



National Heart
Centre Singapore
SingHealth



PATIENTS. AT THE HEART OF ALL WE DO.

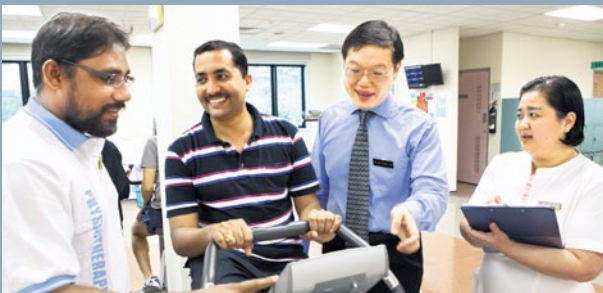
APR-JUN 2013 ISSUE 17 MICA (P) 055/07/2013

A quarterly publication of National Heart Centre Singapore

MURMURS®



SIMPLE GESTURES
THAT MAKE
YOUR DAY -
NHCS NURSE WINS
DISTINGUISHED
SERVICE AWARD



EXERCISE TO LIVE LONGER AND BETTER

NEW TREATMENT
OPTION FOR AORTIC
REGURGITATION

**EUROPCR 2013:
FIRST TAVI REGISTRY
IN ASIA**

**Learning from
Canadian centres –
a one year fellowship in
cardiac rehabilitation**

NHCS STAFF
CLINCH HEALTHCARE
HUMANITY AWARDS

SENIOR STAFF NURSE BAGS FIRST PS21 DISTINGUISHED STAR SERVICE AWARD FOR NHCS



Deputy Prime Minister Teo Chee Hean presenting the PS21 Distinguished Star Service Award to Senior Staff Nurse Ching Suiee Lan at the Excellence in Public Service Awards ceremony on 29 May 2013.

Senior Staff Nurse Ching Suiee Lan from Ward 56 at the National Heart Centre Singapore (NHCS), had always known she wanted to be a nurse. She recalls vividly, the care and concern the nurses showed her when she was warded for a severe bout of diarrhoea in her early adolescence. Their strong service ethics garnered her admiration and she yearned to be like them to serve others.

Suiee Lan answered the call to serve soon after, when she volunteered at a nursing home. Being privy to the vulnerability and sad plights of some of the patients, her heart went out to them. This strengthened her resolution to become a nurse. With this experience, she also realised that nursing was an honourable profession where one could serve others directly. Suiee Lan joined nursing in 1986 and she has not looked back since.

Some 27 years later, Suiee Lan's selfless dedication and passion for serving others has borne fruit. At the Excellence in Public Service Awards Ceremony 2013, she was conferred the PS21 Distinguished Star Service Award, a prestigious national award that recognises individuals in the public service who have displayed exemplary standards of service excellence. The group of nine winners was selected from 102 PS21 Star Service Award winners who have consistently demonstrated high standards of service excellence. This marked the first time NHCS has won the top-tier award.

Service that goes beyond the call of duty

When asked about her service philosophy, she quips, "I believe that excellent service involves putting the patients first and ensuring the provision of holistic care at the crux of the patient experience. Empathy, that is, seeing things according to the patient's perspective, is also essential. There is a lot of truth in the saying, treat others the way you want to be treated."

Clearly, Suiee Lan exemplifies this old adage. Not only does she ensure that the patients receive quality care, she goes the extra mile to deliver an excellent patient experience. Once, she overheard a patient's next-of-kin mention that, although a nearby hotel seemed close to the hospital, the cab fare there was not cheap due to the road structure. As the next-of-kin was unaware of how to reach the hotel by foot, Suiee Lan was swift to address the issue. On her own initiative, she offered to walk her back to the hotel after her shift, helping her to save transport costs.

Suiee Lan's commitment to serve others wholeheartedly has won her not only the PS21 Distinguished Star Service Award, but also a slew of other service accolades. These include the Singapore Health Quality Service Star Award and the NHCS Service Quality Platinum Award, both in 2011. Yet, Suiee Lan remains grounded. She explains: "Helping and serving others is a part of my responsibility; no matter how busy I am, I have to find time to help."

A heart to serve

The key to exceptional service lies also in the passion to serve. Suiee Lan counts family support and understanding colleagues as some of the motivating factors that keep her passion for serving others ignited. Patient satisfaction is also an important contributing factor. Suiee Lan can recount many a time when satisfied patients have gone to great lengths to thank her for her service. One patient's next-of-kin even baked a cake for her. It is these small acts of appreciation that warm her heart, encouraging her to continue in her efforts to serve patients and to make a lasting difference in the lives of those she comes into contact with.

