

PULSE

SPECIAL EDITION



NEW BEGINNINGS

Celebrating 10 years
with you and beyond

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Glamour *pg10*

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National University Heart Centre, Singapore
A member of the NUHS



NUHCS10 EXCLUSIVE



10 Cheers for NUHCS!

NUHCS kicked off its 10th Anniversary celebration with a launch featuring a tree planting ceremony and signature heart dance performance.

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Tell us what you think about this issue of Pulse and stand to **win an exclusive NUHCS towel!**

Send your entry to nuhcs@nuhs.edu.sg with your name. Winning entries will be featured in the next issue of Pulse!



10 CHEERS FOR NUHCS!

Celebrating 10 Years of Heart Care with You

National University Heart Centre, Singapore (NUHCS) is proud to celebrate its 10th Anniversary in 2018. To kick things off, NUHCS held an opening ceremony to launch the start of its anniversary events. Discover all the exciting happenings in this exclusive feature.



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.

A Momentous Milestone
NUHCS officially launched the year-long celebration of our 10th Anniversary at the sculpture garden on 25 June 2018. In his opening speech, Guest of Honour, Prof. John Eu-Li Wong, Chief Executive, National University Health System (NUHS), commended NUHCS on the significant growth we have attained over the past decade.

Noteworthy Achievements
As one of the two national heart centres in Singapore, NUHCS continues to attract bright and talented clinicians and clinician-scientists.





Prof. Tan Huay Cheem led the tree planting ceremony to celebrate 10 years and beyond.

“I am confident that NUHCS will continue to play a leadership role in the training and education of healthcare professionals. I encourage all in NUHCS to take pride in our accomplishments and to press on for more good years ahead.”

– Prof. John Eu-Li Wong, Chief Executive, NUHS



Noteworthy Achievements	
<p>Clinical programmes:</p>  <ul style="list-style-type: none"> • Only national centre that provides services in adult cardiology, paediatric cardiology, adult cardiac surgeries as well as thoracic and vascular surgeries all under one roof. • Owns the nation's only minimally invasive surgery and aortic centre programmes. 	<p>Clinical outcomes:</p>  <ul style="list-style-type: none"> • Achieved a significant survival rate for heart attacks in Singapore. • Commendable door-to-balloon time of <p><90 mins for 96.5% of patients <i>(higher than US benchmark of 91.4%).</i></p>

NUHCS Comes Together to Celebrate!

The opening ceremony was marked by the unveiling of a large clinic wall facade featuring NUHCS staff and services, as well as a tree planting ceremony. Tree planting signifies continuity and the start of a new phase for NUHCS as we celebrate 10 years and beyond.

Our NUHCS family came together to perform the signature heart dance – an entertaining line dance performance curated to showcase the NUHCS spirit.

Read on to find out more about our other celebratory events including The Heart Truth Mandarin Symposium and book signing, Go Red @ Bukit Batok, World Heart Day, and our year-end Thanksgiving Dinner and Dance.

DO YOU KNOW THE HEART TRUTH?

NUHCS Biennial Mandarin Symposium

National University Heart Centre, Singapore (NUHCS) recently organised its signature Biennial Mandarin Symposium. Discover how attendees were enlightened by interesting facts about the heart and had their burning questions on heart health answered. One of the speakers, Asst. Prof. Yeo Tee Joo, shares more about the event.



Hearing from Our Speakers
The NUHCS Biennial Mandarin Symposium was held on 11 August 2018 at the Stephen Riady Auditorium @ NTUC Centre. In keeping with previous years' tradition, the public symposium featured five speakers from NUHCS and National University Hospital (NUH):

- Prof. Tan Huay Cheem, Director, NUHCS;
- Asst. Prof. Jimmy Hon, Senior Consultant, Department of Cardiac, Thoracic and Vascular Surgery;

- Asst. Prof. Yeo Tee Joo, Consultant, Department of Cardiology
- Asst. Prof. Chan Wan Xian, Senior Consultant and Programme Co-Director, Women's Heart Health Programme; and
- Ms. Lim Su Mei, Senior Dietitian, NUH

Learning Heart Health Knowledge
Hosted by 96.3FM DJ Jing Yun, the event attracted a full-house audience who enjoyed a wide variety of heart health related talks. These ranged from the benefits of exercise, up-to-date recommendations

on blood pressure and cholesterol control, the link between diabetes and heart disease, introduction to open heart surgery, and last but not least, dietary options for those living with diabetes.

The event concluded with a lively question and answer session as well as a book signing session by Prof. Tan. This is the second edition of his collection of articles in Lianhe Zaobao and all proceeds went towards The Heart Fund to benefit needy heart patients from NUHCS. We look forward to the next Mandarin Symposium!



The event attracted a full-house audience who enjoyed a wide variety of heart health related talks.



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

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.



From L-R: Asst. Prof. Yeo Tee Joo, Asst. Prof. Chan Wan Xian, Prof. Tan Huay Cheem, Asst. Prof. Jimmy Hon, Ms. Lim Su Mei and host DJ Jing Yun.



During the CPR relay, residents were taught how to perform CPR on a mannequin.

EMPOWERING WOMEN WITH HEART HEALTH

Go Red Community Heart Health Carnival

Did you know that 1 in 3 women die from heart disease in Singapore and that cardiovascular disease claims eight times more lives than breast cancer? To raise awareness about cardiovascular disease in women, as well as to encourage the community to take charge of their own heart health, National University Heart Centre, Singapore (NUHCS) organised the Go Red Community Heart Health Carnival for Bukit Batok residents.

Reaching out to the Community

NUHCS's Women's Heart Health Programme held the Go Red Community Heart Health Carnival at Bukit Batok Pavillion on 16 September 2018. Graced by Mr. Murali Pillai, Member of Parliament for Bukit Batok Single Member Constituency, the event was organised as part of our programme's community outreach initiative to increase public awareness of cardiovascular diseases in women.

Residents from Bukit Batok came together to join in various heart health activities, which included screening for cardiovascular risks, chronic disease and functional screening (vision, hearing, oral hygiene). This year, we conducted a screening for atrial fibrillation (irregular heartbeat) in the community for the first time. 12-lead electrocardiograms were performed for residents with irregular heart rhythm picked up from the blood pressure machine during screening.

Having Fun with CPR

Ms. Janice Kee, Senior Nurse Educator, NUHCS and Ms. Adeline Teo, Nurse Clinician, NUHCS, held the first public cardiopulmonary resuscitation (CPR) relay to educate and empower the public with knowledge of CPR skills in a fun and interactive way. Mr. Pillai and Prof. Tan Huay Cheem, Director, NUHCS, kicked off the relay followed by the residents. In total, 68 residents, including nine children as young as six years old, participated in the CPR relay. The session clocked a total duration of 180 minutes.

