

TAKE ME HOME!

# PULSE

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# DIRECTOR'S MESSAGE



Dear readers,

It heartens me to share that the National University Heart Centre, Singapore (NUHCS) is on track in its pursuit to accomplish its tripartite mission of clinical, educational and research excellence. We have accomplished much in 2019 moving on an upwards trajectory towards our vision.

Together with National University Hospital Emergency Department, Ng Teng Fong General Hospital and Singapore Civil Defence Force, NUHCS has expanded Singapore's only ST-segment Elevation Myocardial Infarction Network in the western health cluster to provide patients living in the western region of Singapore with efficient and timely treatment of heart attacks.

In addition, NUHCS initiated a cardiogenic shock team service comprising interventional cardiologists, cardiac surgeons and intensive care cardiologists, to provide these highest risk patients with the best chance of survival, through a multidisciplinary approach.

On the clinical front, we have adopted new care models to shift less complex patient care from specialists to family doctors, whilst we continue to upskill our nursing team to enable them to take on integrated care responsibilities.

On the research front, the Cardiovascular Research Institute continues to focus on research into protection, repair and regeneration of the heart. 2019 saw our clinician-scientists winning numerous awards for their work, which you can read about in this issue. A major future thrust will be a move towards expanding our capacity to address vascular biology and myocardial response to injury.

The building of NUHCS is a never-ending journey. With a unified professional team, we will continue to strive to make NUHCS the true academic heart centre of excellence in Singapore and beyond.

To good health!

*Tan Huay Cheem*

**Prof. Tan Huay Cheem**

*Director and Senior Consultant,  
Department of Cardiology, NUHCS*

# Interventional Cardiology Platform Launched

ASIAN INTERVENTIONAL  
CARDIOVASCULAR  
THERAPEUTICS (AICT)-  
ASIAPCR TAKES OFF WITH  
INAUGURAL CONFERENCE  
IN JULY 2019

A new platform for education, research and innovation in cardiovascular interventions in Asia Pacific, AICT-AsiaPCR recently concluded their inaugural meeting at Singapore's Suntec Convention Centre.

Held from 4–6 July 2019, the meeting graced by Guest-of-Honour, Mr. Tharman Shanmugaratnam, Singapore's Senior Minister and Coordinating Minister for Social Policies, attracted more than 250 faculty members and over 1,500 delegates from China, India and around the world.





The AICT Congress was first initiated as a meeting of interventional cardiologists from around the region at National University Heart Centre, Singapore (NUHCS) in 2005, led by like-minded cardiologists within the region who were keen to advance the standard of care here.



From a regional meeting, it quickly evolved to become a society-based meeting and was subsequently designated the official scientific meeting of the Asian Pacific Society of Interventional Cardiology (APSIC) in 2009.

With the advancement of the region's expertise in interventional cardiology and the need to accelerate the learning of local practitioners to meet societal needs of cardiovascular medicine, the eventual collaboration between AICT Congress and AsiaPCR marks

a significant step forward to facilitate the expeditious knowledge exchange in this field.

This collaboration aims to elevate the latest developments in interventional cardiology in Asia onto the global stage by bringing together the region's experts with the support of several cardiovascular centres in the region.

It is hoped that the synergy from the two organisations will not just bring about the sharing of expertise, technical know-how and knowledge exchange but also encourage collaboration and foster closer ties within the scientific community and provide learning experiences to participants regardless of societies or geographic boundaries.

The annual meeting will also serve as a platform to promote goodwill and build rapport amongst cardiologists in the region to support the sharing of values, quality assurance, and deepen mutual cultural understanding for the betterment of all our patients.

Already, the organising committee of AICT-AsiaPCR 2020 is planning the itinerary for the upcoming meeting in 2020. NUHCS will continue to serve as the main LIVE transmission centre for the next meeting, which will be held in Singapore from 16-18 July 2020.



#### ARTICLE BY

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



Prof. Tan is a professor of medicine at Yong Loo Lin School of Medicine, National University of Singapore and possesses 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.

*“... the eventual collaboration between AICT Congress and AsiaPCR marks a significant step forward to facilitate the expeditious knowledge exchange in this field.*

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



**APSIC:**

Professional society formed in 1993 to promote and further interventional cardiology, particularly coronary intervention, in the Asia Pacific region.

**AICT CONGRESS:**

Annual official meeting of APSIC which offers a forum and joint academic research and education programme for cardiovascular specialists to share and discuss the latest research in this field, thereby advancing the cardiovascular fraternity in Asia Pacific. In 2019, it merged with AsiaPCR to form the new AICT-AsiaPCR.

**ASIAPCR:**

The Asia edition of PCR. It is a platform that facilitates the sharing of expertise of interventional cardiology communities across the globe. AsiaPCR provides registered users access to recorded events such as LIVE demonstrations, lectures, specific sessions, clinical cases and slide presentations on its online portal.

**AICT-ASIAPCR:**

Formed in 2019, AICT-AsiaPCR is built by local practitioners, with the support of centres of excellence in the Asia Pacific region and Europe, to focus on the diverse needs of patients in the interventional landscape. As a global educational meeting in the Asia Pacific region, the platform allows knowledge exchange between peers and the opportunity for healthcare professionals to showcase their research and innovation, aimed at contributing to the development of treatment and care possibilities to better serve the region’s patients.



# PASSING ON THE BATON

*Prof. Tan Huay Cheem steps down as Asian Pacific Society of Interventional Cardiology (APSIC)'s President*



In the last quarter of the century, advancement in interventional cardiology grew at an exponential pace, surpassing even the expectations of the founding members of APSIC. While many bore witness to the fast changing landscape of interventional cardiology, APSIC was one of the key driving forces behind this change.

Establishing Asian Intervention Cardiovascular Therapeutics (AICT)-AsiaPCR in 2019 was the culmination of APSIC's ongoing collaboration with another powerhouse that allowed each party to bring its domain of expertise to the table, thereby contributing to the conception of a richer and greater platform for the

Asia Pacific cardiovascular fraternity.

Within APSIC, several new important amendments have been introduced to the Constitution to ensure the society's relevance today and in the foreseeable future. *AsiaIntervention* has been established as the official scientific journal for AICT-AsiaPCR, while its website was redesigned to better inform and meet members' needs. Research is also much better supported at APSIC with the society in a healthy financial position.

The momentum that has propelled APSIC forward is the result of the ardent support and commitment from the community, united by a com-

mon goal to further the development of their practice in the Asia Pacific region.

While much has yet to be achieved, it will be done under the auspices of Dr. Ashok Seth, Chairman Fortis Escorts Heart Institute, New Delhi, India, and Head, Cardiology Council of Fortis Group of Hospitals, New Delhi, India who officially took over the helm from Prof. Tan Huay Cheem on 30 October 2019 as its President.

Under his leadership, APSIC will undoubtedly continue to expand and progress as members tackle the emerging cardiovascular challenges head-on to better the lives of their patients.



Photo credit to: International Council of Nurses

# A GATHERING OF THE WORLD'S SUPERHEROES



International Council of Nurses (ICN) Congress 2019 welcomed delegates from over 130 countries to Singapore

The 120<sup>th</sup> ICN Congress was held in Singapore from 27 June – 1 July 2019. Hosted by the Singapore Nurses Association, this international gathering of nurses explored the many ways in which nurses work to achieve universal access to health, not only by providing care but also through addressing the social determinants of health such as education, gender equality and poverty.

More than 5,000 “superheroes” from over 130 countries actively participated in wide-ranging discussions, including topics about issues affecting nursing leadership, nurses’ mental well-being, advancing policy dialogue to drive investment in the health workforce, increasing nursing competencies in the face of new challenges and many others.

A total of four papers from National University Heart Centre, Singapore (NUHCS) were accepted for oral and poster presentations. Topics ranged from advanced practice nurse-led telehealth, inter-professional education, nurse-initiated pain protocol and examining the effects of different shift patterns on critical care nurses’ sleep quality and cognitive performance.

**ARTICLE BY**

**Ms. Alice Deo** *Nurse Educator, Cardiothoracic Intensive Care Unit (CTICU), NUHCS*



Ms. Deo is a certified Nurse Educator at the CTICU with over 15 years of clinical practice experience. She has previously held various roles as a Nurse Manager and Assistant Nurse Clinician in Malaysia and Singapore before deciding to focus on the educator route.

