



Murmurs

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HIGHLIGHTS

- Mending the Heart, the Robotic Way
- My Fellowship Experience at the Cleveland Clinic Heart Centre
- NHCS Rolls Out Inpatient Physiotherapy Services



Palpitations, No More

35-year-old IT consultant Ho Wee Kit experienced recurrent palpitations in July 2009. It happened when he was carrying his 15-month baby, while walking to the bus stop, and simply just bending down.

Sensing something was amiss, he visited his GP who referred him to the National Heart Centre Singapore (NHCS) for a detailed check-up.

It turned out that he had a heart rhythm disorder known as AV nodal re-entrant tachycardia (AVNRT), a type of tachycardia (fast rhythm) of the heart.

After assessing his condition, his doctors, Dr Ching Chi Keong, Consultant, Department of Cardiology and Dr Teo Wee Siong, Senior Consultant, Department of Cardiology and Director, Electrophysiology and Pacing at NHCS recommended the treatment of catheter ablation using the new magnetic navigation system. Mr Ho became the first patient to undergo this novel treatment.

Safer, Faster Treatment with New Magnetic Navigation System

For this new procedure, the cardiologist sits in front of the computer and uses sophisticated software to map a pathway through the patient's blood vessels and heart to the diseased heart tissue. By remotely navigating the powerful magnets positioned near the patient, the cardiologist leads a soft catheter gently along this pathway by guiding its magnetic tip. When the catheter is safely and precisely positioned in the heart's diseased area, he then activates the catheter and effectively delivers the required treatment.

As the cardiologist can more precisely and accurately navigate the catheters and guidewires within the complex heart anatomy, it can reduce the procedure time by about 50 per cent from 4 – 6 hours to 2 – 3 hours. This in turn 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 – 3 per cent. The accuracy of the new magnetic navigation system also reduces the need for a repeat procedure, saving costs for the patients.

After a one-day stay at the hospital, Mr Ho was discharged. He no longer experiences any palpitations and has returned to work.



New magnetic navigation system at NHCS Cardiac Catheterisation Lab.

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First in South-East Asia

NHCS became the first in South-East Asia and among the first few in Asia to introduce this new magnetic navigation system for catheter ablation.

Citing a distinct advantage of the new system, Dr Teo said: "The robotic magnetic navigation system can allow us to safely map the heart to 1 – 2mm accuracy and precision without the use of fluoroscopy. This precision cannot be achieved by conventional ablation with our hands manually, no matter how skilled we are. This will definitely improve patient outcome and safety, especially in complex arrhythmia cases such as atrial fibrillation and ventricular tachycardia."

An additional benefit is that it reduces the neck or back pain experienced by cardiologists due to the long procedure time associated with the manual approach.

Each year, NHCS handles a high workload of about 300 cases of catheter ablation and implantable cardioverter-defibrillator (ICD) implantations, of which up to 60 per cent of the cases can be treated using this new system.

Besides complex arrhythmias, the magnetic navigation system can also be used to treat heart failure and coronary artery disease such as chronic total occlusions.



Front to back: Dr Teo Wee Siong, Director, Electrophysiology and Pacing, NHCS (in blue) and Dr Ching Chi Keong, Consultant, Department of Cardiology, NHCS (in green) in the control room, mapping a pathway to the patient's diseased heart tissue.

"With this new navigational system, we are able to derive a better understanding of the mechanism of complex abnormal heart rhythms and adopt an effective ablation strategy to achieve a cure in these patients"

**Dr Ching Chi Keong, Consultant,
Department of Cardiology, NHCS**

Mending the Heart, the Robotic Way

When a two-week fever landed him in a hospital in 2004, Mr Ng Hai Chiang found out that he had infective endocarditis and mitral valve regurgitation. Infectious endocarditis is an infection of the lining of the heart chambers and heart valves that is caused by bacteria, fungi, or other infectious substances. Mitral regurgitation, on the other hand, occurs when the heart's mitral valve does not close properly, causing blood to leak into the upper heart chamber.



Dr Tan Teing Ee, Senior Cardiothoracic Surgeon, NHCS assisting in a robotic-assisted cardiac surgery.

The 53-year-old construction site supervisor who had a history of heart murmurs since his twenties, was advised to go for surgical replacement of the valve as his condition might lead to heart failure if left untreated. Concerned with the risks associated with an open heart surgery, he decided to just monitor his condition with a six-monthly visit to his cardiologist.