Knowledge is Key

Our team also conducted a series of talks and educational activities. This year, we invited Dr. Jade Kua, Programme Director of the Dispatcher-Assisted first REsponder (DARE) Programme; Dr. Ida Suzani Binti Ismail, Consultant, National University Hospital; Asst. Prof. Lim Toon Wei, Senior Consultant, NUHCS; and Asst. Prof. Low Ting Ting, Consultant, NUHCS to join us for the event.



The event included performances by various interest groups, comprising the residents from Bukit Batok.



Colleagues from National University Health System came together to volunteer for the health screening booths.

They delivered talks in both English and Mandarin, with topics on CPR; screening for gynaecologic cancer; atrial fibrillation and stroke prevention; and the importance of cardiovascular disease prevention, respectively. The event ended on a high note with a cooking demonstration and a "supermarket tour with a dietitian" from the Health Promotion Board.

Our Women's Heart Health team hopes to continue our efforts in reaching out and educating the public!

The Go Red event aimed to increase public awareness of cardiovascular diseases in women.



By **Asst. Prof. Chan Wan Xian**
Senior Consultant,
Department of Cardiology
Programme Co-Director,
Women's Heart Health Programme

Asst. Prof. Chan completed her advanced specialist training in cardiology at National University Hospital. She then completed further training in advanced heart failure and heart transplantation. Her other specialty interests include heart failure, cardiac imaging, valvular heart disease and heart conditions in women.

The night commenced with cocktails, mingling, and superb photo booth opportunities. It was heartwarming to see staff from NUHCS, Ng Teng Fong General Hospital's cardiology team and our visiting consultants. Everyone was dressed to the nines for the theme of Oscar Night.



During the opening speech, Prof. Tan spoke about the inauguration of NUHCS 10 years ago, our achievements thus far, and a tribute to the late Prof. Chia Boon Lock, which garnered much applause.



A NIGHT OF GLITZ AND GLAMOUR

NUHCS 10th Anniversary Thanksgiving Dinner

As National University Heart Centre, Singapore (NUHCS) celebrates its 10th Anniversary, 400 staff members gathered together on 23 November 2018 for an unforgettable night of fun and camaraderie with a Thanksgiving dinner at Hilton Singapore.



The dinner segment opened with a dramatic entrance of Taiko drumming led by Prof. Tan Huay Cheem, Director, NUHCS, together with our senior leaders. They then joined in a cake cutting and champagne toast together with our VIPs and senior leaders of National University Health System.



The night was filled with exciting game segments and staff performances from our cardiac nurses and cardiology senior residents; a roaring and energetic best-dressed competition; and a grand lucky draw.

The event was a true celebration of NUHCS's milestones over the last 10 years. To many more years of success together!

By **Asst. Prof. Joshua Loh**

Other contributors:
Dr. Harish Muthiah;
NUHCS Ops & Admin team;
and the Organising Committee

CELEBRATING THE NATION'S 53RD BIRTHDAY

Flying the NUHCS Flag High at NDP 2018

In conjunction with National University Heart Centre, Singapore's (NUHCS) 10th Anniversary, NUHCS is proud to be a part of the National Day Parade (NDP) 2018. As the Contingent Commander for the National University Health System (NUHS) marching contingent, Asst. Prof. Yeo Tee Joo recounts his first-hand experience.



A Proud Moment for NUHCS
For the first time in our history, NUHS was invited to participate in the NDP 2018 to celebrate Singapore's 53rd birthday. This was a golden opportunity to showcase NUHS in front of our nation.

NUHCS proudly formed a significant proportion of the marching contingent from NUHS. This included myself and 12 other volunteers: Shariffah Bte Hussain, Loh Sim Yee, Lim Yan Ling, Tan Shu Zhen Susan, Loke Siew Hong Francis, Nassrin Yap Li Mee, Goh Xiang Jin, Lam So Shan Susan, Ma Kelian, Bam Bi Na, Nur Afifah Binte Hazali and Lee Xin Yu Jasmine.

A United Spirit

Most of us had little marching experience to begin with, but it did not dampen our spirits. Be it rain or shine, we were fully committed to a whole day of training every Saturday, which took place at NUHS, Nee Soon Camp and finally the Floating Platform. After four months of hard work, everyone was marching in sync and manoeuvring the NUHS banner like professionals.

Backed by unwavering support from our senior management, the contingent did NUHS and NUHCS proud with a wonderful performance on 9 August 2018, which will live in our memories for a long time to come. We are ONE – We are NUHCS!



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

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.



“**NUHCS is proud to participate in the parade and showcase our team spirit in front of the nation.**”

The NUHCS team were all smiles during the appreciation dinner for NDP 2018.

KEEPING THE BEAT

A Patient's Life-Changing Journey

Everyone faces obstacles in life, some worse than others. When the Pulse editorial team listened to Ashok's story, what struck the team was his gratefulness for life and deep love for his family. Behind the kind demeanour and warm exterior is a man who has to battle one of life's toughest trials. However, he has not only emerged stronger but is also ready to grab life by the horns. Here is his story.

Share with us a bit about yourself.

A: I am a sports manager. I run about five departments and have been there for close to 20 years.

Could you share with us your heart journey story?

A: About two years ago, I felt some uneasiness around my chest area whenever I went to bed. It went on for a couple of days so I decided to go to the hospital. I was admitted for three days. My blood test, electrocardiogram (ECG) and X-ray results were quite good but an angiogram showed that there were three major blockages in my heart. Two of the blockages were about 90% while one of them was 70%. Thus, a stenting procedure could not be done and I had to undergo a triple bypass in April 2016.

How did you feel when you first found out about it?

A: It scared me. It was something I had never expected. Being a sportsman, you think you can get away with all these. You might be very fit but nobody knows what is inside. There are so many ways you can get a heart attack.

How has your lifestyle changed since the surgery?

A: I have always been an outgoing person so it took me a while to readjust. I used to eat junk food and go out partying but I have stopped all that. I now consume food with less oil and eat more greens. I also sleep earlier, which helps me go to work feeling refreshed. I feel so much better after adopting a healthier lifestyle.

What is the greatest thing you have learnt?

A: Life is very important. I wish to spend more time with my family and see my son grow up. The key thing is to be happy as that helps you with your health.

What is one thing you would like to say to fellow heart survivors?

A: Treasure and enjoy what you have. I don't regret going through the surgery because it has given me a second chance in life.

What is one thing you would like to say to the public?