**Ms. Doreen Chew** *Acute Care Advanced Practice Nurse, CTICU, NUHCS*



Ms. Chew has over 19 years of clinical practice experience, specialising in acute care. She is an active member in the Nurse Leader Council, Professional Practice Council and Product Evaluation Committee, and is currently the nursing representative for NUHCS in National University Hospital Redevelopment Committee.

*If you save one life, you are a hero; if you save 100 lives, you are a nurse.*

*Guest-of-Honour, President Mdm. Halimah Yacob*

**REFLECTIONS FROM OUR PRESENTERS:**

*“It was heartening to see so many like-minded nurses who tirelessly push boundaries for innovations to optimise patient care and develop the future generations of nurses.”*

*Dr. Karen Koh, Advanced Practice Nurse, Head of NUHCS Nursing*

*“It is indeed my honour to have our research findings shared with my fellow colleagues around the world and exchanging ideas.”*

*Ms. Nyeo Hui Qing, Senior Nurse Clinician, Ward 28, Coronary Care Unit, NUHCS*

**C**elebrating World Heart Day which falls on 29 September, NUHCS held a special exhibition at the main building of National University Hospital from 13–27 September 2019.

Exhibition panels featuring heart health tips, quotes from various medical professionals and a patient of NUHCS were displayed in the arena to encourage the public to take ownership of their heart health.

Our NUHCS team also supported Singapore Heart Foundation's World Heart Day event held at Kampung Admiralty Community Plaza on 29 September by hosting a booth at the event and engaging the public through games on our Plinko machine and answering their queries on the subject of heart health.

Guest-of-Honour, Mr. Amrin Amin, Senior Parliamentary Secretary, Ministry of Home Affairs and Ministry of Health who graced the event affirmed his support for fellow Singaporeans to prioritise their cardiovascular health and encouraged them to pledge their commitment towards looking after their hearts and the hearts of their loved ones by adopting a healthy lifestyle.

Join us on Facebook (@NUHCS) to find out more about our future events!

# A HEALTHY HEART IS A HAPPY HEART

*National University Heart Centre, Singapore (NUHCS) joins the world to raise awareness about cardiovascular health*

## HEARTY FACTS YOU SHOULD KNOW:



50% of heart attack patients suffer from diabetes



Nearly 1/3 of deaths in Singapore is due to heart disease or stroke



Research has shown that **smoking** and the **avoidance of exercise** increases the chances of sudden cardiac arrest by **12%**

***Heart disease is one of the top contributors to our disease burden, but we can all be empowered to take simple steps and encourage our loved ones to lead healthier lifestyles for a healthier heart.***

Mr. Amrin Amin, Senior Parliamentary Secretary, Ministry of Home Affairs and Ministry of Health



# Women, Heart Disease and Cancer

**THE NATIONAL UNIVERSITY HEART CENTRE,  
SINGAPORE (NUHCS)-NATIONAL UNIVERSITY  
CANCER INSTITUTE, SINGAPORE (NCIS)  
ARTERIOVENOUS FORUM 2019**

Organised by NUHCS and NCIS for the past 12 years, this year's edition of the NUHCS-NCIS Arteriovenous Forum was held at the Ng Teng Fong General Hospital (NTFGH) campus to acknowledge our shared mission of educational outreach within the OneNUHS family.

The forum was led by conference directors Dr. Yap Eng Soo, Senior Consultant, Department of Haematology-Oncology, NCIS, and myself. Held from 19–20 October 2019, speakers from NUHCS, NCIS, NTFGH and National University Hospital (NUH) spoke on a range of issues related to the theme of our forum – women, heart disease and cancer.

ARTICLE BY

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



A/Prof. Chan is also an Associate Professor at the Yong Loo Lin School of Medicine, National University of Singapore. He is a prolific researcher, being the principal investigator of multiple large outcomes studies in acute coronary syndrome and having won awards for his publications. He continues to contribute to the editorial of cardiovascular journals and oversees research at the Cardiovascular Research Institute as well as at NUHCS.



*We would like to thank our speakers, delegates and partners who have given their support to this educational forum for more than a decade.*

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

## EVENT HIGHLIGHTS



**Dr. Chan Po Fun,**  
Consultant, Department of Cardiology, NTFGH shared about the facts and myths of women's heart health.



**Asst. Prof. Low Ting Ting,**  
Consultant, Department of Cardiology, NUHCS, discussed the major challenges in anticoagulation for heart diseases in pregnancy.



**Dr. Winnie Teo,**  
Associate Consultant, Department of Haematology-Oncology, NCIS, gave an overview of the treatment of cancer-associated thrombosis.



**Dr. Christopher Koo,**  
Associate Consultant, Department of Cardiology, NUHCS summarised the literature on cancer therapies and the heart.

<sup>1</sup>**atrial fibrillation** – The quivering or irregular heartbeat (arrhythmia) that can lead to blood clots, stroke, heart failure and other heart-related complications.

<sup>2</sup>**hyperglycaemia** – The condition where there is too much glucose circulating in the blood.

<sup>3</sup>**VTE prophylaxis** – Measures designed to prevent conditions where a blood clot forms in a vein that leads to a heart attack and/or stroke.

**Dr. Sim Hui Wen,**  
Associate Consultant, Department of Cardiology, NUHCS addressed the unique aspects of the diagnosis and management of atrial fibrillation<sup>1</sup> in women.



**Asst. Prof. Yew Tong Wei,**  
Consultant, Division of Endocrinology, NUH gave a session on a practical approach to hyperglycaemia<sup>2</sup> and diabetes in pregnancy and beyond.

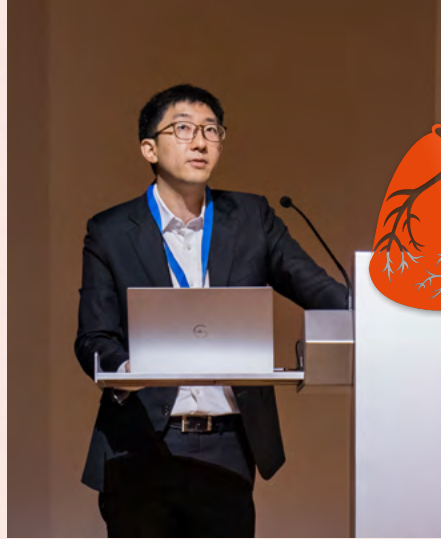


**Dr. Yap Eng Soo,**  
Senior Consultant, Department of Haematology-Oncology, NCIS delved into the difficulties of managing atrial fibrillation in patients with cancer.



**Dr. Chee Yen Lin,**  
Senior Consultant, Department of Haematology-Oncology, NCIS discussed the approach to venous thromboembolism (VTE) prophylaxis<sup>3</sup> in cancer patients.





# TACKLING CARDIAC CHALLENGES WITH DEEP LEARNING

*Singapore hosted multidisciplinary international Computing in Cardiology (CinC) conference*

From 8–11 September 2019, Singapore hosted the 46<sup>th</sup> Computing in Cardiology conference at Biopolis where speakers gathered to discuss the utility of computers and computational related research work in clinical practices. On behalf of the National University Heart Centre, Singapore (NUHCS), we had the opportunity to share our work in this space.

Presenting our SHAPE project, we talked about our goal to use videogrammetry<sup>1</sup> and computer vision artificial intelligence (AI) techniques to deliver timely pro-active heart failure (HF) community care and prevent their admission for acute decompensation, as well as the challenges of developing such techniques to provide more enhanced remote monitoring for HF patients.

We also discussed the DISCOVERY AI tool, a deep learning model which predicts 30-day unplanned hospital readmissions amongst patients by relying on Electronic Medical Re-

ords. Developed by Dr. Ngiam Kee Yuan, Chief Technology Officer, National University Health System (NUHS), and Dr. Luo Zhaojing, Research Assistant, Computer Science, National University of Singapore (NUS), the AI model achieved 88% accuracy in the real-world context compared to 60% accuracy of the current predictive model.

With the tool's initial promising results, we hope the model will be able to generate multiple intervention recommendations to improve the welfare of high-risk patients. A prospective validation study of the DISCOVERY AI tool is currently underway.

We thank the conference for bringing NUHCS and Heart Kinetics<sup>2</sup> from Brussels together. Currently, we are collaborating to explore further applications of seismocardiography<sup>3</sup> and ballistocardiography<sup>4</sup> technology to construct better treatment platforms for the management of HF patients.

<sup>1</sup>**videogrammetry** – The measurement technology in which the three-dimensional coordinates of points on an object are determined by measurements made in two or more video images taken from different angles.

