

## NATIONAL HEART CENTRE SINGAPORE

Mr Chua Yoke Lim (right), 66, followed his heart, and is alive today for that reason. Five different medical practitioners told him that the chest discomfort he experienced while exercising was nothing to worry about, but Mr Chua decided to go for a thorough medical check-up at NHCS. Tests there revealed he had four blockages in his heart. His heart bypass surgery was scheduled two weeks later. Mr Chua is now back at work as a relief taxi driver, and goes for cardiac rehabilitation at NHCS twice a week. With him is A/Prof Koh Tian Hai, Medical Director, NHCS.





“As the standard bearer for cardiovascular care, the National Heart Centre Singapore (NHCS) is constantly seeking new treatment options that are evidence-based to give our patients the best care possible. In 2009, NHCS introduced a number of new therapies that allow us to provide timely and optimal patient care. This includes the hybrid operating theatre, which greatly enhances patient safety and helps patients save time and money with fewer operations, quicker recovery and shorter hospital stays.

NHCS also introduced the magnetic navigation system for electrophysiological procedures to treat patients with complex arrhythmias. With greater navigation precision, we are able to shorten the procedure time and enhance patient safety.

On the education front, NHCS joined hands with EuroPCR to launch the first AsiaPCR-SingLIVE. The collaboration helps to bring cutting-edge interventional cardiology to the doorstep of Asian doctors and paramedical staff, without the need for them to travel long distances to Europe.

NHCS officially opened the induced Pluripotent Stem Cell (iPS) Laboratory in March 2010 with a \$10 million grant from the National Research Foundation. The new facility will research autologous cell therapy for ageing hearts.

We will continue to pursue the highest standards of cardiovascular care that is accessible and affordable to all Singaporeans.”

**Associate Professor Koh Tian Hai**

Medical Director, National Heart Centre Singapore

### **PATIENT CARE**

The National Heart Centre Singapore (NHCS) now offers an alternative treatment to atrial fibrillation patients who are at high risk of stroke from long-term warfarin medication. Atrial fibrillation is a condition where the heart beats irregularly, which can cause blood clots. Warfarin which is a drug typically used to address this condition, is not suitable for all patients as it could cause bleeding, especially in the elderly. In October last year, NHCS performed Asia’s first percutaneous closure of the left atrial appendage using the Watchman device. The device is permanently implanted in these high-risk patients to prevent them from having a stroke caused by blood clots that start in the heart. The Watchman device blocks off the left atrial appendage where 90 per cent of blood clots in the heart form.

Mr Cheong Ching Chuan, 70, was the first to undergo this new procedure. A retiree, Mr Cheong has long-term atrial fibrillation and was at high risk of stroke. After he accidentally knocked his head twice, doctors discontinued his warfarin treatment as he developed haematoma in the brain. After the successful procedure, Mr Cheong has not experienced any bleeding.

Another example of a patient-centric advancement is the introduction of a hybrid operating theatre (OT) that allows hybrid cardiovascular procedures. With the hybrid OT, doctors can easily convert a coronary angioplasty to an open heart bypass surgery if needed. This helps to improve patient safety. The new setup also helps patients save time and money with fewer operations, quicker recovery and shorter hospital stays. It also offers a viable option for very high-risk patients where the non-availability of such a facility in the past meant they could not be treated.

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Hassan Bin Doll, 59, who suffered from severe aortic stenosis and chronic lung disease, was among the earliest to benefit from the new hybrid OT. His condition was so bad that it left him breathless even when sitting down. Because of his poor lung function, traditional valve replacement was ruled out as it was too risky. With the hybrid OT, Mr Hassan was able to undergo the percutaneous aortic valve replacement. After a short hospital stay of five days, he was discharged and able to resume his normal lifestyle.

NHCS also introduced a magnetic navigation system for electrophysiological procedures to treat patients with complex abnormal heart rhythms such as rapid or irregular heartbeats. Using computer-aided magnetic guidance, cardiologists can more precisely and accurately navigate the catheters and guidewires within the heart, reducing the procedure time from four to six hours down to two to three hours. In turn, the new system reduces radiation exposure, enhancing patient safety. In addition, the magnetically-enabled catheters are softer and more flexible, hence reducing the chance of distorting or damaging the heart wall to less than 1 per cent from 2 to 3 per cent. NHCS is the first in Southeast Asia and among the first few in Asia to introduce this new magnetic navigation system for catheter ablation.