However his condition went south in early 2009 when his left ventricle showed signs of enlargement. He began to experience chest pains when stressed at work. In June 2009, upon the recommendation of Dr Chua Yeow Leng, Senior Consultant, Department of Cardiothoracic Surgery at National Heart Centre Singapore (NHCS), he decided to go for the robotic-assisted mitral valve repair, a minimally invasive procedure.

Compared to the conventional surgery, the robotic cardiothoracic surgery performed with the aid of advanced robotic systems such as Da Vinci has two distinctive benefits.

Dr Chua elaborates, "Recovery time is a big plus. Conventionally, a person who has to engage in strenuous activities can only return to work after three months. Now, with robotics, the same person can be fit for work within a month, and there will be much less pain and scarring."

By keeping the breastbone intact, robotics also reduces the chance for post-surgical complications, such as infection of the chest wall.

Open heart surgery usually requires an opening of about 15cm. In robot-assisted surgery, only a 4cm cut into the right side of the patient's body and three 9mm cuts are needed.

Through the 4cm opening, a valve ring is inserted into the chest cavity for repair of the mitral valve. The other three holes allow the arms of the robot to enter the chest with a three-dimensional camera and surgical instruments.

"Many centres globally have given up their robotic programmes because of time and cost considerations. However, we believe this will become the new standard of care for heart patients in future"

**Dr Chua Yeow Leng, Senior Consultant,
Department of Cardiothoracic Surgery, NHCS**



Conventional heart surgery wound scar (left) versus robot-assisted heart surgery wound scar (right).

Mr Ng has since recovered well and returned to work. He can also continue his favourite sport, badminton.

Each year, NHCS performs about 80 mitral valve repairs with a mean mortality rate of only 1.92 per cent, well below the international Society of Thoracic Surgeons (STS) benchmark of 6 per cent for mitral valve surgeries.

In a Snapshot:

NHCS Robotic-Assisted Minimally Invasive Cardiothoracic Surgery (RAMICS)

- RAMICS can be used for bypass surgery, mitral valve repairs, closure of congenital heart defects and excision of chest tumours.
- 34 robot-assisted heart operations have been performed since December 2006.
- Robotic-assisted surgery requires a mature level of expertise since it involves a steep learning curve.
- NHCS is currently the only centre in Singapore that performs the complex robotic-assisted mitral valve repair.
- Funded by the SingHealth Endowment Fund, the minimally invasive procedure costs the same as the conventional open heart surgery.
- RAMICS team includes Dr Chua Yeow Leng, Dr C Sivathanan, Dr Lim Chong Hee, Dr Tan Teing Ee and Dr T Agasthian.

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Tel 6436 7800 Fax 6221 0944

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NHCS ELECTROPHYSIOLOGY AND PACING SERVICES

- Electrophysiological study
- Pacemaker / lead extraction
- Permanent pacemaker, biventricular pacing and implantable cardioverter-defibrillator (ICD) implantations
- Radiofrequency ablation of atrial fibrillation and other arrhythmias

For a comprehensive list of NHCS services and specialists, please visit www.nhc.com.sg

OUR CARDIAC ELECTROPHYSIOLOGISTS

Dr Teo Wee Siong, Senior Consultant

Dr Ching Chi Keong, Consultant

Dr Reginald Liew, Consultant

Dr Ho Kah Leng, Consultant



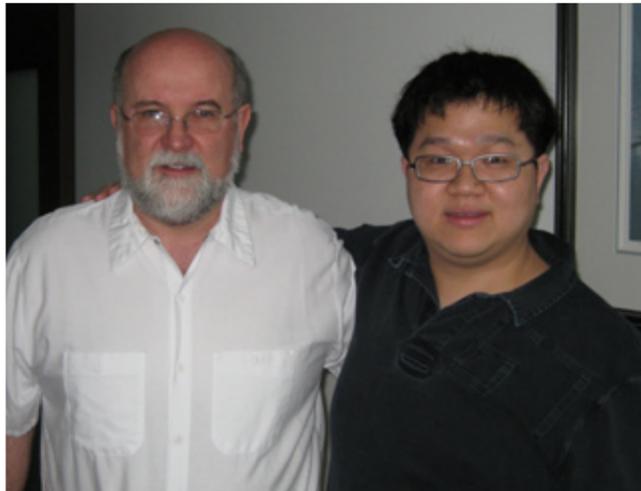
My Fellowship Experience at the Cleveland Clinic Heart Centre

Dr Su Jang Wen, Associate Consultant of Department of Cardiothoracic Surgery at National Heart Centre Singapore shares with the Murmurs team, his tough but heartwarming two-year Health Manpower Development Programme (HMDP) at the Cleveland Clinic Heart Centre.