A: Don't take your health for granted. If you don't feel good, go see the doctor. Stress will always be there but exercise and healthy eating will help.

A subsidiary of NUHS Fund Limited, The Heart Fund aims to assist needy heart patients and support cardiovascular research and education programmes.

To donate to The Heart Fund:

Scan this QR code or visit www.giving.sg/campaigns/NUHCSHeartFund.



or



Email nuhcs@nuhs.edu.sg for more information.

Mr. Ashok Kumar, 59, Heart Survivor



Honour
Gan Kim Yong
Master for Health



“Nursing is a unique and rewarding vocation as nurses get to see the entire spectrum of life as a whole. So listen with your ears, as well as your heart.”

– Ms. Juvena Gan, Advanced Practice Nurse, Ward 28 Coronary Care Unit

NURTURING FROM THE HEART

National University Heart Centre, Singapore (NUHCS) is proud of Ms. Juvena Gan for receiving the prestigious Nurses' Merit Award 2018. Juvena has proven herself to be a dependable, efficient and trustworthy nurse leader. She is open to new challenges and never fails to mentor and share her knowledge with her peers. She also adds a personal touch while providing care to her patients and their families. The Pulse editorial team caught up with Juvena to learn about her thoughts on receiving this award.

What made you decide to join nursing?

I joined nursing after completing my polytechnic education. Little did I know that my passion for nursing would grow day by day. Unknowingly, I have been in this noble profession for 17 good years.

I am truly blessed to have so much support and mentoring from my family, peers, patients and their loved ones. Doors of opportunity were opened to me at different stages of my nursing career. They allowed me to learn and grow, shaping me to be who I am today.

What was your greatest fear and most memorable experience as a nurse?

When I was a novice nurse, I feared handling death but now I have learnt to view it in a different light. The most significant experience that left a deep impression on me was with a brain dead patient. At 40, she was declared brain dead following a cardiovascular collapse.

Her husband was at a loss as to how to break the devastating news to their only daughter who was only eight.

I held the little girl's hand, brought her to her mother's bedside to talk to her and broached the sensitive subject. Though heart wrenching, I was glad I took the step forward to help 'open up' the little girl's heart, allowing her time to take in what was happening and accept her mother's eventual death.

What is your advice to aspiring nurses?

My advice to those who are considering nursing – go for it! The rewards you will get cannot be measured in units, but it is an indescribable feeling that belongs to you alone.

HONOURING OUR PEOPLE

Congratulations to our staff from National University Heart Centre, Singapore (NUHCS) for receiving the National Day Awards 2018 and National Medical Excellence Award 2018!

Recognising Dedicated Service

- The National Day Award is a prestigious award that acknowledges recipients for their service to the nation as well as various forms of merit.
- The National Medical Excellence Award (National Clinical Excellence Team Award) recognises teams that have contributed greatly to improving healthcare through impactful research.

National Day Efficiency Medal

M Ms. Ting Kit Cheng
Advanced Practice Nurse,
Ward 20

R Ms. Nyeo Hui Qing
Senior Nurse Clinician,
Ward 63

Public Administration Medal (Bronze) 2018

&

National Medical Excellence Award 2018 (National Clinical Excellence Team Award)

L A/Prof. James Yip
Senior Consultant,
Department of Cardiology



CARING FOR THE HEARTS OF CANCER PATIENTS

Training in Cardio-Oncology

Cardio-oncology is a growing field that aims to prevent or treat cancer patients who face heart problems due to its treatments. With the support of National University Heart Centre, Singapore (NUHCS), Asst. Prof. Tan Li Ling pursued training in this area of speciality.



Fellowship in Cardio-Oncology

I had the privilege of receiving the Health Manpower Development Programme (HMDP) award to pursue a fellowship in cardio-oncology. My training was completed at the Royal Brompton Hospital in London, UK under the supervision of Dr. Alexander Lyon, President, British Cardio-Oncology Society.

The Heart and Cancer Connection

Heart disease and cancer are leading causes of mortality in many developed countries including Singapore. It is not surprising that many patients suffer from cancer and heart disease at some point in their lifetime.

Both diseases share similar risk factors. Moreover, advancements in therapies have improved the prognosis of cancer patients – more are cured of cancer and more patients with metastatic disease¹ live longer with reasonable quality of life.

Hence, in recent years, there are many patients presenting with long-term adverse cardiac complications related to cancer therapies.

Training Experience in the UK

The Royal Brompton is located strategically adjacent to the Royal Marsden Hospital which is the leading specialist cancer treatment hospital in the UK.

Majority of referrals to the cardio-oncology unit are from the Royal Marsden and they fall under the following categories:

1. Cardiac risk assessment before cancer treatment.
2. Cardiac issues during treatment (e.g. heart failure, arrhythmias², ischaemia³).
3. Cardiac surveillance during cancer survivorship.

With the knowledge and experience gained during my training, I look forward to collaborating with our oncology and haematology colleagues and hope to increase the awareness of this burgeoning specialist field among patients and healthcare professionals.

“I look forward to collaborating with our oncology and haematology colleagues and hope to increase the awareness of the cardio-oncology field among patients and healthcare professionals.”



By **Asst. Prof. Tan Li Ling**
Consultant,
Department of Cardiology

Asst. Prof. Tan graduated from St. Bartholomew's and the Royal London School of Medicine and Dentistry, University of London, UK. She was conferred the Master of Medicine in Internal Medicine from National University of Singapore and Membership of the Royal College of Physicians, UK. Thereafter, she completed her cardiology training at NUHCS. Her specialty interest includes cardio-oncology and she is active in clinical research and medical education.

¹ Cancer that spreads from its origin to a different part of the body.

² A group of conditions where the heartbeat is irregular, too slow, or too fast.

³ Insufficient blood supply to an organ or tissue, usually due to the narrowing or blockage of an artery.

COMMITMENT TO ENHANCE WOMEN'S HEART HEALTH SERVICES

Expanding Clinical Experience through Clinical Attachments

To push the envelope for women's heart health, National University Heart Centre, Singapore (NUHCS) provides a programme dedicated to women with and at risk of heart disease. In 2018, the team had an opportunity to go for clinical attachment programmes in North America.



NUHCS Women's Heart Health team with Dr. Rekha Mankad, Director, Women's Heart Clinic, the Mayo Clinic; and her team.

Travelling to the Land of Opportunity

Our Women's Heart Health team received the FY2018 Health Manpower Development Programme (HMDP) Team Award and went for clinical attachment programmes at the University of Ottawa Heart Institute (UOHI), Canada and the Mayo Clinic, Minnesota, US. Our multidisciplinary team includes Ms. Lim Lee Ying, Physiotherapist; Ms. Janice Chen Dehui, Senior Occupational Therapist; Ms. Lee Choy Yee, Advanced Practice Nurse; Ms. Seow Yen Hoon, Programme Coordinator; and myself.

