampo EM, Ti LK, Richards AM, Kofidis T.*

Asian Interventional Cardiovascular Therapeutics (AICT), Melbourne, Australia, 24 - 25 November 2017

One-year outcome of single long 48mm drug eluting stent versus overlapping drug eluting stents in the treatment of diffuse coronary artery disease. *Sim HW, Elizabeth HE Thong, Loh PH, Tay EL, Chan KH, Chan MY, Lee CH, Low AF, Tan HC, Loh JP. •*

Congratulations on Your Promotion!

Dr. Tan Li Ling
Consultant,
Department of Cardiology
July 2017

Dr. Lin Wei Qin
Consultant,
Department of Cardiology
July 2017

Dr. Chan Koo Hui
Senior Consultant,
Department of Cardiology
July 2017

New Appointment

Prof. Quek Swee Chye, Chairman, Medical Board, National University Hospital has been appointed a member of the Adult Congenital & Paediatric CV Section Leadership Council of the American College of Cardiology from 1 April 2018 for three years. Congratulations, Prof. Quek, for this prestigious appointment!





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