Why Cleveland Clinic Heart Centre...

There were a few tipping factors. Cleveland Clinic Heart Centre is ranked Number 1 in the US for 15 years in a row. Half of our cardiothoracic surgeons are trained there hence we have established a pretty good network with them. To add icing on the cake, they have a similar system, making it easier for us to adapt.

The Training...



Dr Su Jang Wen with Dr Thomas Rice, a world authority in oesophageal disease.

I started off with intensive training in thoracic surgery where I was exposed to a full range of thoracic operations with emphasis on minimally invasive thoracic surgery, airway surgery and oesophagectomy. I have the great honour to have Dr Thomas Rice, a world authority in oesophageal disease, to be my mentor. I was also heavily involved in a good number of lung transplantations under the guidance of Dr David Mason and Dr Kenneth McCurry. During my cardiac surgery fellowship, I was very fortunate to have received in-depth training on complex cardiac operations especially minimally invasive valvular surgeries and redo cardiac surgeries from Dr Gosta Pettersson and Dr Nicholas Smedira.

Shortly after a year into my fellowship, we moved into the new heart centre at the Cleveland Clinic, worth US\$800 million. Spanning an astounding size of 1,000,000 square feet with 76 CTSICU beds, I was blown away by the thoughtful design and attention to details, which gave complete patient experience, a whole new dimension.

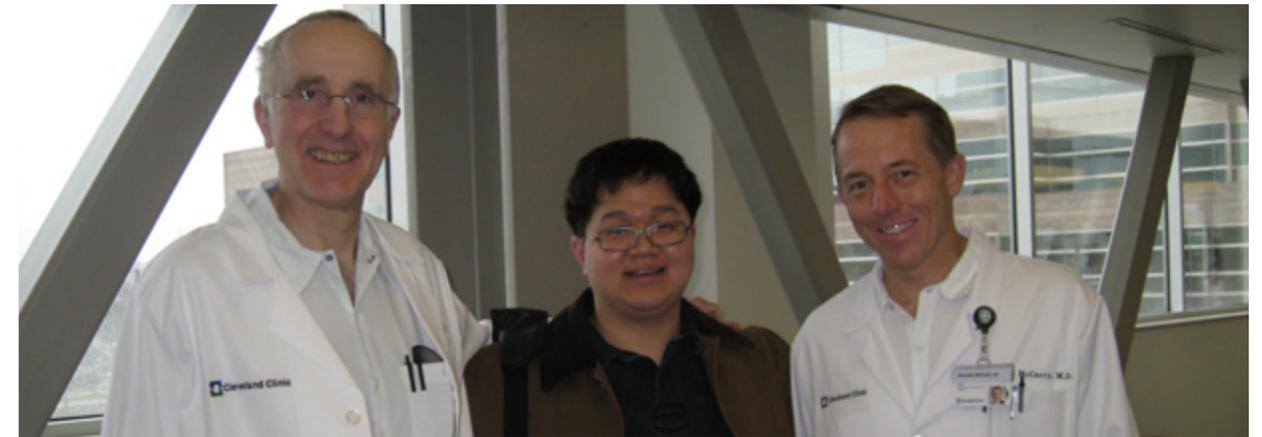
Being one of the largest cardiovascular and thoracic specialty groups in the world, the Cleveland Clinic Heart Centre has an extremely high workload. Everyday, I reached the hospital at around 5.30am and by 7am, I was fully prepared in the Operating Room. The day didn't wrap up till around 9 – 10pm. On weekends, life was a lot crazier. I would have to finish rounding all my 40 plus patients by 6am before my thoracic boss arrived. That meant I have to reach the ward and start seeing patients by 3:45am. The commonest question I received from patients was not "how am I doing?" but "doc, what time is it now???"

There were two fellows on-call every night, including myself and we had to take care of all the 76 ICU patients as well as the general ward patients and consultations. This meant that I practically had to run call all night. I was made the Chief Thoracic Fellow, second month into my training. Though extremely demanding, all my efforts were traded off by being involved in management of the most complex cases.

Benefits...

The fellowship stint has provided me with three distinct advantages. Firstly, without a doubt, the surgical exposure. Cleveland Clinic does over 4000 cases a year compared to 900 at NHCS. The variety of cases I did thoroughly hone my clinical skills.

Research is also a strong focus at the Cleveland Clinic. I had presented three papers at the Philadelphia Chest Meeting, two heart and lung transplant



Dr Su Jang Wen and mentors, Dr Gosta Pettersson (left) and Dr Kenneth McCurry.

papers at the Paris meeting and had three papers published. In the pipeline, I'm working on another four to five papers plus a book chapter. During my training, I had also clinched the Best Scientific Paper award and won myself US\$1000 prize money.