<sup>2</sup>**Heart Kinetics** – An innovative technology platform that is a cardiac monitoring system designed to support cardiological treatments for heart failure.

<sup>3</sup>**seismocardiography** – The non-invasive measurement of accelerations in the chest wall produced by myocardial movement.

<sup>4</sup>**ballistocardiography** – A non-invasive method based on the measurement of the body motion generated by the ejection of the blood at each cardiac cycle.

#### ARTICLE BY

**Dr. Mayank Dalakoti**  
Senior Resident,  
Department of  
Cardiology, NUHCS



Dr. Dalakoti is currently a second year Senior Resident at NUHCS as well as the clinical lead on the Discovery AI readmissions pilot at the National University Hospital, Singapore. Besides cardiology, he has a keen interest in public health and health systems.

**Dr. Chen Zhengfeng Jason**  
Associate Consultant,  
Department of  
Cardiology, NUHCS



Dr. Chen is an Associate Consultant at NUHCS as well as a Clinical Lecturer at Yong Loo Lin School of Medicine, NUS. He has special interests in medical informatics, healthcare innovation and interventional cardiology.

# THE IMPORTANCE OF PREVENTION AND REHABILITATION

*The 3<sup>rd</sup> Singapore Prevention and Cardiac Rehabilitation Symposium attracted more than 400 delegates and faculty from around the region and beyond*

The 3<sup>rd</sup> Singapore Prevention and Cardiac Rehabilitation Symposium (SPCRS), organised by the Singapore Heart Foundation, was held from 18–19 October 2019 with the theme “Contemporary Cardiac Rehabilitation: Special Situations, Novel Measures”.

Mr. Edwin Tong, Senior Minister of State, Ministry of Health (MOH) and Ministry of Law, graced the event as the Guest-of-Honour and elaborated on the recent measures taken by MOH and Health Promotion Board to combat and prevent cardiovascular disease in Singapore.

As the Chairman of the Scientific Committee, it was my privilege to welcome over 400 local, regional and international delegates and faculty including our keynote speakers – Prof. Paul Dendale, President of the European Association of Preventive Cardiology, and Prof. Sherry Grace, Chair of the International Council for Cardiovascular Prevention and Rehabilitation.

For the first time, the Caring Hearts Support Group, a group of passionate heart patients, performed an emotional medley of songs during the opening and later shared about the

*On behalf of the organising committee, a big thank you to all who have contributed to the success of this year’s event. We look forward to seeing you next year!*

Asst. Prof. Yeo Tee Joo, Consultant, Department of Cardiology, NUHCS

importance of peer support for heart patients.

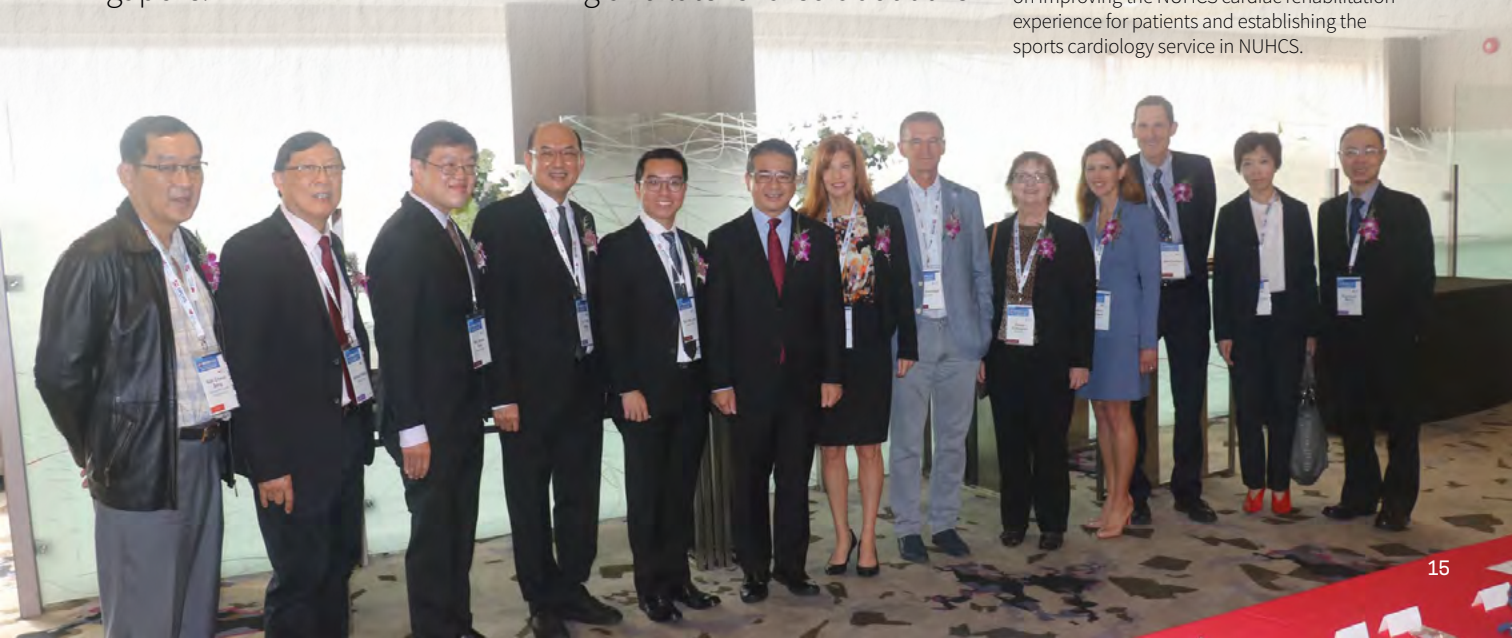
Taking a broad based approach comprising pertinent topics in cardiovascular prevention and rehabilitation, SPCRCS intends to heighten the awareness of cardiac rehabilitation in the region and beyond.

#### ARTICLE BY

Asst. Prof. Yeo Tee Joo  
Consultant, Department  
of Cardiology, National  
University Heart Centre,  
Singapore (NUHCS)



Asst. Prof. 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.



# THE HEART TRUTH:

*Because it  
Matters!*

National University  
Heart Centre, Singapore  
(NUHCS) held their  
biennial English  
Symposium in July 2019



On 20 July 2019, NUHCS held their biennial English Symposium at National University Health System Tower Block Auditorium. Hosted by CNA938 DJ Daniel Martin, this year's edition of The HEART Truth attracted a full-house audience of 300.

Attendees were treated to mementos of the event with a themed photo booth featuring bright and colourful props, in addition to com-

plimentary goodie bags and low-sugar refreshments.

In the lively sharing sessions hosted by NUHCS' panel of doctors as well as a dietitian from National University Hospital (NUH), attendees learned more about taking charge of their heart health, uncovering risk factors for heart diseases and took tips home on keeping their hearts strong.



## EVENT HIGHLIGHTS



### TREATMENT OF HEART VALVE DISEASE — MODERN DAY KEYHOLE APPROACH

by A/Prof. Theodoros Kofidis, Head and Senior Consultant, Department of Cardiac, Thoracic & Vascular Surgery, NUHCS, where attendees learned about the benefits of the minimally-invasive keyhole surgery



### CORONARY ARTERY DISEASE IN DIABETICS: A DOUBLE JEOPARDY

by Prof. Tan Huay Cheem, Director and Senior Consultant, Department of Cardiology, NUHCS, where attendees learned the preventive ways to reduce complications from a heart attack for diabetic patients



### HEART ATTACK IN WOMEN; MYTH OR MISSED?

by Asst. Prof. Low Ting Ting, Consultant, Department of Cardiology, NUHCS, where attendees uncovered the truth behind some myths of heart attack symptoms and its risk factors in women



### CHOLESTEROL FACTS & FAKE NEWS

by Asst. Prof. Yeo Tee Joo, Consultant, Department of Cardiology, NUHCS, where attendees clarified their doubts surrounding the topic of cholesterol



### MANAGING DIABETES WITH DIET!

by Ms. Lim Siew Choo, Senior Dietitian, Department of Dietetics, NUH, where attendees learned about various types of hidden sugars in our daily diet and common food myths surrounding diabetes

*Look out for our Mandarin Symposium via our Facebook page!*

# LEADING THE ADVANCING SCIENTIFIC

Chief Editors of scientific journals share more about the mission of furthering quality clinical education and practice



## *AsiaIntervention*: A new era of scientific publications in Asia

I have the tremendous honour and privilege to be one of the founding Chief Editors of *AsiaIntervention*, the official journal of Asian Pacific Society of Interventional Cardiology. This journal first came into existence in 2015 as a result of the perception that there was a need for an academic and clinical publication specifically “by and for” the Asia Pacific interventional cardiology community. Since its conception, *AsiaIntervention* has strived to be an open forum for all.