Though nursing is a profession that comes with many challenges, such as difficult patients, these challenges leave Suiee Lan unfazed and her passion, unwavering.

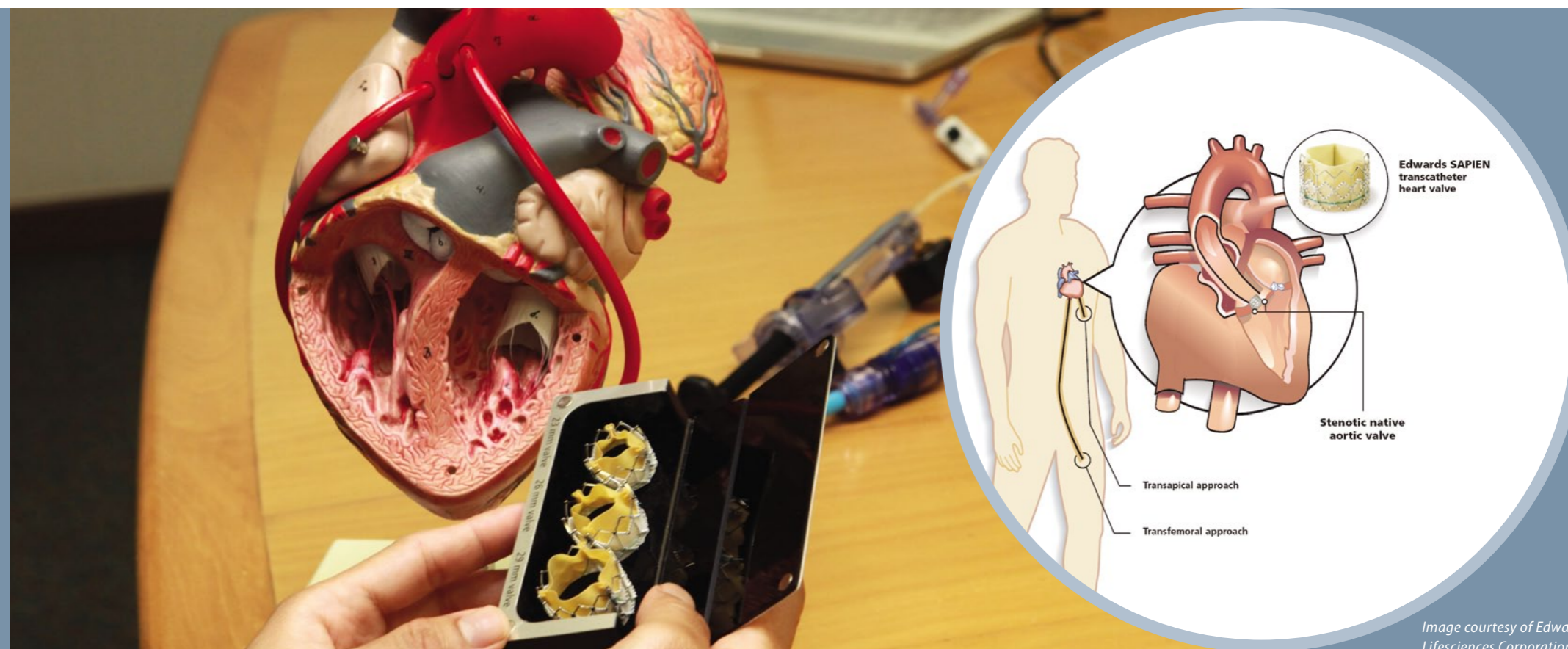


"We understand that patients do not mean to be difficult or angry. It's because they are sick and in pain. I remembered that when I gave birth, I wasn't a cooperative patient too as I was in pain. Take a simple case of serving meals, sometimes patients are in pain and it could be difficult for them to just simply reach for the meals at the end of the bed hence they don't want to eat. We make it easier for them by putting it close to them," she shares.

Affable and energetic, she continues to maintain a cheerful attitude and demeanour in her service to others. Even in the face of challenges, Suiee Lan chooses to think positively, never overlooking the good in a bad situation. "A wise patient once told me to never give up even in difficult circumstances, as these are what will spur us to continuously improve ourselves. After all, since we have only one life to live, we should do our best," she says. Indeed, Suiee Lan's steadfast spirit to serve others is a mark of a true service role model.