After multiple stops on long distance flights, our team arrived at Ottawa and discovered that the Ottawa-Gatineau region was just hit by six tornadoes over the past 24 hours. Fortunately for us, water and electricity were resumed before we reached our hotels. Despite the weather, Dr. Thais Coutinho, Chair, Canadian Women's Heart Health Centre and Division



UOHI and NUHCS Women's Heart Health teams together with Dr. Thais Coutinho, Chair, UOHI's WHHP (far right, back row).

Head, Cardiac Prevention and Rehabilitation, and her team from the Women's Heart Health and Preventive Cardiology, UOHI, warmly welcomed us. We met her team of nurse clinicians, physiotherapists, dietitians and programme coordinators for a round table discussion and sharing of the Women's Heart Health Programme (WHHP) services at UOHI.

A Multidisciplinary Sharing Experience

Throughout the week of attachment at UOHI, our team was introduced to the different components and services of the WHHP. The team at UOHI made every effort to maximise our exposure as they arranged for us to attend their women's heart health clinics, cardiac health coaching sessions and cardiac rehabilitation sessions. They shared with us their community outreach programmes including the cardiac virtual care, cardiac volunteers education and community cardiac rehabilita-

tion programmes.

Following that, we visited the Mayo Clinic. Our team was privileged to have a programme tailored to our needs. The team at the Mayo Clinic shared with us their clinical expertise and experience in the WHHP, the cardiac diseases in pregnancy programme and their cardiac rehabilitation programmes. We also had the opportunity to attend the Heart Disease in Women's Symposium organised by the WHHP at the Mayo Clinic.

An Insightful Journey

Our team learnt and benefited greatly from our clinical exposure at both renowned heart institutes. We deeply appreciate their kindness and generosity in sharing with us their experiences and providing us with advice and tips in our journey ahead to develop a more wholesome programme. We hope to be able to contribute to the healthcare of our women with heart diseases.

“During the clinical attachment programmes, the NUHCS team gained clinical expertise and experience in women's heart health.”



By **Asst. Prof. Chan Wan Xian**
Senior Consultant,
Department of Cardiology
Programme Co-Director,
Women's Heart Health Programme

Asst. Prof. Chan completed her advanced specialist training in cardiology at National University Hospital. She then completed further training in advanced heart failure and heart transplantation. Her other specialty interests include heart failure, cardiac imaging, valvular heart disease and heart conditions in women.

SAVING PATIENTS BORN WITH HEART DEFECT

A Fellowship Experience in Toronto

What happens to adults born with a heart defect? Through the sub-specialty of adult congenital heart disease¹ (ACHD), more efforts are carried out to improve care and treatment including training programmes. Find out more about Asst. Prof. Low Ting Ting's ACHD fellowship in Toronto, Canada.

Cardiac morphology course with wet specimens in SickKids Hospital.



The Largest Centre for ACHD
With more than 18,000 patients in its registry, Toronto General Hospital has trained more ACHD specialists than any other centres in the world. It was a spectacular educational experience training in a centre that cares for 9,500 active patients and provides adult congenital surgeries and catheter-based interventions².

The number and complexity of ACHD patients are rapidly increasing and the medical community is facing new challenges in this unique population; tackling lesion-specific complications³, pregnancy and heart disease, pulmonary hypertension⁴, as well as tough end-of-life decisions with re-operations and transplants.

A Year of Professional and Personal Growth

I was fortunate to have three abstracts accepted at the 28th International Symposium on ACHD, hosted

in Toronto. I spoke on my systematic review of pregnancy outcomes in pulmonary arterial hypertension and was a nominee for the young investigator research award. I was also awarded for my abstract on a study of sex-specific cardiovascular management at the Canadian Women's Heart Health Summit in Ottawa, Canada.

The fellowship year was also a significant milestone in my personal growth. I am most grateful to my husband for his wholehearted support and to my children for stepping outside of their comfort zones. I look forward to contributing the experience I have gained back home.

“It was a spectacular educational experience training in the world's largest centre for ACHD, which cares for 9,400 active patients.”



With Dr. Gary Webb, a master clinician and visionary leader in the ACHD field.

¹ A type of heart defect that exists from birth.
² Minimally-invasive procedures using a thin tube inserted into the artery or vein.
³ Complications that arise due to the damage of an organ or tissue.
⁴ High blood pressure that affects the arteries of the lungs.



Ice-skating under the stars in Toronto during winter.



By **Asst. Prof. Low Ting Ting**
Consultant,
Department of Cardiology

Asst. Prof. Low is a cardiologist with special interest in adult congenital heart disease, heart disease in pregnancy and women's heart health. Beyond clinical work and research, she enjoys teaching and nurturing the young (both her little boys and students alike). She is grateful to excellent mentors and teachers who have helped her come this far, and hopes to pay it forward with her involvement in medical education.

DELVING INTO HEART FAILURE, LVAD AND TRANSPLANTS

Learning and Working at Cleveland Clinic



Light-hearted moment with my other advanced heart failure and transplant cardiology fellows in Cleveland Clinic.

As doctors gain more experience and medical know-how, patients stand to benefit from quality care. Thus, National University Heart Centre, Singapore continuously supports our doctors with training opportunities to further expand their skills and expertise. Read to find out more about Asst. Prof. Lin Weiqin's one-year fellowship journey in Cleveland, Ohio.

A Dream Come True
Heart failure is a fast-growing field, with new medications and devices being developed at breakneck speed. I have always aspired to apply innovative treatment modalities in managing heart failure in Singapore.

It was thus a privilege for me to be given an opportunity to pursue a one-year advanced heart failure and transplant cardiology fellowship at Cleveland Clinic, Ohio, USA.

Learning and Working in Cleveland Clinic

During my fellowship, I was exposed to a wide variety of complex heart failure cases. Under the guidance of heart failure cardiologists from Cleveland Clinic, like Dr. David Taylor and Dr. Randall Starling, I had the chance to hone my clinical skills.


I worked closely with the surgical team, selecting patients suitable for left ventricular assist device (LVAD) implantation¹ or heart transplantation, as well as providing post-surgery cardiology care.

Under the mentorship of Dr. Wilson Tang, Heart Failure Research Director, Cleveland Clinic, I also participated in a multi-centre study that looks into echocardiographic² predictors of right ventricular failure³ in LVAD patients. I look forward to publishing our findings soon.