The journal harbours the vision that it will boost clinical research and scientific communication within Asia and enhance the global visibility for clinical research in the region. To date, *AsiaIntervention* has seen 94 peer-reviewed publications of various nature, including original research, basic and translational science papers, guidelines

and consensus statements and discussion on technical approaches to complex intervention cases.

There is no better proof in the diversity of our approach than a look at the composition of the editorial board, which includes clinical researchers from China, India, Japan and Korea. We also have the honour of having Prof. Patrick Serruys as our Senior Consulting Editor.

Through the efforts of the editors and 16 consulting and associate editors, the journal has begun to bear fruit in terms of the recognition it receives from the community. *AsiaIntervention* has been selected by the International Cardiology Foundation of India as its official journal, further underlining the representative nature of our work throughout the region.

### ARTICLE BY

**Prof. Tan Huay Cheem**  
Director and Senior Consultant, Department of Cardiology, National University Heart Centre, Singapore (NUHCS)



Prof. Tan is a professor of medicine at Yong Loo Lin School of Medicine, National University of Singapore and possesses 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.

Today, *AsiaIntervention* is poised for listing in PubMed.

***Our team remain committed to maintain the quality of its content to capture the full breadth of the vibrant medical, academic, research and clinical landscape in Asia.***

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

# CHARGE TOWARDS COMMUNICATION

## My Journey As Editor Of Singapore Medical Journal (SMJ)

Six years ago, when Prof. Teo Eng Kiong passed me the *SMJ* torch, he wrote in his final editorial as Editor-in-Chief, “长江后浪推前浪 – and so the next generation will succeed and surpass the previous”. I was not sure I could fit into the big shoes left by my predecessors.

Prof. Teo had been training me ever since I started off as a Reviewer and progressed to be an Associate, Specialty and Deputy Editor in *SMJ*, and later, when he put me in charge of *SMJ*'s Electrocardiography series. It must be the support and mentorship I received from Prof. Teo and the late Prof. Chia Boon Lock which prepared me for my current role.

Editing an academic journal is an important and rewarding task. We have met with unexpected challenges, such as plagiarism and duplicate publications, threats of predatory publishers, and authors unhappy with their paper's outcome. Yet I managed to meet these challenges head-on with the support of my editorial staff, whom I also rely on to keep the journal running smoothly on a daily basis.

Now in its 60<sup>th</sup> year of publication, I am especially indebted to the editorial board members and reviewers who volunteer their valuable time and expertise to ensure that the highest rated papers are accepted

### ARTICLE BY

A/Prof. Poh Kian Keong  
Senior Consultant,  
Department of Cardiology,  
National University Heart  
Centre, Singapore (NUHCS)

A/Prof. Poh is presently a Senior Consultant and Director of Research at the Department of Cardiology, NUHCS. He is Editor-in-Chief of *SMJ*, member of the Editorial Boards of the *Journal of the American Society of Echocardiography* and *Cardiac Failure Review* and reviewer of multiple high-impact factor journals.



“  
**Editing an academic journal is an important and rewarding task.**

A/Prof. Poh Kian Keong,  
Senior Consultant, Department of  
Cardiology, NUHCS



for publication, as well as our authors for submitting their work to the *SMJ* whose efforts continually define the quality and impact of the journal since its establishment in 1959.

It has been a productive and enjoyable six years thus far. I hope, at the end of my editorship, to pass on an even brighter *SMJ* torch to the next editor.

Photo credit to:  
Ng Teng Fong  
General Hospital



**H**eat failure (HF) is characterised by significant mortality, re-admissions, and grim prognosis.

In 2018, Singapore saw more than 3,000 admissions for heart failure from reduced ejection fraction (HFrEF)<sup>1</sup>, in spite of ready evidence, health innovations and guidelines behind managing this condition.

In response, Ng Teng Fong General Hospital (NTFGH) set up the nurse-led, physician-supervised Heart Failure Self-Management Clinic (HFSMC) aimed at providing a skilled nursing-led guideline-directed medical therapy (GDMT)<sup>2</sup> clinic.



# IMPROVED CARE FOR HEART FAILURE PATIENTS

*Pilot nurse-led physician-supervised Heart Failure Self-Management Clinic reduced readmissions of heart failure patients at Ng Teng Fong General Hospital (NTFGH)*

Spearheaded by Ms. Toh Lay Cheng, Nurse Clinician, NTFGH, the HFSCM is a programme instrumental in keeping HFrEF patients well and reducing readmissions.

Ms. Toh and her colleagues adopt a pro-active role in the coordination and application of post-discharge care. Discharged HFrEF patients are reviewed early at the HFSCM, allowing unforeseen issues to be addressed before they snowball into more serious problems.

At the clinic, Ms. Toh also up-titrates<sup>3</sup> HF medications according to guidelines, empowers patients with self-care strategies, ensures vaccinations are updated, and manages mild fluid overload cases. When the need arises, she enlists the help from other allied health colleagues to develop a holistic recovery plan for her patients.

Since the initiation of the HFSCM, readmission rates

during the vulnerable period transiting into outpatient setting have improved. Mean-duration to fully optimised GDMT has shortened, and a larger proportion of HFrEF patients are on at least a beta-blocker and an angiotensin-converting enzyme inhibitor (ACE-I)/angiotensin II receptor blocker (ARB)<sup>4</sup>.

***The HFSCM has been successful in bridging the evidence-practice gap in real-life heart failure management.***

Dr. Chan Po Fun,  
Consultant, NTFGH

Through the HFSCM, more patients now understand the importance of adherence to their medical treatment and are able to recognise symptoms of fluid overload. In addition, outpatients can seek professional medical advice through a telephone helpline as well.



<sup>1</sup>HFrEF – The condition when the left side of your heart muscle fails to contract effectively, leading to less oxygen-rich blood pumped out to the body.

<sup>2</sup>GDMT – The mainstay of drug management of HFrEF patients. HFrEF patients require close follow-up and careful titration of multiple medications as hemodynamics, electrolytes and symptoms permit.

<sup>3</sup>up-titrates – The gradual increase of a dose accompanied by observation of effects until maximum tolerated or target dose.

<sup>4</sup>ACE-I/ARB – Types of heart medications that aim to lower blood pressure by widening or dilating blood vessels.

ARTICLE BY

Dr. Chan Po Fun  
Consultant, NTFGH



Dr. Chan completed her training in 2017 with Yong Loo Lin School of Medicine, National University of Singapore and joined NUHCS as an Associate Consultant in the same year. She is currently a Consultant at NTFGH.

# LIVE BROADCAST TO FUWAI HOSPITAL IN BEIJING

## LIVE Broadcast during the 3<sup>rd</sup> China Structural Heart Disease Academic Week

On 10 October 2019, our team from National University Heart Centre, Singapore (NUHCS) was invited to contribute to the 3<sup>rd</sup> China Structural Heart Disease Academic Week through a LIVE broadcast to Fuwai Hospital in Beijing, China where cardiologists from Europe and US also participated via LIVE video streaming.

Cardiologists first deliberated on a patient case with severe aortic valve stenosis (AS)<sup>1</sup> before our team demonstrated the treatment procedure performed in our hybrid operating room.

The procedure, Transcatheter Aortic Valve Replacement/Implantation (TAVI), is a minimally-invasive treatment option for severe AS, which has been recently extended to



ARTICLE BY

Asst. Prof. Edgar Tay Lik Wui  
Senior Consultant,  
Department of Cardiology,  
NUHCS



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

lower risk patients. This treatment procedure involves placing a valve-stent prosthesis through the femoral artery and delivering this to the aortic valve.

In addition to the LIVE broadcast, angiographic images<sup>2</sup> and hemodynamic<sup>3</sup> tracings were broadcast to the conference centre in Beijing, China, which facilitated a robust discussion amongst the cardiologists and led to the presentation being well-received.

The session concluded with a lecture on coronary disease and its relationship to AS.

<sup>1</sup>AS – Occurs when the heart’s aortic valve narrows which reduces or blocks blood flow from the heart into the main artery and onward to the rest of the body.

<sup>2</sup>angiographic images – A diagnostic test using X-rays to show images of blood vessels.

<sup>3</sup>hemodynamic – The dynamics or study of blood flow.