EUROPCR 2013: A CLOSER LOOK AT TAVI IN ASIA

The recent EuroPCR 2013 conference, one of the largest interventional cardiology meetings with more than 12,000 international participants in Paris, France, saw several updates on Transcatheter Aortic Valve Implantation (TAVI) – the minimally invasive method of replacing faulty or diseased valves without open-heart surgery.



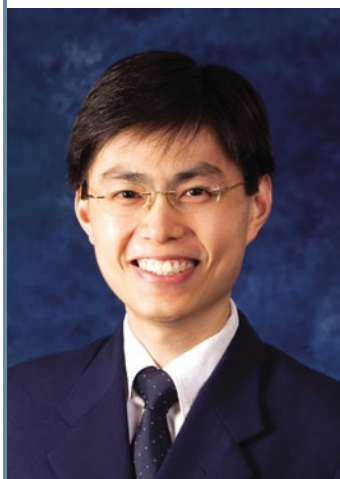
The Edwards SAPIEN CoreValve synthetic valves in three sizes.

Image courtesy of Edwards Lifesciences Corporation.

The ADVANCE registry, using the CoreValve prosthesis with rigorous end-point adjudication, enrolled 1,000 high-risk patients (mean Logistic EuroSCORE 19.4 per cent) across several European centres reported a 30-day all-cause mortality of 4.5 per cent and a 30-day all-stroke rate of 3 per cent. These results indicate that the results of TAVI are excellent and reproducible, as the PARTNER trial (using the Edwards SAPIEN valve) showed similar findings.

Safe for Asians

Data from the randomised PARTNER trial demonstrated that TAVI, in non-operable patients with symptomatic severe aortic stenosis, was superior to medical therapy (with or without balloon aortic valvuloplasty) with a highly significant reduction of all-cause mortality at 1 and 2 years, and non-inferior to surgical aortic valve replacement (AVR) in high-risk patients with similar all-cause mortality at 1 and 2 years.



By Dr Paul Chiam
Senior Consultant
Department of Cardiology
National Heart Centre Singapore

Dr Chiam's sub-specialty interest is in interventional cardiology and he is part of the team that performed the first TAVI via the transfemoral approach in Asia in 2009.

TAVI has thus become the treatment of choice for inoperable patients [European Society of Cardiology (ESC) guidelines Class I indication], and an alternative treatment to AVR for patients at high surgical-risk (ESC guidelines Class IIa indication).

The two major transcatheter valves are the SAPIEN XT valve (Edwards Lifesciences) and the CoreValve (Medtronic) with over 80,000 implants combined worldwide. Several other transcatheter valves have also achieved the European CE mark approval, although experience with these is still limited.

My team presented the first results of outcomes after TAVI in Asia. 14 centres across Asia participated in this registry and included countries such as Singapore, Malaysia, the Philippines, Thailand, Hong Kong S.A.R., Taiwan, China and South Korea, using both the Edwards SAPIEN and Medtronic CoreValve. 256 patients were studied and the 30-day mortality was found to be 3 per cent (CoreValve 2 per cent versus SAPIEN 5 per cent, $p=0.19$), and stroke was 1.6 per cent (CoreValve 0.7 per cent versus Sapien 2.7 per cent, $p=0.33$).

There was, on average, improvement in effort tolerance by one functional class (mean New York Heart Association (NYHA) class improved by 1 class). There were no clinical differences between the two valves except for a higher permanent pacemaker implantation rate with the CoreValve prosthesis. These preliminary results showed that TAVI is efficacious and safe in the diverse Asian population.