Time to Unwind

Outside work, my wife and I spent our time enjoying the outdoors and travelling the country. We were truly awed by the wonderful sights nature provided us.

“It has truly been an unforgettable year of growth and I return with renewed enthusiasm to advance the practice of heart failure in our centre.”

By Asst. Prof. Lin Weiqin
Consultant,
Department of Cardiology

Asst. Prof. Lin obtained his medical degree from National University of Singapore in 2008 and completed his cardiology training in NUHCS in 2015. His clinical interests include advanced heart failure, mechanical circulatory support and echocardiography. His personal mission is to provide holistic care for patients living with heart failure in Singapore.

¹ A mechanical pump that is surgically implanted to help the left chamber of the heart to pump blood to the rest of the body.

² Echocardiography is the use of ultrasound waves to examine the heart.

³ Occurs when the right chamber of the heart is not pumping as efficiently as it should be.

During our free time, I enjoyed exploring the beautiful outdoors with my wife.

COMMENDATION FROM THE SCIENTIFIC ADVISORY BOARD

A Milestone for Cardiovascular Research Institute

National University Heart Centre, Singapore's (NUHCS) research arm, Cardiovascular Research Institute (CVRI), conducts scientific research to improve the quality of care for patients. In 2018, the international scientific advisory board (SAB) congratulated the centre for its research work.



“The SAB would like to congratulate NUHCS on their research that was felt to be scientifically rigorous, potentially practice changing and ultimately will benefit patients in Singapore and beyond.”

Developing Support for Heart Research

NUHCS currently holds a Centre Grant that provides \$10 million over four years. The grant is dedicated towards building our research infrastructure and supporting six themes of work focused on the protection, repair and regeneration of the heart in Singaporeans suffering from heart attacks and other forms of heart disease.

The programme, Solving Cardiac EPigeneTics, Remodelling and rEpair (SCEPTRE), has received commendation from the international SAB that stayed in Singapore for three days in April 2018. The SAB included Professors John Burnett, Thomas Marwick, David Newby and Martin

Cowie, who are successful cardiovascular researchers from the US, UK and Australia.

Congratulatory Words from the SAB

The SAB commended NUHCS for our scientifically rigorous and potentially practice changing research that will ultimately benefit patients in Singapore and beyond. They were also impressed by our organisational strength and strategy as well as the clear vision of science delivery, collegiality and mentorship.

I am also honoured to be recognised for my leadership towards the development of our centre. In addition, the SAB observed that NUHCS is progressing well in delivering our key objectives by 2021.



By **Prof. A. Mark Richards**
Director,
Cardiovascular Research Institute
(CVRI), NUHCS

Prof. Richards has taken up the Directorship of CVRI since October 2010. He leads a group focused on discovery and assay of cardiovascular biomarkers to assess an array of cardiovascular conditions including acute and chronic phases of heart failure, heart valve disease and coronary artery disease.



TREATING HIGH-RISK PATIENTS WHO HAVE HAD PRIOR HEART VALVE REPLACEMENT

A Percutaneous Technique

Asst. Prof. Edgar Tay shares more about a minimally invasive technique that helps patients who face a high risk of complications if they were to opt for open heart surgery.

Biological heart valve replacement¹ is a common treatment for many patients with severe valvular heart disease². Although this treatment offers good relief while avoiding the need for anticoagulation³ (warfarin), valve deterioration may occur within 7-15 years after the initial surgery. When this occurs, the patient would require another surgery to change the valve.

Recent advances in transcatheter therapies⁴ have enabled modifications of current devices to help such patients. In 2018, the National University Heart Centre, Singapore (NUHCS) transcatheter aortic valve implantation (TAVI) team used transvenous femoral access⁵ to successfully treat two patients who had prior valve replacement but whose bioprosthetic heart valves

had now deteriorated with bioprosthetic valve deterioration. This technique has the advantages of reduced bleeding and more rapid recovery.

Recent publications have supported the role of transcatheter therapies and are now the recommended treatment for patients deemed at high risk for a heart valve replacement surgery.

“In 2018, the NUHCS TAVI team used an updated technique to successfully treat two patients with valve deterioration.”



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

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

¹A procedure where a biological valve made from animal or human tissue replaces a damaged valve.

²A damage or defect in one of the four heart valves.

³A medicine that helps prevent blood clots.

⁴Minimally invasive techniques that allow the heart to be repaired or treated.

⁵Insertion of tube or wire through a vein in the leg.

USING A SMARTPHONE TO MANAGE HEART FAILURE

National HealthTech Challenge 2018

What if heart patients can use their smartphones to assess their health status? Well now they can, thanks to a solution developed by our team from National University Heart Centre, Singapore (NUHCS).

Singapore faces the growing problem of heart failure, with rising numbers of heart failure admissions throughout the years. Thus, we wanted to develop a solution to optimise the community care of our heart failure patients, and in doing so, reduce the need for frequent admissions or clinic visits.

From March to June 2018, we devised a solution that utilises the ubiquitous smartphone together with our technology partner, XRvision.

Leveraging their computer vision expertise and harnessing the power of machine learning, we created an assessment tool that enables patients to assess the volume of fluids in their bodies, thus supporting the management of diuretic therapy¹.

Our project was initiated as part of the inaugural National HealthTech Challenge 2018. We were one of the top ranked teams among 124 competitors, and were thus selected to showcase our project at the

National Health IT Summit in July 2018.

Organised by Integrated Health Information Systems (IHIS), the competition is a platform that offers professionals the opportunity to work on challenges in public healthcare. It also provides funding for health technology solutions and brings together people from Singapore's public healthcare institutions and solution providers to improve healthcare.

“NUHCS was one of the top ranked teams among 124 competitors at the inaugural National HealthTech Challenge 2018.”

¹A treatment method that helps to increase the excretion of water from the body.



By **Dr. Jason Chen**
Senior Resident,
Department of Cardiology

Jason is a graduate of Yong Loo Lin School of Medicine, National University of Singapore in 2010, and is currently a senior resident in the cardiology training programme at NUHCS. He has interests in medical informatics, healthcare innovation, and interventional cardiology.



Dr. Jason Chen (centre) is proud to receive the team award with tech partner, XRvision.

DRIVING THE FUTURE OF CARDIAC CARE

Presenting at an International Congress

Over the years, National University Heart Centre, Singapore (NUHCS) has been invited to various international conferences including the European Society of Cardiology (ESC) Congress 2018.

NUHCS at ESC Congress

Our team attended the ESC Congress from 25 to 29 August 2018 in Munich, Germany along with 33,000 delegates from across five continents. Prof. Tan Huay Cheem, Director, NUHCS and Asst. Prof. William Kong, Consultant, Department of Cardiology were invited to chair symposiums on safer stents¹ and mitral regurgitation² respectively.