Last but not least, the strong network established between Cleveland Clinic and National Heart Centre Singapore. With our strong ties, it helps in patient care as we are able to seek their viewpoints on extremely challenging cases. We have also invited them as visiting experts to Singapore to share with us the latest techniques as we constantly seek to offer new innovative treatment modalities to provide our patients with the optimal care.

A Memorable Experience Would Be...

Soon after we found out about my wife's pregnancy, due to my busy schedule, she returned to Singapore to be "properly taken care of". On the midnight of 1st July, my heavily pregnant wife called me from Singapore, telling me that she was experiencing premature contractions and was admitted to the hospital. The baby was supposed to be due in only seven weeks' time. After a rough night, I went to work the next morning with a heavy heart. While working, I lost my cool and yelled at my boss Dr Rice, even louder than he usually does. Instead of ticking me off, Dr Rice calmly asked if something was amiss. After hearing my predicament, he whipped into action and went all out to make sure I could return to Singapore on the same day. Thanks to him and the department, I was on the plane back home the same evening and celebrating my birthday alone on the plane. Phew, all went well in the end, and 48 hours later, I'm the proud father of my baby boy.

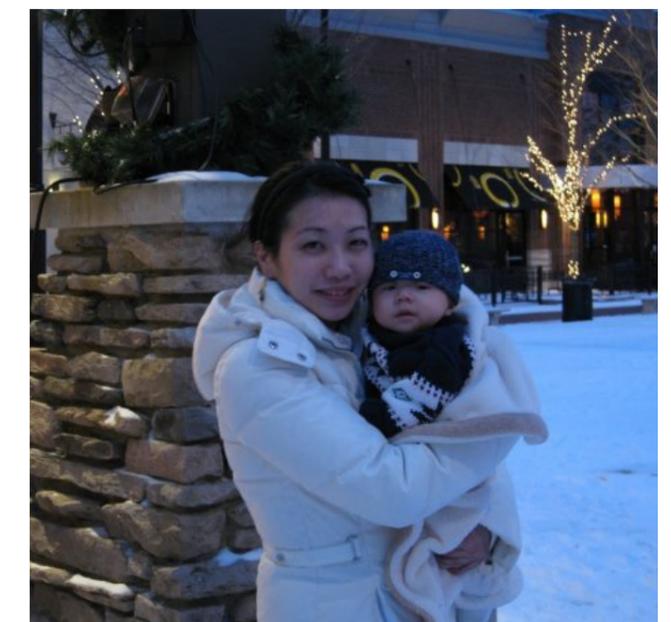
New Initiatives in the Pipeline...

I wish to be able to apply all the experience that I learned at Cleveland Clinic back in NHCS. Over time, I would like to establish a minimally invasive surgical

service in both cardiac and thoracic surgery. This is to provide patients with lesser pain, shorter hospital stays and better cosmetic outcomes.

During my thoracic surgery fellowship, I have done 89 cases of oesophagectomy. This is a surgery to remove the oesophagus, a part of the gastrointestinal tract ("food pipe"). It is normally done to remove cancerous tumours from the body. Currently, oesophageal cancer is often detected in the late stages, leaving the outcome less than optimal. If detected early, it can be treated with an oesophagectomy which can be life saving. I hope to offer the oesophagectomy service at NHCS to provide oesophageal cancer patients a better chance of survival and possibly cure them of their disease.

Dr Su Jang Wen is married to a lawyer and they have an adorable 1-year-old baby boy. When probed of his hobbies, the jovial and candid surgeon lamented that he has very little leisure time but every bit of it goes to bonding with his family.



Dr Su's family against a white Christmas backdrop in Cleveland.

NHCS Partners Europa Organisation to Launch AsiaPCR-Singapore LIVE 2010

Come 21 – 24 January 2010, the National Heart Centre Singapore (NHCS) and the Europa Organisation (organiser of EuroPCR) will jointly launch the inaugural AsiaPCR-Singapore LIVE in Singapore. EuroPCR is the largest cardiology meeting in Europe and one of the two biggest worldwide. Singapore LIVE, 18th year in the running, is Asia's premier cardiovascular interventional meeting.



With this synergistic partnership, attendance for the AsiaPCR-Singapore LIVE is likely to double that of the Singapore LIVE to 2000 - 3000. The sharing of the latest skills, devices and knowledge will allow the patients to have earlier access to new treatments and devices. This exchange of know-how will also elevate the standard of cardiovascular care locally and in the region. What's more, participants in the region can now learn from the top experts without having to travel to Europe or United States, cutting down expenses.