Patients with end-stage heart failure now have a much improved option for left-ventricular support of the heart. A new device, known as HeartMate II, has a much smaller pump, making it fully implantable within patient's body regardless of patient's chest cavity size. This makes it suitable for adults with smaller builds, such as women or Asians. The new device can potentially be used for chronic long-term support of patients with irreversible heart failure.

Mechanical heart assist devices, such as HeartMate II which take over the function of a failing heart by pumping blood around the body, provide critically ill patients with a way to prolong and improve their quality of life while waiting for a heart transplant.

Young mother, Salina Mohamed So'ot, was given a new lease of life with HeartMate II. Before the surgery, the mother of a three-year-old girl, was bedridden

with an enlarged heart and severe irregular heartbeat. As her condition was unstable, her chance of getting a heart transplant was slim. Now, the portable device keeps her alive and allows her to look after her little girl while waiting for a heart transplant.

### EDUCATION

In January 2010, the renowned interventional meeting, EuroPCR (Paris Course on Revascularisation) partnered with NHCS to jointly launch the first AsiaPCR-SingLIVE, a cardiology conference combining EuroPCR and Singapore LIVE.

EuroPCR is one of the two biggest interventional meetings in the world while Singapore LIVE is an annual cardiology conference which has been organised by NHCS since 1989. Each year, over 1,000 doctors and healthcare professionals from around the globe attend the Singapore LIVE course to benefit from the sharing of current and new interventional techniques and devices by experts.

The collaboration with EuroPCR helps to bring cutting-edge interventional cardiology to Asian doctors and paramedical staff, eliminating the need to travel long distances to Europe.

### RESEARCH

NHCS officially opened the induced Pluripotent Stem Cell (iPS) Laboratory in March 2010. The laboratory was set up with a grant of up to \$10 million awarded by the National Research Foundation. The new research facility will facilitate research into autologous cell therapy for ageing hearts. With this laboratory in place, the Research and Development Unit of NHCS has moved into high-value, competitive research involving stem cell technology.

In December last year, NHCS collaborated with the Institute of Microelectronics to develop a faster and simpler test kit for heart attacks. This kit tests for specific cardiac biomarkers in blood, such as troponin-T and creatinine kinases. Elevated levels of troponin-T or creatinine kinases in the blood alert the doctors that a heart attack has taken place. As the kits are deployed on-site as opposed to a central laboratory, confirmation of the condition is rapid.

In May 2009, Mdm Salina Mohamed So'ot, 32, became the first in Singapore to get the new HeartMate II artificial heart. The HeartMate II has a smaller pump, making it ideal for patients with slight builds like petite Mdm Salina who stands just 1.56m tall. With her new artificial heart, Mdm Salina can carry on with her life while she waits for a heart transplant. She's able to savour the ordinary joys of a walk in the park or time playing with her toddler, without risking her health. With her is Dr C. Sivathanan, Co-Director, Heart and Lung Transplant Programme, part of the highly-skilled multidisciplinary team caring for Mdm Salina.



## NATIONAL HEART CENTRE SINGAPORE

This is crucial in heart attack scenarios as the faster and more accurate the diagnosis can be made, the quicker proper care and treatment can be instituted.

### OUR PEOPLE

Dr Su Jang Wen, a Consultant at the Department of Cardiothoracic Surgery spent two years at the Cleveland Clinic Heart Centre, one of the top heart centres in the US, under the Health Manpower Development Programme (HMDP). The training exposed him to a full range of complex cardiac operations especially minimally invasive valvular surgeries and redo cardiac surgeries, and thoracic operations with emphasis in minimally invasive thoracic surgery, airway surgery and esophagectomy.

The Cleveland Clinic also emphasises research, which allowed Dr Su to present five papers and publish three. His training also helped to strengthen the relationship between NHCS and the Cleveland Clinic, thus allowing for future exchanges and consultations. Upon his return in 2009, Dr Su aims to establish a minimally invasive surgical service in both cardiac and thoracic surgery to provide patients with less pain, shorter hospital stays and better cosmetic outcomes.

Between July 2008 and August 2009, Dr See Chai Keat, a Consultant at the Department of Cardiology went on an echocardiography fellowship at the Princess Alexandra Hospital in Brisbane, Queensland in Australia. There, he learnt more systematic ways of interpreting stress echocardiography results to improve the accuracy of the reporting. He also learned more about echocardiographic strain and strain-rate imaging, which is non-invasive method for assessing myocardial regional and global functions. During his fellowship, he completed close to 1,400 cases of stress echocardiography and published a number of research papers. Dr See plans to apply his knowledge by procuring a comprehensive clinical workstation to allow for a more efficient workflow, higher patient throughput and increased productivity at NHCS.