A Scientific Showcase

NUHCS showed our strength and breadth through multiple presentations on basic and clinical sciences.

Oral presentations included:

- Deficiency of toll-like receptor 7³ prevents cardiac rupture and reduces adverse ventricular remodelling after myocardial infarction by Dr. Wang Jiong-Wei, Research Fellow, Cardiovascular Research Institute.
- Severe functional tricuspid valve regurgitation⁴: Predictors of mortality at 1 and 2 years and heart failure admission by Dr. Perryn Ng, Senior Resident, Department of Cardiology.
- Population based prevalence of Brugada syndrome⁵ in a young male population in Southeast Asia by Dr. Shen Xiayan, Resident, Department of Medicine, National University Hospital.

Poster presentations included:

- Bipolar radiofrequency ablation⁶ by Asst. Prof. Pipin Kojodjojo, Senior Consultant, Department of Cardiology.

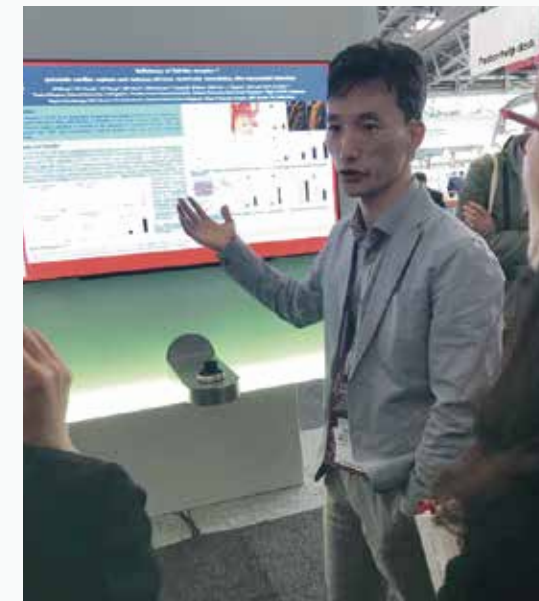
- Ischaemic events⁷ post cessation of dual anti-platelet therapy at 12 months post myocardial infarction represented by Dr. Eugene Tan, Senior Resident, Department of Cardiology.
- The association of diabetes mellitus and sleep-time blood pressure by Dr. Aye Thandar Aung, Research Fellow, Department of Cardiology and A/Prof. Ronald Lee, Senior Consultant, Department of Cardiology.
- Adverse cardiac outcomes in colorectal carcinoma patients by Dr. Christopher Koo, Senior Resident, Department of Cardiology.

Congratulations to Our Team

Our research team was also congratulated twice among global centres for contributing towards the much-anticipated ISCHEMIA study. The NUHCS site is led by principal investigator A/Prof. Poh Kian Keong, Senior Consultant, Department of Cardiology and site coordinator Ms. Vion Tan, Clinical Research Coordinator, Department of Cardiology.

We look forward to making NUHCS proud again at next year's session in Paris.

“NUHCS showed our strength and breadth in multiple oral and poster presentations.”



Dr. Wang Jiong-Wei presenting his poster on the relationship of toll-like receptor deficiency and ventricular remodelling to the judging panel.



By **Dr. Christopher Koo**
Senior Resident,
Department of Cardiology

Dr. Koo is a cardiologist in training who believes in providing the best care for patients. He is also involved in several research projects and is often on the lookout for new research ideas.

¹A tiny tube placed into a narrow artery to hold it open.

²An abnormal reversal of blood flow from the left to the right chamber of the heart.

³A type of protein that is a key component of the immune system.

⁴Occurs when one of the heart valves does not close tight enough.

⁵Abnormal electrical activity within the heart.

⁶A medical procedure that passes electrical currents to destroy dysfunctional tissues.

⁷Restriction in blood supply to tissues, causing a shortage of oxygen.

ADVANCING SCIENCE BEYOND BOUNDARIES

14th Asian Interventional Cardiovascular Therapeutics Congress

Catch the highlights of the 14th Asian Interventional Cardiovascular Therapeutics (AICT) Congress, the official scientific meeting of the Asia Pacific Society of Interventional Cardiology (APSIC), which was held in Hong Kong from 7 to 9 September 2018.

14 Years of Education and Advancing Science

Since its inauguration at National University Hospital 14 years ago in 2005, the AICT Congress has grown in terms of size and influence in the global arena. Prof. Tan Huay Cheem, the incumbent President of APSIC for the last five years, reiterated that the sole mission of AICT has always been to bring the best of scientific advances and education to its participants, regardless of geographic boundaries.

Graced by Guest of Honour, Mr. Matthew Cheung Kin-Chung, Chief Secretary of Administration of Hong Kong, the congress was jointly organised with the Hong Kong College of Cardiology and Hong Kong Stent Society. Highlights of the meeting included live demonstrations of complex coronary and structural interventions from Hong Kong Queen Elizabeth Hospital and Guangdong Provincial Hospitals. There were also didactic lectures, debates, as well as best abstract and case presentations.

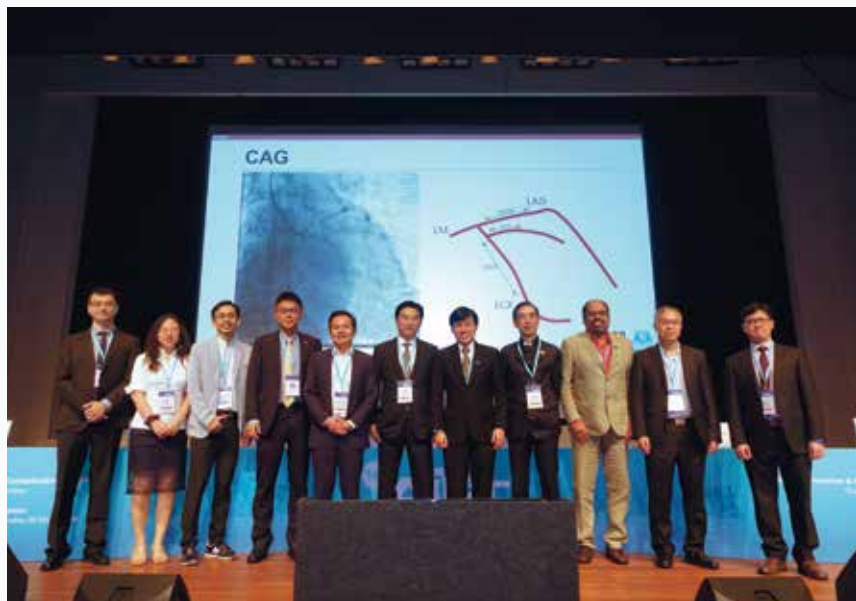
Participating at the Congress

A total of 425 participants from 30 countries attended the event including four invited faculties from National University Heart Centre, Singapore (NUHCS) – A/Prof. Adrian

Low, A/Prof. Ronald Lee, Asst. Prof. Edgar Tay and Asst. Prof. Joshua Loh, Senior Consultants, NUHCS.