New generation of valve implants

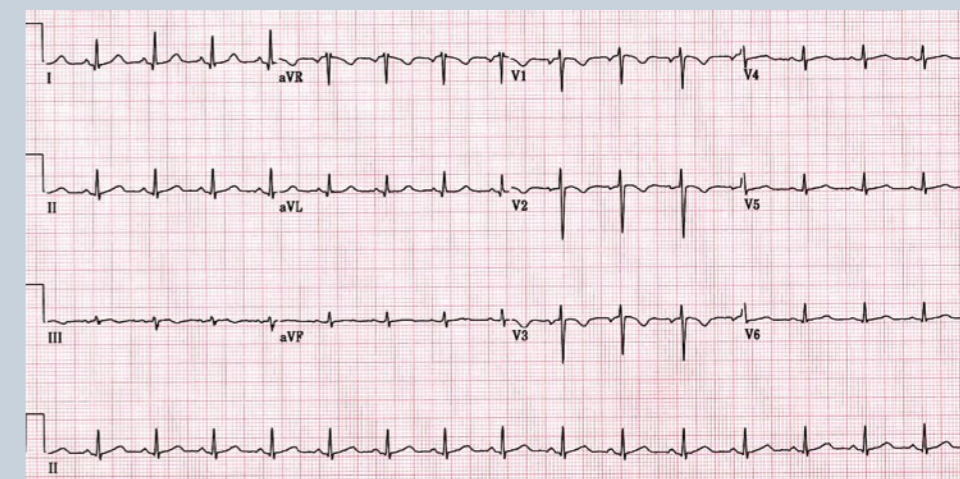
There were several sessions providing updates on the increasing experience with several other transcatheter valves that have achieved the European CE mark approval such as the Portico (St. Jude Medical), Direct Flow Medical valve, JenaValve (JenaValve Technology), ACURATE valve (Symetis), and other valves close to CE mark approval such as the Lotus valve (Boston Scientific) and the Engager valve (Medtronic). These valves are an improvement over the "first generation" Sapien and CoreValve as they can be repositioned and retrieved.

One other very promising presentation was by Dr Sanjeevan Pasupati from New Zealand's Waikato Hospital reporting the first-in-man use of a novel TAVI technology (the HELIO valve system from Edwards Lifesciences) for the problem of severe aortic regurgitation as opposed to severe aortic stenosis. This may offer many patients with severe aortic regurgitation who have no surgical option or are at high risk, an alternative therapy in future.

ANALYSE THIS

WHAT IS THE ECG
PATTERN FROM V1 TO V4
SHOWN HERE?

Refer to page 10 for
the answer.



NEW VALVE, NEW LIFE

Mr Tee Tengky works as an office manager and looks just like any other healthy individual. It would be hard to guess that just one year ago, he was fighting a severe heart infection that was affecting his heart valve and function.



Dr Paul Chiam (right) explaining the TAVI procedure to Mr Tee Tengky.

A tooth as the root of the problem

In June 2012, the 43-year-old developed endocarditis, an infection of the inner lining of the heart, due to bacteria from tooth decay. He sought treatment at two hospitals but the infection was not fully neutralised and the spread of the bacteria damaged one of his heart valves.

Mr Tee's aortic valve started leaking very badly six months after the onset of the heart infection. The aortic valve regulates blood flow from the heart into the aorta, our largest artery in the body. At its worst, Mr Tee's blood pressure plunged to a dangerous level of around 30mmHg – less than half a normal adult's diastolic figure.

Complicating matters were Mr Tee's co-existing medical conditions of liver cirrhosis, diabetes and thalassemia. Doctors he had seen thus far told him that he was a poor candidate for open-heart surgery to treat his ailing valve. He had only a 35 per cent success rate if he decided to go for the operation.

Alternative treatment for high-risk heart patients

Just as things were beginning to look grim, Mr Tee went with an alternative minimally invasive treatment that made him the first patient in Asia to receive the transcatheter aortic valve implantation (TAVI) for aortic regurgitation. This is a condition where the aortic valve leaks, leading to the backward flow of blood from the aorta into the left ventricle. There are only about 60 such procedures done worldwide to date.

The team led by Dr Paul Chiam, Senior Consultant, Department of Cardiology at National Heart Centre Singapore (NHCS), completed the valve implantation under two hours for Mr Tee on 23 March 2013. He recovered well and was discharged after a week's stay at the hospital.

“Before this, I was always breathless and could not walk for more than 15 minutes,” said Mr Tee, “Now I’m able to go back to work, take walks and even climb the stairs.”

Not just for leaky valves

Ms Meriny Leonalis is another patient who benefitted from the TAVI treatment – not for a leaky heart valve, but a hardened one.

Her year-end holiday in Japan was disrupted one evening after dinner, where she suffered a bout of fever, loss of appetite and strength, and vomiting. The 57-year-old was later referred from a clinic to the emergency medicine department at a hospital in Nagoya, where doctors diagnosed her with aortic stenosis, or hardening of the aortic valve.

She was subsequently hospitalised for a month in Japan, followed by another month at a hospital in Singapore.