Marking the start of the collaboration, NHCS transmitted three 'live' challenging cases on percutaneous coronary intervention cases for multi-vessel disease from its

catheterisation lab to the EuroPCR (Paris Course on Revascularisation) main meeting in Barcelona, Spain on 22 May 2009.

"The live transmission allows sharing of knowledge and discussion on correct management of the disease, patient characteristics and teaching points in new trials and stents. It provides the opportunity for us to demonstrate Singapore's expertise in cardiac care to our European counterparts. This is the first time we are transmitting live to the main audience of EuroPCR," said Associate Professor Koh Tian Hai, Medical Director, National Heart Centre Singapore and Course Director, Singapore LIVE.

ACSM Certified Clinical Exercise Specialist Workshop and Certification 2009



Held on 14 – 17 August 2009, the American College of Sports Medicine (ACSM) Exercise Specialist Workshop and Certification, was renamed the ACSM Certified Clinical Exercise Specialist Workshop and Certification this year. The change aimed to elevate the course standing by raising the customers' perception of the certified professionals to commensurate with the work they are performing.

Organised by the NHCS's Physiotherapy Department since 2003, the internationally recognised workshop was again well received by 15 local and overseas participants. The session brought together partners in healthcare who share the passion and commitment to improving the wellness of individuals who are at high risk of having chronic diseases.

Awards and Appointments



A/Prof Terrance Chua, Deputy Medical Director, National Heart Centre Singapore was awarded the SingHealth GCEO Excellence Award 2009 – Professional Category (Medical). The award represents SingHealth's highest tribute to staff excellence, recognising exemplary professionals who excel in their work and who are role models.

A/Prof Terrance Chua, Deputy MD, NHCS (left) receiving the SingHealth GCEO Excellence Award 2009 – Professional Category (Medical) from Prof Tan Ser Kiat, Group CEO, SingHealth.

Appointments with the Duke-NUS Graduate Medical School



DR LIM SOO TEIK
Head and Senior Consultant, Department of Cardiology / Director, Interventional Cardiology appointed as Adjunct Associate Professor



DR CHEAH FOONG KOON
Head and Senior Consultant, Department of Cardiac Radiology appointed as Adjunct Associate Professor



DR TAN SWEE YAW
Consultant, Department of Cardiology appointed as Adjunct Assistant Professor

National Day Awards 2009 Efficiency Medal



ONG BEE GEOK
Nurse Clinician



TAY AI LIU
Nurse Clinician



SIM LING LING
Manager, Singapore Cardiac Data Bank

Appointment as Sub-Specialty Director



DR TAN JU LE
Senior Consultant, Department of Cardiology appointed as Director, Adult Congenital Heart Diseases



DR SOON JIA LIN
Associate Consultant, Department of Cardiothoracic Surgery



DR EWE SEE HOOI
Associate Consultant, Department of Cardiology

New Appointments

Long Service Medal



VERONICA KWOK
Senior Nurse Manager



WONG AH NOOI
Nurse Clinician

Warmest congratulations from all of us at NHCS!

NHCS Rolls Out Inpatient Physiotherapy Services

NHCS unveiled its Inpatient Physiotherapy Services (IPS) at Ward 56 on 8 September 2009. The new facility serves to enhance the treatment options for long-stayers such as patients with ventricular assist device implantation and the heart and lung transplant recipients. It allows them to exercise and train at a higher intensity to improve their exercise capacity, and enhance their confidence and functional independence. The IPS is particularly useful for the rehabilitation of patients with stroke, amputation and balance problems.

By allowing the long-stay patients to undergo cardiac rehabilitation in the inpatient setting, while waiting for the medical problems to resolve, or a place in the community care facilities, this early intervention is likely to translate to a smoother recovery without the need for a prolonged hospitalisation stay, and consequently saving cost and time for the patients and their family members.



L-R: A/Prof Koh Tian Hai, Medical Director, NHCS and Dr Kenny Sin, Head, Department of Cardiothoracic Surgery, NHCS officiating the opening of the Inpatient Physiotherapy Services.

New Look for the Wards



To enhance patient safety and comfort as well as improve workflow, NHCS recently gave its wards a mini 'facelift'.

Upcoming Events

CTO Interventions Live Course

Date 24 - 25 October 2009

Venue NHCS Lecture Theatre

AsiaPCR-SingaporeLIVE

Date 21 - 24 January 2010

For registration and enquiry, please check out NHCS website at www.nhc.com.sg

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