The AICT Congress will be elevated to an even higher platform next year when it combines with the renowned EuroPCR organisation to form the AICT-AsiaPCR Meeting. The inaugural event will be held at the Suntec Singapore Convention Centre from 4 to 6 July 2019. NUHCS looks forward to hosting approximately 2,000 delegates at the meeting.

“The sole mission of AICT has always been to bring the best of scientific advances and education.”



PUMP UP YOUR HEART

A BPA Masterclass by NUHCS



Ever wondered how narrow blood vessels can be treated via a “balloon”? Find out more about balloon pulmonary angioplasty (BPA) and National University Heart Centre, Singapore’s (NUHCS) masterclass on this treatment method.



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

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

Why is There a Need for BPA?

Chronic thromboembolic pulmonary hypertension is a severe illness that occurs when blood clots (thrombus) obstruct the blood vessels of the lungs (pulmonary arteries). Over time, the clots restrict blood flow through the lungs, leading to an increase in blood pressure and possibly heart failure. Patients may face breathlessness and chest discomfort, swelling in the legs and abdomen, fatigue and light-headedness.

BPA is a recent technique that is increasingly accepted to treat patients. This involves inserting a small tube (catheter) into the blood vessels. A balloon at the end of the tube is then inflated to open up the vessels and help the blood flow better.

Guiding Doctors via a Hands-On Course

NUHCS started the BPA pro-

gramme in November 2016. Since then, several patients have been treated with good outcomes. As part of the programme, we organised the first BPA course in Asia from 4 to 5 September 2018 at NUHCS. It was a privilege to have Dr. Takeshi Ogo, Director, National Cerebral and Cardiovascular Centre, Osaka, Japan to teach the participants.

We were also thankful to the local faculty from National University Heart Centre, Singapore and National Heart Centre. The highlight of this course was the hands-on training as well as the live case demonstration of BPA. There was active participation and enthusiasm from colleagues around the region (Thailand, Vietnam, Myanmar, Indonesia, Malaysia) and locally. We look forward to organising this course again in 2019.

“Colleagues from around the region participated in hands-on training and live case demonstration of BPA.”

ROADMAP FOR THE FUTURE OF NUHCS

Annual Workplan Meeting 2018

Much like a roadmap, a workplan meeting provides strategy and direction for an organisation. Read about the key highlights of National University Heart Centre, Singapore's (NUHCS) annual workplan meeting held on 14 September 2018.

Reviewing Achievements in 2018

NUHCS reviewed our progress in pursuing our tripartite mission of clinical care, education and research in the last financial year. Prof. Tan Huay Cheem, Director, NUHCS, highlighted our various clinical milestones, achievements, public outreach programmes and education, as well as research output. We also touched on the new National University Health System (NUHS) vision statement – "A Healthy Community, Shaping Medicine, Transforming Care".

Moving forward, NUHCS will be embarking on five strategic thrusts:

1. **Improving** community health in the western region of Singapore
2. **Developing** a seamless integrated care system across NUHS
3. **Creating** a new model of care through technology and right siting
4. **Developing** cardiovascular capabilities
5. **Using** research to achieve clinical excellence

Clinical and Research Updates

A/Prof. Theodoros Kofidis, Head, Department of Cardiac, Thoracic and Vascular Surgery, updated on

the 'crown jewel' of surgical service, the Minimally Invasive Cardiac Surgery (MICS) programme. MICS has grown in capabilities and complexities through its multidisciplinary and integrated approach, combining the expertise of cardiac and vascular surgeons, cardiologists, radiologists and anaesthetists. It has since become a unique programme in Southeast Asia. A/Prof. Kofidis also showcased new techniques and tools available, and shared new surgical devices designed by our very own research team.

Prof. A. Mark Richards, Director, Cardiovascular Research Institute (CVRI), commented that half of the 132 publications from NUHCS last year were in journals with an impact factor of more than five. Prof. Richards also shared the progress of CVRI's many ongoing clinical trials and research projects and looks forward to mentoring more junior staff members in research to expand our research capacity.

“The NUHCS family gathered to share the centre's various milestones in clinical, education and research.”



A FORUM FOR COLLABORATION

Besides conducting programmes within our centre, National University Heart Centre, Singapore (NUHCS) also joins in collaborative educational platforms, including the 3rd Singapore-China Cardiovascular Forum 2018.



The 3rd Singapore-China Cardiovascular Forum 2018 (中新2018心血管介入论坛) took place in Guangzhou on 23 June 2018. The forum was jointly organised by National University of Singapore (NUS) and Sun Yat-sen Memorial Hospital (SYSU), led by Prof. Tan Huay Cheem, Director, NUHCS and Prof. Du Zhimin, Chief Physician, SYSU respectively.

The forum is one of the platforms for mutual learning and sharing of ideas and knowledge. Asst. Prof. Joshua Loh, Senior Consultant and Dr. Loh Poay Huan, Consultant, NUHCS were among the invited faculty members to deliver talks and chair academic sessions. Asst. Prof. Joshua Loh also won the Case Competition in the SYSU-NUS Interventional Cardiology session.

By **Dr. Loh Poay Huan**
Consultant,
Department of Cardiology

BUILDING HEALTHY HEARTS TOGETHER

National University Heart Centre, Singapore (NUHCS) engaged residents from Toa Payoh with fun-filled games and information at a community heart health carnival to celebrate World Heart Day 2018.

National University Heart Centre, Singapore (NUHCS) collaborated with the Singapore Heart Foundation (SHF) to bring heart health knowledge to residents from Toa Payoh through a community heart health carnival on 29 September 2018.

The residents were invited to join in a series of booth games – focused on sharing heart health information – at the NUHCS booth. Many of them walked away satisfied with greater knowledge and freebies!

NUHCS is also proud of our dance team from Ward 28, Coronary Care

Unit, who were invited to perform the opening act of the carnival, in the presence of Guest of Honour, Mr. Amrin Amin, Senior Parliamentary Secretary, Ministry of Home Affairs & Ministry of Health.



HEALTH TECHNOLOGY WITH A HUMAN TOUCH

Can technology replace the human touch in healthcare? This was the talking point of an episode of Channel NewsAsia's "Perspectives" featuring Prof. Tan Huay Cheem.