Her condition was precarious as Ms Leonalis also has lupus, a systemic disease where the immune system attacks the body's cells and tissues. Immunosuppressants have to be taken regularly to keep the condition under control.

Due to her low platelet count and medical history, doctors advised Ms Leonalis against going for open-heart surgery in view of the high risk of complications. She then decided to undergo the TAVI treatment at NHCS in early March 2013 to have her diseased aortic valve replaced with a synthetic model. She is the first patient in Asia with systemic lupus to be treated via the TAVI procedure.

Ms Leonalis' husband, Mr Yongki E. Salim, said: “I am very glad there was an alternative treatment for my wife's aortic stenosis.”



Recovering well - Ms Meriny Leonalis with her husband at a follow-up appointment at National Heart Centre Singapore.



National Heart
Centre Singapore
SingHealth

CONTACT US

GP FAST-TRACK APPOINTMENT Tel 6436 7848

NHCS CALL CENTRE Tel 6436 7840 Fax 6222 9258
Email central.appt@nhcs.com.sg

GENERAL ENQUIRIES Tel 6436 7800 Fax 6227 3562
Email nhcs@nhcs.com.sg

NHCS INTERVENTIONAL CARDIOLOGY PROCEDURES

- Coronary angiography/ cardiac catheterisation
- Percutaneous coronary intervention (PCI) – angioplasty, stent implantation and rotablator treatment
- Percutaneous device closure of atrial septal defect (ASD)/ patent foramen ovale (PFO)
- Percutaneous closure of the left atrial appendage using the Watchman device
- Percutaneous balloon valvuloplasty of mitral, aortic and pulmonary valves
- Transcatheter aortic valve implantation
- Intraaortic balloon counterpulsation
- Intravascular ultrasound imaging (IVUS)
- Pressure wire measurement
- Percutaneous cardiopulmonary bypass
- MitraClip procedure for severe mitral regurgitation
- Renal denervation
- Peripheral vascular intervention

OUR SPECIALISTS (INTERVENTIONAL CARDIOLOGY)

Assoc Prof Koh Tian Hai	Medical Director and Senior Consultant
Assoc Prof Lim Soo Teik	Head and Senior Consultant, Director, Cardiac Catheterisation Laboratory
Dr Aaron Wong	Senior Consultant, Director, Interventional Cardiology
Assoc Prof Philip Wong	Senior Consultant
Dr Paul Chiam	Senior Consultant
Dr Jack Tan	Senior Consultant
Asst Prof Chin Chee Tang	Senior Consultant
Dr Yeo Khung Keong	Consultant
Dr Ho Kay Woon	Consultant
Dr Ang Chin Yong	Associate Consultant

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

EXERCISE AND THE HEART

Today, more than ever, urban society is facing an epidemic caused by our sedentary lifestyle. The automation of many manual tasks, the increasingly desk-bound nature of many jobs and the lack of recreational time have contributed to an ever decreasing calorific expenditure by working individuals.

Executives, working professionals and even doctors cite the lack of time to partake in exercise. But how much more are they losing if they opt to avoid exercise? Does exercise really reduce the risk of heart attacks and increase longevity or is it a convenient fall guy that doctors use when health issues arise despite following a medication regime?

The majority of Singaporeans in general do not exercise regularly. In 1998, only 16.8 per cent of the population exercised regularly with a staggering 50 per cent of the population not exercising at all. Health awareness campaigns have changed attitudes recently, with 25 per cent of the adult population exercising regularly as of 2004.

Perks of exercising

Exercise is an essential component in maintaining a healthy heart. This holds true for healthy individuals and patients with existing coronary artery disease. Regular physical activity, especially those that involve large muscle groups, such as swimming, walking, pilates and yoga, produce cardiovascular adaptations that increase exercise capacity, endurance and strength.

Multiple clinical trials have shown that exercise confers improved longevity. In the 1977 Harvard Alumni study published in *Circulation* in 2000, those participants who were most physically active (>12,000 kilojoules of energy expenditure per week) had a 20 per cent survival benefit compared to those who were sedentary (<2100 kilojoules used per week). Indeed those with good exercise tolerance have been also shown to have a much lower risk of events. Blair et al (2007 *Circulation*) found that those who could do more than 18 minutes on a treadmill had a fourfold reduction in cardiovascular mortality compared to those who could do only 9 minutes on a similar protocol.