**“  
NUHCS’  
contribution  
to the meeting  
cements our role  
as a regional  
leader in the field  
of structural  
heart disease and  
showcases the  
strong support of  
our medical team  
including nurses,  
allied health,  
operations and  
physicians.**”

Asst. Prof. Edgar Tay Lik Wui,  
Senior Consultant,  
Department of Cardiology, NUHCS



# IN PURSUIT OF KNOWLEDGE

*Medical students experience the world of cardiology through the 10<sup>th</sup> Chia Boon Lock Cardiology Review Course*

286 medical students participated in the 10<sup>th</sup> Chia Boon Lock Cardiology Review Course held over the weekend of 16–17 November 2019. The course was conducted by National University Heart Centre, Singapore's (NUHCS) team of doctors and medical professionals.

The highlight of the review course was a gruelling 75-minute session, during which each student had the opportunity to examine and diagnose a series of patient-volunteers with complex cardiac conditions under the guidance and mentorship of our team of clinician-educators.

The course exposed medical students to complex real-life cardiac conditions, giving them the opportunity to turn

theory into practical knowledge. In the two days, participants also had the chance to consult closely with experienced doctors to better understand the range of cardiac conditions managed at NUHCS.

Participants have given positive feedback on the course and shared that the course has increased their confidence in the diagnosis and management of cardiac conditions.

This would not have been possible without the enthusi-

astic support of our patients who share our belief in education to raise the competency of future doctors, as well as our medical team who dedicated their weekends in the administration of the course.

#### ARTICLE BY

**Dr. Lim Yinghao**  
Associate Consultant,  
Department of Cardiology,  
NUHCS



Dr. Lim is presently an Associate Consultant at NUHCS. He is the course co-director for the Chia Boon Lock Cardiology Review Course and the Cardiology PACES Course. His interests are in the fields of pulmonary hypertension, structural heart disease as well as medical and device innovation.

# FIVE WAYS TO ACHIEVE YOUR *Health Goals* THIS YEAR

*Dr. Lim Su Lin,  
Chief Dietitian from  
Department of  
Dietetics, National  
University Hospital  
(NUH) shares some  
health tips*

ARTICLE BY

Dr. Lim Su Lin  
Chief Dietitian & Senior Assistant  
Director, Department of Dietetics,  
NUH

1

## EAT LIGHT

Keep it light for the next two subsequent meals to decrease your calorie intake after all the holiday binging. Choose to consume low-calorie and healthy foods such as chicken salad, wholemeal sandwiches and/or clear soups.

2

## MOVE IT!

The start of a new year is a good time to renew your resolve to get active! Sign up for that yoga or pilates class you have been eyeing and choose to walk whenever you can.

3

## CHEW ON THIS

Singaporeans are often rushing, even when it comes to eating. Eat slowly by chewing longer on your food gives your body time to tell your brain that you have eaten enough. It also helps you to practise mindful eating to enjoy every bite and to keep you from overeating.

4

## EAT CLEAN

In an attempt to “see results” quickly, you may be tempted to go on a fast or starve yourself. However, doing so would only worsen your food cravings, and you might likely consume more calorie-dense food. Instead, opt for lean protein such as lean meat, tofu, chickpeas and beans. Stay away from deep-fried foods and processed foods that are high in sodium, such as ham and bacon.

5

## USE SMALLER PLATES

The festive indulgence might increase your appetite and satiety levels, causing you to need more food to feel satisfied. Try using a smaller plate or bowl to reduce your meal portions.



# AN IMMERSION IN ADVANCED CARDIAC CRITICAL CARE

*Dr. Robin Cherian returns to National University Heart Centre, Singapore (NUHCS) after completing a one-year fellowship at the Royal Papworth Hospital, UK*

I was fortunate to have been able to complete a one-year fellowship with the cardiac intensive care unit at the Royal Papworth Hospital in Cambridge, UK. The hospital is one of UK's major heart and lung hospitals, having performed the most number of heart and lung transplants in the country and serving more than 100,000 patients a year.

My opportunity came about as part of NUHCS' support programme to train cardiologists in advanced critical care to meet the increasing need of managing significant co-morbidities in an ageing population and the complexity in medical care that comes with longevity due to society's technological development.

Aside from being exposed to many patient types such as those with complex cardiac and respiratory problems,

requiring advanced life support and organ transplants, I also participated in the varied educational programs in the hospital such as weekly journal clubs, registrar coaching, mortality and morbidity audits, regular ultrasound and trans-oesophageal echocardiography<sup>1</sup> sessions and transplant meetings.

My fellowship at the Royal Papworth Hospital was an enriching experience augmented by the mentorship I received from the stalwarts in the field of cardiac intensive care at the hospital.

Now back at NUHCS, I am eager to impart and share the knowledge and experience gained with my fellow colleagues.

<sup>1</sup>**echocardiography** – A procedure that produces images of your heart and the surrounding arteries using high-frequency sound waves (ultrasound).

#### ARTICLE BY

**Dr. Robin Cherian**  
Consultant, Department  
of Cardiology, NUHCS



Dr. Cherian is a cardiologist at NUHCS and is also active in undergraduate and postgraduate medical education. He is a core faculty member of the Cardiology Senior Residency Program and a Clinical Educator with Yong Loo Lin School of Medicine, National University of Singapore.

Queen Elizabeth visits the ICU during a tour of the newly finished Royal Papworth Hospital in 2019.





# MAKING A DIFFERENCE ONE STEP AT A TIME

*Top graduate Ms. Alice Deo,  
Nurse Educator, shares the  
different facets of nursing*

**N**ational University Heart Centre, Singapore (NUHCS) is proud to announce that Ms. Alice Deo, Nurse Educator, Cardiothoracic Intensive Care Unit (CTICU), NUHCS has successfully completed her Specialist Diploma in Clinical Education at Nanyang Polytechnic and emerged as the top graduate of her cohort. The Pulse editorial team sat down with Ms. Deo to chat about her journey.

## *How did you become a Nurse Educator?*

I chose to become a Nurse Educator when I realised that teaching gave me an additional sense of fulfilment. Apart from guiding the newer generation of nurses to provide quality patient care, I also want to be able to motivate them through the sharing of my rewarding encounters with patients throughout my career, and consequently spread the passion and fulfilment of nursing to those starting out on their careers.

## *What made you decide to take up the Specialist Diploma in Clinical Education?*

One of the main challenges in nursing is the ongoing technology development in the profession. As nurses, we need to keep up with new changes, new practices, and patient demographic changes. Taking up this course is a privilege from the management that allowed me to enhance my clinical teaching skills to better guide the next generation of nurses. I was also able to network with fellow nurses from other hospitals. Hearing their experiences aided my own learning as well.

### *How did you manage work and studies and still come out tops?*

Balancing work and studies was definitely not easy but thankfully, I had the support and understanding of the people around me. My family members would help each other around the house; my colleagues, especially Sister Janice, helped me by taking over some of my responsibilities. My seniors and lecturers would also guide me whenever I needed help. Without everyone's support, I probably would not have been able to cope.

### *What was your most memorable experience throughout your nursing career?*

There was a young boy who had met with a road accident and was transferred to the intensive care unit. His mother visited him almost every day and would bring along food for us. When I told her it was not necessary as taking care of her son was a part of our job, she told me, "I am a nurse too so I really appreciate the hard work and effort you are putting in to care for my son." Knowing that people are appreciative of our efforts really keeps us going. When the boy was discharged, he even came back with chocolates and a thank you card.

### *Last question, what would you say to those who are considering nursing as a career?*

The fulfilment you get from nursing cannot be measured or quantified. The satisfaction you get from being able to help someone in pain and see them eventually recover, is gratifying. Through nursing, we get to connect with another person and motivate them to get better. Our patients may be physically sick, but the heart is something we can connect with one-on-one.

”

***The fulfilment you get from being a nurse is something that cannot be measured or compared with money.***

**Ms. Alice Deo,**  
Nurse Educator, CTICU, NUHCS

# MY JOB, MY PRIDE

*Ms. Oon Siow Eng, Nurse Clinician, Cardiothoracic Intensive Care Unit (CTICU), National University Heart Centre, Singapore (NUHCS) talks about receiving the Nurses' Merit Award and her passion for nursing.*

I think many nurses are just like me – we love what we do and we do not expect anything in return for our work. It was therefore a pleasant surprise for myself and 100 other nurses when we were presented with the Nurses' Merit Award from Mr. Gan Kim Yong, Singapore's Minister of Health.

with the expertise I need to face unexpected challenges in life. I was initially thrown off-guard when my mother was diagnosed with cancer earlier this year. Fortunately, as a result of my training, I was able to provide her with better care and remain optimistic about her recovery process.