In the episode aired on 13 June 2018, Prof. Tan Huay Cheem, Director, National University Heart Centre, Singapore gave his viewpoints on the topic of 'Health Technology with a Human Touch'.

His key insights included:

- Technology can improve healthcare outcomes and delivery but it can never replace a human being as computers cannot understand feelings and provide the same human touch. The human connection remains immeasurable and irreplaceable in a doctor-patient relationship.
- Technology poses challenges such as data confidentiality and the ethics of relying on machines for diagnosis and treatment.
- NUHCS's telemonitoring and telemedicine initiatives have improved patients' clinical outcomes including reducing hospitalisation and costs, as well as improving risk factor control.
- Many mobile healthcare applications are not designed by healthcare professionals and have not been validated for accuracy and clinical applicability. However, the use of large data analytics and artificial intelligence has the potential to enhance healthcare delivery by supporting value-driven outcome initiatives.
- To be clinically relevant, newer technology must improve efficacy, reduce risks or save on costs for patients. Technology solutions will always remain an enabler rather than a substitute for patient-centric care.



CONTINUING THE PATH OF EDUCATION

As part of National University Heart Centre, Singapore's (NUHCS) mission to integrate clinical care, research and education, the centre is committed to providing regular Continuing Medical Education (CME) events for general practitioners (GPs) and family physicians.



The NUHCS heart team, including Asst. Prof. Jimmy Hon, Senior Consultant, Department of Cardiac, Thoracic and Vascular Surgery, the Operations and Administration Department and myself, organised a GP CME event focusing on aortic stenosis¹ in Singapore on 17 November 2018. The event aimed to provide the latest and relevant clinical updates for GPs.

This involved sharing the epidemiology² and possible increase in the number of patients over the next few years. We also presented updates on the diagnosis and treatment, as well as useful patient management adjuncts like the digital stethoscope and V scans. The family physicians also had an active discussion about the possible options available to patients.

In addition, we also introduced patient information tools and websites that enable optimal patient understanding. We are excited to continue this educational interaction with our other groups of family physicians in the coming year.

¹Narrowing of the aortic valve opening.
²A study of the distribution and causes of diseases in populations.

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

MEETING THE COMMUNITY

The journey to becoming a doctor is often filled with interesting anecdotes and life lessons. Prof. Tan Huay Cheem shared his memorable experiences with the community.

Prof. Tan Huay Cheem, Director, National University Heart Centre, Singapore (NUHCS), was invited by the National Library Board to deliver a talk in Mandarin entitled "My Journey as a Doctor" on 3 August 2018. This was part of a regular "Meet-the-Author" session organised by the library for local authors to have an opportunity to meet with readers. Prof. Tan had recently published his second book entitled "临床心得" or "My Clinical Experience".

Speaking to a full-house audience, Prof. Tan spoke about his childhood dream of becoming a doctor, his learning



Prof. Tan held a book signing session for attendees of his talk. The talk was met with overwhelming response with full-house attendance.

experiences, the reasons for his devotion to public healthcare as well as the joys and challenges of treating patients. He also responded to questions from the very enthusiastic audience and sold a hundred copies of his book, with proceeds going to NUHCS's 'The Heart Fund' in support of needy patients.

PREPARING MEDICAL STUDENTS FOR THE EXAMINATION

Beyond hard work and determination, practical hands-on sessions are also needed for medical students to better prepare for their examination. The Chia Boon Lock Cardiology Review Course was conducted for this very purpose.



There was a strong turnout of 282 students, who were put through a gruelling 75-minute session of examining and diagnosing 15 patients with a myriad of complex conditions, ranging from prosthetic valves to congenital heart disease.

Their feedback was overwhelmingly positive, with 100% recommending the course to future batches, and more than 90% expressing increased confidence in tackling the cardiovascular section of their final Bachelor of Medicine (MBBS) examination.

This course would not have been possible without the support of the department and most importantly, the patient volunteers who share our beliefs in the importance of medical education.

The Cardiology Review Course, now renamed the Chia Boon Lock Cardiology Review Course, was held from 24 to 25 November 2018. Now in its 9th edition, it serves as an examination preparation course for final year medical students.

By **Dr. Tan Li Wei**
Senior Resident,
Department of Cardiology

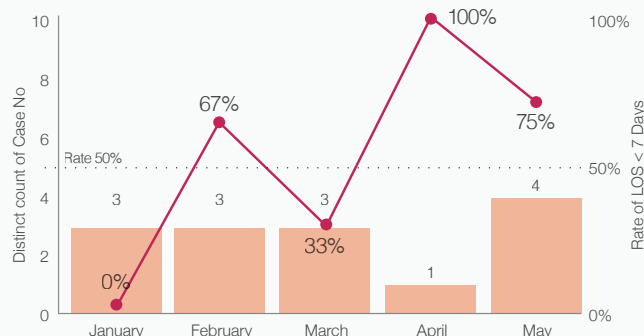
MAKING HEART TREATMENT MORE AFFORDABLE

Launched in 2015, National University Heart Centre, Singapore's (NUHCS) value driven outcome (VDO) project has helped to reduce the length of stay for heart patients, decreasing the healthcare costs for them.

Singapore's average life expectancy of 83 years is the third highest in the world. Thus, our healthcare system is expected to see more cases of degenerative heart valve disease. While neighbouring countries such as Japan and Korea have adopted transcatheter aortic valve implantation¹ (TAVI) as the standard of care for patients with high and intermediate risk for surgery, Singapore has not followed suit due to its high cost.

NUHCS developed the VDO project to make TAVI more accessible to the Singapore population by reducing its procedure cost. The initiative has identified that by reducing length of stay (LOS) after the procedure, the overall cost will reduce significantly.

Few initiatives have been implemented such as pre-admission checklist, standardised post-TAVI care and early rehabilitation discharge after the procedure. In the future, we will work towards achieving same-day admission and performing the procedure in the catheterisation lab for low-risk patients.



LOS has been reduced significantly over the course of five months from January to May 2018.

¹A procedure that replaces damaged aortic valve with a new tissue valve without the need for open-heart surgery.

By **Dr. Ivandito Kuntjoro**
Consultant,
Department of Cardiology

CONGRATULATIONS to our LONG SERVICE AWARD WINNERS for 2018

“The long service award is a testament to the commitment and service of our staff to NUHCS. They are the ones who form the backbone and provide the continuity upon which NUHCS will build further growth and development in the years ahead. I am honoured and privileged to be associated with this special group of individuals.

- Prof. Tan Huay Cheem, Director, NUHCS



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