In 2006, I had the opportunity to work with Professors Myers and Froelicher in Stanford and our data mirrored earlier research with highly active patients having 35 per cent less cardiac events. The amount of energy expenditure the body consumes while at rest is 1 Metabolic Equivalent (MET). In general, most people can perform up to 4 to 6 METs of activity. For every 1 MET increase in exercise capacity, there is a 16 per cent relative reduction in the risk of a cardiac event. In short, the better an individual's exercise tolerance, the lower the risk of a cardiac event and mortality.

Moderate intensity aerobic exercise brings the most benefit to cardiovascular health. Benefits include:

- Better preserved heart function, according to studies done in the 1990s. Indeed, participating in a cardiac rehabilitation programme after bypass surgery or angioplasty has consistently been shown to reduce mortality by 25 per cent.
- Improved vascular smooth muscle relaxation, thereby relaxing the peripheral vessels and reducing blood pressure. An audit of patients at National Heart Centre Singapore in 2004 revealed that patients who underwent cardiac rehabilitation exercises had an average drop of 19mmHg in systolic blood pressure and 11 mmHg in diastolic blood pressure with no change in their medication.
- Increased vagal tone. Regular exercise improves the parasympathetic autonomic activity that controls heart rate. Physically fit patients generally have a lower heart rate. Recent studies have shown that this higher vagal tone may help suppress cardiac arrhythmias.
- Improvement to heart failure symptoms, effort tolerance, flexibility and balance.

So how much exercise do we need?

Current guidelines from the American College of Cardiology and American College of Sports Medicine advocate a minimum of 30 to 60 minutes of moderate intensity exercise five times per week. This would include brisk-walking, stair-climbing, jogging and gardening. One should ideally try to exercise daily. A 2,000kCal weekly expenditure of energy will confer a one to two-year increase in life expectancy.

There are, nonetheless, precautions to note when it comes to exercising.

Always warm up and warm down before and after exercises. This will minimise the risk of injury. Warming down is particularly important after an intense bout of aerobic exercise, as the sudden cessation of activity may trigger an increased venous return, making a patient susceptible to cardiac arrhythmias.

Do not exercise when you are having a fever or feeling unwell. Stop exercising if you experience pain, sudden palpitations, or difficulty in breathing.



Asst Prof Tan Swee Yaw
Senior Consultant
Department of Cardiology
Director
Cardiovascular Rehabilitation
and Preventive Cardiology
National Heart Centre Singapore

Asst Prof Tan's sub-specialty interests are in cardiac rehabilitation, preventive cardiology and cardiac imaging. He is also an Adjunct Assistant Professor at the Duke-NUS Graduate Medical School and a Clinical Tutor at the National University of Singapore, Yong Loo Lin School of Medicine.



Dr Tan Swee Yaw (2nd from right) works closely with nurses and physiotherapists to help heart patients regain their strength.

Image courtesy of Singapore Health.

RESEARCH HIGHLIGHT



JAMA. 2013;309(9):896-908. doi:10.1001/jama.2013.1363.

Association of Fibrosis With Mortality and Sudden Cardiac Death in Patients With Nonischemic Dilated Cardiomyopathy

Ankur Gulati, MD; Andrew Jabbour, MD, PhD; Tefvik F. Ismail, MD; Kaushik Guha, MD; Jahanzaib Khwaja, BSc; Sadaf Raza, MD; Kishen Morarji, MD; Tristan D. H. Brown, BSc; Nizar A. Ismail, BSc; Marc R. Dweck, MD; Elisa Di Pietro, MD; Michael Roughton, MSc; Ricardo Wage, DCR; Yousef Daryani, MD; Rory O'Hanlon, MD; Mary N. Sheppard, MD; Francisco Alpendurada, MD; Alexander R. Lyon, MD, PhD; Stuart A. Cook, MD; Martin R. Cowie, MD; Ravi G. Assomull, MD; Dudley J. Pennell, MD; Sanjay K. Prasad, MD

Author Affiliations: Royal Brompton Hospital, London, England; National Heart and Lung Institute, Imperial College, London, England (Drs Ismail, Guha, Sheppard, Lyon, Cook, Cowie, Pennell, and Prasad); Centre for Cardiovascular Science, University of Edinburgh, Edinburgh, Scotland (Dr Dweck); and National Heart Centre Singapore, Singapore (Dr Cook).