Dr David Sim, an Associate Consultant at the Department of Cardiology did his heart failure fellowship at The Alfred Heart Centre in Melbourne, Australia between May 2008 and September 2009.

During his fellowship he performed more than 500 cases of right heart studies and cardiac biopsies. Right heart studies are performed to monitor the haemodynamic as part of the pre-transplant workup. Cardiac biopsies are done after heart transplants to watch for signs of rejection. Since his return, Dr Sim has adopted a proactive approach to identify and treat heart failure patients at an early stage to reduce hospitalisation rate, prolong survival and give patients a better quality of life.

Dr Fong Meng Kum, Assistant Director of Nursing, was awarded the SingHealth-Alice Lee Institute of Advanced Nursing Scholarship to scholarship to pursue a PhD degree in clinical education at The University of Melbourne. For her PhD, Dr Fong investigated the effectiveness of clinical supervision as perceived by new nurses, their preceptors (buddies), and nurse managers/nurse clinicians in six acute-care hospitals in Singapore. She discovered that effectiveness was related to the frequency, type and duration of supervision sessions. Her findings provide a foundation for supporting new nurses in their transition from student to clinician.

Dr Fong also presented her research findings at the 2009 Shanghai International Nursing Conference. Her research paper gained an "Excellent Paper" award at the conference. The PhD has also given Dr Fong a personal sense of achievement and has helped her to better manage new nurses; taking care of both their welfare as well as their professional development.

### COMMUNITY ENGAGEMENT

In October last year, NHCS supported the President's Challenge 2009. Besides raising funds for the needy, the centre also garnered 569 smiles under the SingHealth's "Healthcare, I Care!" 10K Smiles Project. In addition, 15 staff led by NHCS Acting Chief Operating Officer Malcolm Koh spent time with some 70 elderly folks at the Yong-En Care Centre on 31 October 2009. The staff and residents sang karaoke, watched a movie, played ball games, and celebrated birthdays. Residents also received a goodie bag from NHCS.

KEY FIGURES	FY 09	FY 08	
<b>Size</b>			
Bed Complement (as at end Mar)	185	185	May Day Model Partnership Award 2009 (Individual) Chia Li Sen
Beds in Service	183	178	GCEO Excellence Awards 2009 – Professional (Medical) A/Prof Terrance Chua
<b>Workload per annum</b>			
Bed Occupancy Rate	72.7%	77.6%	National Safety and Security Watch Group (SSWG) Award
Inpatient Admissions	9,955	9,863	NHCS
Inpatient Discharges	9,928	9,891	National IQC Convention
Total Patient Days	48,660	50,273	8 Awards – 6 Gold, 2 Silver
Average Length of Stay (days)	4.9	5.1	
Total Procedures*	6,683	6,291	
Day Procedures*	34	26	
Inpatient Procedures*	6,649	6,265	
Specialist Outpatient Clinic Attendances	101,113	99,355	<b>Education</b> SingHealth-Lee Foundation Nursing Scholarship Gillian Wee
<b>Staffing (as at end Mar)</b>			
Total	836	754	SingHealth-Lee Foundation Nursing Awards Jasmine Lee
Doctors	85	84	
Nurses	375	319	Duke-NUS GMS Outstanding Innovator Award (Normal Body Module) Dr Kenny Sin
Allied Health Professionals	117	103	
Others	260	249	Duke-NUS GMS Outstanding Innovator Award (Body and Disease Module) A/Prof Hwang Nian Chih
Note: Staffing figures refer to Filled Posts, in terms of Full-Time Equivalent, and may not add up to total due to rounding.			
* Interventional and Surgical			
<b>AWARDS &amp; ACCOLADES</b>			
<b>Patient Care</b>			
Excellent Service Awards 2009 76 staff – 11 Star, 25 Gold, 40 Silver			
National Day Awards 2009 (Efficiency) Ong Bee Geok, Sim Ling Ling, Tay Ai Liu			
National Day Awards 2009 (Long Service) Veronica Kwok Hong Har, Wong Ah Nooi			
MOH Nurses' Merit Award 2009 Foong Jia Yi, Pauline Lim			
Healthcare Humanity Awards 2010 Dr C Sivathanan, Loo Yu Jen, Jasmine Lee			
<b>Research</b>			
National Medical Research Council Grant Dr Zhong Liang			
Duke-NUS (Goh Cardiovascular Research Award) Dr Reginald Liew, Dr Tan Swee Yaw			
<b>Human Resource/Talent Development</b>			
Work-Life Achiever Award 2009 Singapore Health Award 2009 (Gold)			