As a nurse clinician, I am in charge of working with other nursing leaders to decide the best care options for my patients. Being able to support my patients during their most vulnerable times, whether ultimately witnessing their recovery or staying with them throughout their end-of-life journey is something that I will never take for granted.

Overall, my nursing experience has been nothing short of fulfilling, and I hope I can continue to positively impact the lives of others for a long time.

Additionally, I think my experience has equipped me

*With each day bringing new experiences, I count my blessings to be able to work in such an exciting and meaningful profession for the past 15 years.*

Ms. Oon Siow Eng,  
Nurse Clinician, CTICU, NUHCS

ARTICLE BY

Ms. Oon Siow Eng  
Nurse Clinician,  
CTICU, NUHCS



As a specialised nurse clinician, Ms. Oon collaborates with nursing leaders and contributes in multi-disciplinary work groups to improve clinical management. She has received awards such as the Outstanding Nurse Leader Award in 2016 and the Ministry of Health's Nurses' Merit Award in 2019.

Our study, “*MicroRNA-221 attenuates the development of cardiac fibrosis caused by renal impairment via inhibition of TSP-1 mediated latent TGF activation*” was selected for oral presentation at American Heart Association Scientific Sessions 2019, held in Pennsylvania, US, from 16–18 November 2019. This research was acknowledged as the highest ranked abstract submitted from Singapore and received the Paul Dudley White International Scholar Award.

Two of our other studies on miRNA-221 therapeutics in cardioprotection and in-depth mechanisms on p27 gene regulation were also selected for oral presentations at the European Society of Cardiology Congress 2019.

Focusing on the discovery of microRNA<sup>1</sup> therapeutics which could better treat cardiac diseases such as myocar-

dial infarction and fibrosis, our team established a methodology to screen potential miRNA targets in vitro disease models to demonstrate the underlying mechanisms and in vivo animal models to testify the treatment efficacy of selective miRNA mimics.

In future research, we hope to learn more about off-target effects and boosting disease organ targeted delivery.

I am very thankful for the support and trust from Prof. Arthur Mark Richards, Director, Cardiovascular Research Institute (CVRI), National University Heart Centre, Singapore (NUHCS), the dedication from Dr. Zhou Yue, Postdoctoral Fellow, CVRI, NUHCS, as well as the hard work of our many research assistants and visiting scholars.

# STEPPING UP ONTO THE BIG STAGE

*Research on microRNA therapeutics acknowledged*

<sup>1</sup>microRNA – MicroRNAs, also known as miRNAs, are small non-coding RNA molecules that regulate gene expression in diverse biological processes.

#### ARTICLE BY

Asst. Prof. Wang Peipei  
Research Assistant  
Professor, CVRI, NUHCS



Asst. Prof. Wang is a Research Assistant Professor at CVRI, NUHCS and Yong Loo Lin School of Medicine, National University of Singapore (NUS). Having received her PhD training at Yong Loo Lin School of Medicine, NUS, she is currently working on the discovery and development of microRNA biomarkers specifically in its implications for cardiovascular therapeutic applications.

**To be recognised by our peers and international committees in the field of cardiovascular research is highly encouraging for our small research team.**

Asst. Prof. Wang Peipei, Research Assistant Professor, CVRI, NUHCS

# CVRI SCORES AT BCVS 2019

*Scientists scoop up awards at scientific sessions in Boston*

**W**e had the privilege of representing Cardiovascular Research Institute (CVRI), National University Heart Centre, Singapore (NUHCS) at the inaugural Asian Cardiovascular Symposium (ACS) and Basic Cardiovascular Sciences (BCVS) Scientific Sessions held from 29 July – 1 August in Boston, US.

Through the BCVS Scientific Sessions, the American Heart Association's Council on Basic Cardiovascular Sciences brings research investigators together to enhance collaborations and catalyse new ideas or directions and inspire the next generation of researchers in cardiovascular science. This year, the inaugural ACS was held one day prior to the official BCVS Scientific Session 2019.

As lead investigator, Dr. Lim Tingsen Benson, Senior Research Fellow, Foo-lab@Genome Institute of Singapore (GIS) won five awards for his research on *"Targeting the highly abundant circular RNA, circSlc8a1, in cardiomyocytes attenuates pressure overload induced hypertrophy"*:



- i. *BCVS New Investigator Travel Grant for the overall top 20 abstracts at BCVS 2019*
- ii. *Paul Dudley White International Scholar Award for highest ranked abstract from Singapore*
- iii. *Honourable Mention at the Early Career Poster Competition*
- iv. *2<sup>nd</sup> Prize Oral Abstract Competition*
- v. *Top 5 Best Selected Abstracts at Academy of Cardiovascular Research Excellence*

Mr. Wilson Tan Lek Wen, PhD student, Foo-lab@GIS, was one of the top five winners of the Early Career Poster Competition for his abstract presentation titled, *"Disease and phenotype relevant genetic variants identified from histone acetylomes in human hearts"*.



## FOO-LAB:

Foo-lab works closely with CVRI and GIS to map out genome organisation in heart cells and uncover novel medical therapy. Through its collaboration with other heart centres around the world, the research team has been instrumental in putting together a clinical genomics programme with high-throughput genetic test for patients with inherited cardiac conditions.

### ARTICLE BY

**Dr. Lim Tingsen Benson**  
Senior Research Fellow, Foo-lab@GIS



Dr. Lim is a molecular geneticist at Foo-lab@GIS who was recently awarded the Open Fund – Young Individual Research Grant for his work on circular RNA in heart failure. Under the mentorship of Asst. Prof. Chen Ching Kit, he is expanding his research interests into cardiovascular epigenetics and congenital heart disease.

**Mr. Wilson Tan Lek Wen**  
PhD student, Foo-lab@GIS



Mr. Tan is a Bioinformatics Specialist. His work, guided by his knowledge in computation, bioinformatics and applied statistics, focuses on analysing data from various ongoing genomic research projects to provide meaningful insights.

# THE SYNERGY REGISTRY

*A multi-centre study on long term safety and efficacy of new generation drug eluting stent in the Asian population*



Late stent thrombosis<sup>1</sup> after stent<sup>2</sup> implantation has always been a concern with early-generation drug eluting stents<sup>3</sup> used in the treatment of coronary artery disease.

While current clinical data showed that stents with biodegradable polymer coating have demonstrated long-term safety and efficacy in comparison to early generation drug eluting stents, real-world data, especially amongst the Asian population, is still lacking.

To narrow the gap, our team set up the SYNERGY Registry in May 2017 to evaluate the real-world intermediate and long-term safety and efficacy outcomes in the Asian population who were implanted with the SYNERGY stent.

Under the auspices of Asian Pacific Society of Interventional Cardiology and directed by its President, Prof. Tan Huay Cheem, our study is a collaborative effort across nine study sites in four countries – Singapore, Malaysia, Indonesia and Brunei.

Funded by Boston Scientific Pte. Ltd. and with the support from the Singapore Clinical

Research Institute on project management, research informatics and epidemiology, we have met our target recruitment of 2,000 subjects in October 2019.

Follow-up is currently underway where patients' demographics, detailed procedural information and clinical outcome data will be recorded for three years.

<sup>1</sup>**stent thrombosis** – A complication that sometimes arises from coronary stenting that often results in the occurrence of acute coronary syndrome.

<sup>2</sup>**stent** – A tube inserted into narrowed coronary arteries to help keep them open, allowing normal flow of blood and oxygen to the heart.

<sup>3</sup>**drug eluting stent** – A peripheral or coronary stent that slowly releases a drug over time to keep blockage from recurring.

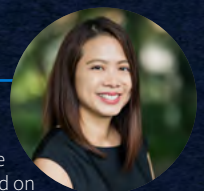
#### ARTICLE BY

Asst. Prof. Joshua Loh *Senior Consultant, Department of Cardiology, National University Heart Centre, Singapore (NUHCS)*



Asst. Prof. Loh is the Principal Investigator of the SYNERGY Registry. He supervises the post-myocardial infarction clinic at NUHCS. Outside of the clinic, his research interests include coronary artery disease and acute coronary syndromes. He is also a Council Member of Singapore Cardiac Society.