ABSTRACT

IMPORTANCE: Risk stratification of patients with nonischemic dilated cardiomyopathy is primarily based on left ventricular ejection fraction (LVEF). Superior prognostic factors may improve patient selection for implantable cardioverter-defibrillators (ICDs) and other management decisions.

OBJECTIVE: To determine whether myocardial fibrosis (detected by late gadolinium enhancement cardiovascular magnetic resonance [LGE-CMR] imaging) is an independent and incremental predictor of mortality and sudden cardiac death (SCD) in dilated cardiomyopathy.

DESIGN, SETTING, AND PATIENTS: Prospective, longitudinal study of 472 patients with dilated cardiomyopathy referred to a UK center for CMR imaging between November 2000 and December 2008 after presence and extent of midwall replacement fibrosis were determined. Patients were followed up through December 2011.

MAIN OUTCOME MEASURES: Primary end point was all-cause mortality. Secondary end points included cardiovascular mortality or cardiac transplantation; an arrhythmic composite of SCD or aborted SCD (appropriate ICD shock, nonfatal ventricular fibrillation, or sustained ventricular tachycardia); and a composite of HF death, HF hospitalization, or cardiac transplantation.

RESULTS: Among the 142 patients with midwall fibrosis, there were 38 deaths (26.8%) vs 35 deaths (10.6%) among the 330 patients without fibrosis (hazard ratio [HR], 2.96 [95% CI, 1.87-4.69]; absolute risk difference, 16.2% [95% CI, 8.2%-24.2%]; $P < .001$) during a median follow-up of 5.3 years (2557 patient-years of follow-up). The arrhythmic composite was reached by 42 patients with fibrosis (29.6%) and 23 patients without fibrosis (7.0%) (HR, 5.24 [95% CI, 3.15-8.72]; absolute risk difference, 22.6% [95% CI, 14.6%-30.6%]; $P < .001$). After adjustment for LVEF and other conventional prognostic factors, both the presence of fibrosis (HR, 2.43 [95% CI, 1.50-3.92]; $P < .001$) and the extent (HR, 1.11 [95% CI, 1.06-1.16]; $P < .001$) were independently and incrementally associated with all-cause mortality. Fibrosis was also independently associated with cardiovascular mortality or cardiac transplantation (by fibrosis presence: HR, 3.22 [95% CI, 1.95-5.31], $P < .001$; and by fibrosis extent: HR, 1.15 [95% CI, 1.10-1.20], $P < .001$), SCD or aborted SCD (by fibrosis presence: HR, 4.61 [95% CI, 2.75-7.74], $P < .001$; and by fibrosis extent: HR, 1.10 [95% CI, 1.05-1.16], $P < .001$), and the HF composite (by fibrosis presence: HR, 1.62 [95% CI, 1.00-2.61], $P = .049$; and by fibrosis extent: HR, 1.08 [95% CI, 1.04-1.13], $P < .001$). Addition of fibrosis to LVEF significantly improved risk reclassification for all-cause mortality and the SCD composite (net reclassification improvement: 0.26 [95% CI, 0.11-0.41]; $P = .001$ and 0.29 [95% CI, 0.11-0.48]; $P = .002$, respectively).

CONCLUSIONS AND RELEVANCE: Assessment of midwall fibrosis with LGE-CMR imaging provided independent prognostic information beyond LVEF in patients with nonischemic dilated cardiomyopathy. The role of LGE-CMR in the risk stratification of dilated cardiomyopathy requires further investigation.