Dr. Sim Hui Wen *Associate Consultant, Department of Cardiology, NUHCS*



Dr. Sim is the Co-Investigator of the SYNERGY Registry. She completed her Cardiology Senior Residency Program at NUHCS in 2018 and is currently an Associate Consultant at NUHCS. Her research interests are focused on percutaneous coronary intervention, myocardial infarction, aortic stenosis and medication adherence among patients with heart disease.

# IT TAKES TWO



On 12 July 2018, a memorandum of understanding was signed between National University Heart Centre Singapore (NUHCS) and Medtronic Asia Pacific, affirming their commitment to collaborate and combine resources towards achieving their shared

goal of improving the standard of patient care in cardiovascular health in the region and beyond.

Over the next few years, both parties will be looking to pursue less invasive treatment procedures through educa-

tion and increasing the capabilities of their medical teams through the training of their surgeons, anesthetists, perfusionists and nurses.

ARTICLE BY

**A/Prof. Theodoros Kofidis**  
Head and Senior Consultant,  
Department of Cardiac, Thoracic and  
Vascular Surgery, NUHCS

## SINGAPORE, CHINA DEEPEN TIES IN CARDIOLOGY

*Singapore and China strengthen collaborative efforts at annual Singapore-China cardiovascular forum*

Held from 21–22 June 2019, Ms. Pan Ning, Nurse Clinician I, Ward 28 Coronary Care Unit (CCU), National University Heart Centre, Singapore, (NUHCS) and I attended the 4<sup>th</sup> Singapore-China Cardiovascular Forum 中新心血管介入论坛 in Guangzhou, China.

Jointly organised by National University of Singapore and Sun Yat-sen University (SYSU), this annual forum was led by Prof. Tan Huay Cheem, Director and Senior Consult-

ant, NUHCS, and Prof. Du Zhimin, Chief Physician, SYSU, to foster better understanding of the cardiovascular landscape across the two countries.

On behalf of NUHCS CCU, Ms. Pan presented the unit's patient care protocols at the forum, where the management workflow for patients in cardiogenic shock garnered interest from nursing heads of other hospitals.



It was also announced that Prof. Tan was conferred the Visiting Professorship at the Foshan Sanshui District People's Hospital, further expanding the collaborative efforts between Singapore and China.

ARTICLE BY

**Dr. Koo Chieh Yang, Christopher**  
Associate Consultant,  
Department of Cardiology, NUHCS



**CONGRATULATIONS**  
TO OUR NEWLY-PROMOTED  
DOCTORS!



**A/Prof. Jackie Ho Pei**  
*Senior Consultant  
Department of Cardiac,  
Thoracic and Vascular  
Surgery*



**Asst. Prof. Kang Giap Swee**  
*Senior Consultant  
Department of Cardiac,  
Thoracic and Vascular  
Surgery*



**Asst. Prof.  
Ramanathan K.R.**  
*Senior Consultant  
Department of Cardiac,  
Thoracic and Vascular  
Surgery*



**Asst. Prof. Vitaly A.  
Sorokin**  
*Senior Consultant  
Department of Cardiac,  
Thoracic and Vascular  
Surgery*



**Dr. Lim Yoke Ching**  
*Consultant  
Department of  
Cardiology*



**Prof. Roger Foo**  
*Senior Consultant  
Department of Cardiology*

**Prof. Roger Foo**, Senior Consultant, Department of Cardiology, National University Heart Centre, Singapore (NUHCS), has been **awarded full professorship at the Yong Loo Lin School of Medicine, National University of Singapore**, where he is also the Asst. Dean (Research). As a principal investigator at the Cardiovascular Research Institute and the Genome Institute of Singapore (GIS), he is the brainchild behind Foo-lab@GIS and has published a number of publications focused on genomic technology, contributing to new areas of cardiovascular research.

# CONGRATULATIONS!

## QUALITY IMPROVEMENT PATIENT EXPERIENCE AWARD (QIPE) WINNERS

Congratulations to the Department of Cardiac, Thoracic and Vascular Surgery and the Cardiothoracic Intensive Care Unit at National University Heart Centre, Singapore (NUHCS) on receiving the QIPE Award for their project, 'Reduction in duration of Extracorporeal Membrane Oxygenation (ECMO) Re-certification processes'.



From left to right:

- i. Ms. Clara Anne Lim, Perfusionist, Department of Cardiac, Thoracic and Vascular Surgery, NUHCS
- ii. Mr. Chew Kai Hong, Clement, Perfusionist, Department of Cardiac, Thoracic and Vascular Surgery, NUHCS
- iii. Ms. Pauline Oh, Senior Nurse Manager, Ward 20 Cardiothoracic Intensive Care Unit, NUHCS
- iv. Ms. Nancy SC Huang, Senior Perfusionist, Department of Cardiac, Thoracic and Vascular Surgery, NUHCS
- v. Ms. Chua Pei Han, Perfusionist, Department of Cardiac, Thoracic and Vascular Surgery, NUHCS
- vi. Not in picture: Ms. Woo Pei Yoong, Asst. Nurse Clinician, NUHCS



**Dr. Ng Jun Jie**  
Associate Consultant,  
Department of Cardiac,  
Thoracic and Vascular Surgery,  
NUHCS



**Ms. Anabelle Dionisia Ilagan Dasal**  
Senior Staff Nurse,  
Ward 64, NUHCS

NATIONAL UNIVERSITY HEALTH SYSTEM (NUHS)

TEACHING EXCELLENCE AWARDS 2019



# DISTINGUISHED CONTRIBUTOR AWARD

Congratulations to **Ms. Winnie Sia**, Senior Clinical Research Coordinator, National University Heart Centre, Singapore for receiving the *Distinguished Contributor Award – Finalist* from the Singapore Clinical Research Institute Academy.

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## ABSTRACTS

**Transcatheter Cardiovascular Therapeutics Asia Pacific (TCTAP) 2019 24<sup>th</sup> Cardiovascular Summit, Seoul, Korea, 27-30 April 2019**

Early Magmaris Bioresorbable Scaffold Failure  
Ng YP, Loh JP.

Finding a Disappeared Bioresorbable Scaffold in a Coronary Artery  
Loh JP.

**XXVII Congress of the International Society on Thrombosis and Haemostasis (ISTH), Melbourne, Australia, 6-10 July 2019**

Bleeding and Clotting in Children on ECMO at the Royal Children's Hospital: A Two Year Summary  
Van Den Helm S, Barton R, Yaw HP, Letunica N, Newall F, d'Udekem Y, Horton S, **MacLaren G**, Chiletto R, Johansen A, Best D, McKittrick J, Butt W, Linden M, Monagle P, Ignjatovic V.

Platelet Phenotype and Function in Paediatric Extracorporeal Membrane Oxygenation (ECMO) Circuits  
Yaw HP, Van Den Helm S, Barton R, Newall F, d'Udekem Y, Horton S, **MacLaren G**, Chiletto R, Johansen A, Best D, McKittrick J, Butt W, Monagle P, Ignjatovic V, Linden M.

Platelet Physiology and Function in Neonates and Children from Different Pathways onto Extracorporeal Membrane Oxygenation (ECMO)  
Yaw HP, Van Den Helm S, Barton R, Newall F, d'Udekem Y, Horton S, **MacLaren G**, Chiletto R, Johansen A, Best D, McKittrick J, Butt W, Monagle P, Ignjatovic V, Linden M.

**European Society of Cardiology (ESC) Annual Scientific Sessions 2019, Paris, France, 31 August-4 September 2019**

Machine learning versus classic electrocardiographic criteria for left ventricular hypertrophy in a young pre-partici-

pation cohort: results from the SAFE protocol study  
Sng G, Lim DYZ, **Sia CH**, Lee JSW, Shen XY, Lee ECY, **Dalakoti M**, Wang KJ, Kwan CKW, Chow WE, Tan RS, Lam CSP, Chua T, **Yeo TJ**, Chong DTT.

Novel direct thrombin inhibitor achieves superior antithrombotic effect with lower bleeding risk than heparin or bivalirudin  
Koh CY, Shih N, Leong EJE, Amran FS, Li AWL, Kini RM, **Chan MY**.

Predictors of intracranial haemorrhage in patients with atrial fibrillation treated with oral anticoagulants: results from the GARFIELD-AF and ORBIT-AF registries  
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The lipid paradox in patients with non-ST elevation and ST elevation myocardial infarction and percutaneous coronary intervention  
**Sia CH**, Ho AFW, Bulluck H, Zheng HL, Foo LL, **Chan MY**, Hausenloy DJ.

Utility of a prominent R wave in lead V1 of a resting electrocardiogram for detecting significant cardiac pathology in an unselected population of young males  
Lee JSW, Lim DYZ, Sng G, Shen XY, Wang KJ, Tan BYQ, **Sia CH**, **Dalakoti M**, Kwan CKW, Chow WE, Chua TSJ, **Yeo TJ**, Chong DTT.

**2019 World Conference on Lung Cancer (WCLC), Barcelona, Spain, 7-10 September 2019**

Good Survival in Females Undergoing Surgery Without Adjuvant Chemotherapy for Stage Three Lung Cancer: A Review of Our 12-Year Experience  
**Chen J**, Mithiran H.

**American Association for Thoracic Surgery (AATS) International Thoracic Surgical Oncology Summit, New York, US, 27-28 September 2019**

Involvement of visceral pleura as a predictor for the need of post operative chemotherapy in patients with Stage 3A and below lung cancer – A review of our 12 year Experience at a single tertiary centre  
**Chen J**.

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Platelet phenotype and function in paediatric extracorporeal membrane oxygenation (ECMO) circuits  
Yaw HP, Van Den Helm S, Barton R, Newall F, d'Udekem Y, Horton S, **MacLaren G**, Chiletto R, Johansen A, Best D, McKittrick J, Butt W, Monagle P, Ignjatovic V, Linden M.

Platelet physiology and function in neonates and children on extracorporeal membrane oxygenation (ECMO)  
Yaw HP, Van Den Helm S, Barton R, Newall F, d'Udekem Y, Horton S, **MacLaren G**, Chiletto R, Johansen A, Best D, McKittrick J, Butt W, Monagle P, Ignjatovic V, Linden M.

**3<sup>rd</sup> Singapore Prevention & Cardiac Rehabilitation Symposium (SPCRS) 2019, Singapore, 18-19 October 2019**

*Best Poster presentation award for the category "Exercise prescription/Exercise and its effect on health/sports":* Correlating changes in heart-rate walking speed index to 6-minutes walk test during cardiac rehabilitation  
**Tung BWL**, Poon KJ, **Qamaruzaman SG**, Lim SPY, **Yeo TJ**.

**20<sup>th</sup> Congress of Asian Society for Vascular Surgery (ASVS), Bali, Indonesia, 23-26 October 2019**

A retrospective review of outcomes in patients with haemodialysis with infected arteriovenous grafts  
Tan KZX, **Ng JJ**, **Choong AMTL**.

*Best Oral Presentation:* Open thrombectomy versus percutaneous throm-

bolysis for salvage of thrombosed upper limb arteriovenous grafts  
Lim BJH, **Ng JJ**, Loh SEK, **Choong AMTL**.

Does having an ipsilateral internal jugular tunneled dialysis catheter during arteriovenous fistulae creation affect short-term maturity outcomes?  
Lim BJH, **Choong AMTL**, **Ng JJ**.

Efficacy and safety of Haemodialysis Reliable Outflow (HERO) graft for haemodialysis vascular access: a systematic review and meta-analysis  
Ler A, Ng S, Farah N, Samuel M, **Ng JJ**, **Choong AMTL**.

Longitudinal versus transverse incision for common femoral artery exposure in vascular surgery: A systematic review and meta-analysis  
**Ng JJ**, Tan JKH, Lee JWK, **Choong AMTL**.

Precision medicine: Looking at the role of biomarkers in the diagnosis of peripheral arterial disease – a systematic review  
Ng S, **Ng JJ**, **Richards AM**, **Choong AMTL**.

Short-term outcomes of surgical residents compared with attending surgeons in the creation of autogenous haemodialysis arteriovenous fistulae  
Lim BJH, **Choong AMTL**, **Ng JJ**.

Stenting after balloon angioplasty without complete lesion effacement is associated with poor outcomes in haemodialysis access maintenance  
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Systematic review and meta-analysis of post-operative complications after major lower limb amputations  
Ho GWK, Ng S, **Ng JJ**, **Choong AMTL**.

Use of candy plug technique for false lumen occlusion in Type B aortic dissection: A narrative review  
Ler A, **Kofidis T**, **Choong AMTL**.

12<sup>th</sup> Asia Pacific Heart Rhythm Society (APHRS) Scientific Session, Bangkok, Thailand, 24-27 October 2019

*Young Investigator Award: Effect of Diabetes Mellitus on Cardiac Resynchronization Therapy and to Prognosis in Heart Failure (from the Prospective Evaluation of Asian With Cardiac Resynchronization Therapy for Heart Failure Study)*  
**Tan ESJ**, Lim J, **Chan SP**, Seow JT, **Singh D**, **Yeo WT**, **Lim TW**, **Kojodjojo P**, **Seow SC**.

Transcatheter Cardiovascular Therapeutics (TCT) 2019, California, US, 25-29 October 2019

Diabetes Mellitus Confers Worse Clinical Outcomes at 1 Year Compared to Non-Diabetes Mellitus in an All-Coroner Population Implanted With Biodegradable Polymer Everolimus-Eluting Stents  
**Sim HW**, Sen H, **Chan MY**, **Lee CH**, **Tan HC**, **Low AF**, **Tay EL**, **Chan KH**, **Loh PH**, **Loh JP**.

Real-World Experience of Biodegradable-Polymer Drug Eluting Stents Versus Second-Generation Durable-Polymer Drug-Eluting Stents in Patients With ST-Segment Elevation Myocardial Infarction Undergoing Primary Percutaneous Coronary Intervention  
**Sim HW**, **Thong EH**, **Ser JS**, **Chen J**, **Chan MY**, **Lee CH**, **Tan HC**, **Low AF**, **Tay EL**, **Chan KH**, **Loh PH**, **Loh JP**.

29<sup>th</sup> Annual Congress of the Association of the Thoracic and Cardiovascular Surgeons of Asia (ATCSA) 2019, Taipei, Taiwan, 30 October-3 November 2019

Smoking cessation reduces recurrence rates and improves survival outcomes after curative resection and delays their presentation prior: A review of our experience with early lung cancer surgery  
**Chen J**.

Video-assisted thoracoscopic surgery for decortication preserves lung function with less complications and shorter length of stay  
**Yong JK**, **Tan JW**, **Ong K**, **Ooi OC**, **Tam JK**, **Chen J**, **Mithiran H**.

European Society of Cardiology (ESC) Asia with Asian Pacific Society of Cardiology (APSC) & Asean Federation of Cardiology (AFC), Singapore, 8-10 November 2019

Characterisation of patients with acute myocardial infarction complicated by left ventricular thrombus  
**Leow AST**, **Sia CH**, **Tan BYQ**, **Kaur R**, **Sim HW**, **Yeo TC**, **Chan MY**, **Richards AM**, **Tay EL**, **Loh JP**.

American Heart Association (AHA) Scientific Sessions 2019, Philadelphia, US, 16-18 November 2019

Clinical Characteristics and Outcomes of Patients With Differing Haemoglobin Levels Undergoing Semi-Urgent and Elective Percutaneous Coronary Intervention  
**Dalakoti M**, **Sia CH**, **Ho PY**, **Lau RH**, **Yeo TC**, **Tan HC**, **Chan MY**, **Loh JP**.

Impact of Chronic Kidney Disease on the Outcomes of Patients Undergoing Semi-Urgent and Elective Percutaneous Coronary Intervention  
**Dalakoti M**, **Sia CH**, **Lau RH**, **Ho PY**, **Yeo TC**, **Tan HC**, **Chan MY**, **Loh JP**.

Microna-221 attenuates the Development of Cardiac Fibrosis Caused by Renal Impairment via Inhibition of TSP-1 Mediated Latent TGF activation  
**Zhou Y**, **Richards AM**, **Wang PP**.

National Undergraduate Cardiovascular Conference, Birmingham, UK, 30 November 2019

Exertional dyspnea and T-wave inversions on electrocardiogram: A case report  
**Goh FQ**, **Sia CH**, **Singh D**, **Poh KK**, **Kong WKF**.



# HOW WELL DO YOU *know your* **HEART?**

**H** \_\_\_\_\_ is a significant cause of heart attacks as your heart and blood vessels experience additional strain.

A: Hypertension

Besides drinking plain water, drinking \_\_\_\_\_ regularly can improve the function of blood vessels and reduce the risk of cardiovascular disease.

A: tea

**E** \_\_\_\_\_ is a procedure that produces images of your heart using sound waves.

A: Echocardiography

\_\_\_\_\_% of heart attack patients suffer from diabetes.

A: 50%



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