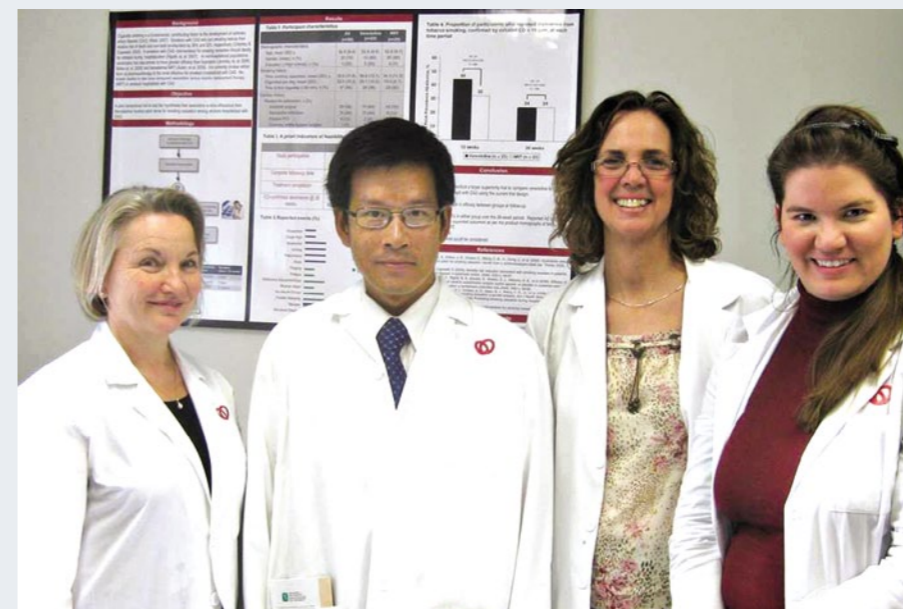
For the full list of NHCS publications, please refer to www.nhcs.com.sg.

ANALYSE THAT

Continued from page 5.

The ECG shows a persistent juvenile pattern. The inversion of the T wave from V1 to V4 is common in infancy and childhood. This pattern may persist into early adulthood and is then known as the persistent juvenile pattern. This occurs in 0.5 to 4 per cent of various population groups but there is no demonstrable heart disease and the pattern may disappear with deep inhalation.

REFLECTIONS IN CARDIAC REHABILITATION



Dr Chee Fang Yee (2nd from left) with Ms Debbie Aitken (far left), Program Manager of the Smoking Cessation Program, and two associates at the University of Ottawa Heart Institute.

Dr Chee Fang Yee, Consultant, Department of Cardiology, National Heart Centre Singapore, shares on his fellowship experience at four different centres in Canada.

What were some of the cardiac rehabilitation programmes you observed during your stint?

Cardiac rehabilitation programmes are very different in the various centres, but they carry the same important message – a healthy lifestyle in terms of diet, exercise and risk factor modification work to prevent recurrent cardiac events. Being exposed to the different programmes enabled me to compare the various systems implemented to optimise outcomes for patients.

Dr Aggawal from the Talisman Centre, which is managed by the largest private cardiology practice in Canada, started the early access programme which recruited patients who suffered a heart attack two weeks after their discharge from hospital. This translated to more patients enrolling and completing the cardiac rehabilitation programme.

The University of Ottawa Heart Institute, Canada's largest cardiovascular health centre that sees more than 80,000 patients each year, is known for their smoking cessation programme. They have long-term quit rates of about 40 per cent, which is highly commendable. They have also started nicotine replacement therapy early in patients to reduce withdrawal symptoms, and incorporated an automated telephone programme to follow up with smokers.

Like the Ottawa centre, the Glenrose Rehabilitation Hospital has a home cardiac rehabilitation programme which enables patients to do cardiac rehabilitation at their convenience. This benefitted patients who were otherwise reluctant to participate in the traditional outpatient cardiac rehabilitation programme. The Glenrose Rehabilitation Hospital also happens to be the academic centre partner with the University of Alberta and a strong driver of research and education in the rehabilitation fields.

What are your plans?

At National Heart Centre Singapore, we have been working on increasing and bringing forward the uptake of cardiac rehabilitation from among the inpatients. I plan to enhance the patient education materials as they are essential in facilitating the rehabilitation process for patients. We will also explore the possibility of leveraging on technology to monitor our cardiac rehabilitation patients.

Any memorable experiences during your one-year stay in Canada?

Winter in Edmonton is very cold with temperatures going down to -30°C . I was not well prepared for the winter environment. My supervisor's wife, Marie Dafoe, brought me to the Co-op shop to purchase a down feather jacket and other winter clothing. This has helped me survive through the harsh winter environment. I thank her for her kindness.

HEALTHCARE HUMANITY AWARDS

Three staff members at National Heart Centre Singapore (NHCS) clinched the Healthcare Humanity Awards this year. Assoc Prof Lim Soo Teik, Head, Department of Cardiology, Ms Ho Ai Lian, Director, Nursing, and Ms Lee Kwee Huey, Nurse Clinician, Ward 47B, were among 54 healthcare professionals who received the award on 30 April 2013 at the ceremony graced by President Tony Tan. The award recognises healthcare workers who are inspirational role models who carry the values of courage, extraordinary dedication, and compassion.



The winners of the Healthcare Humanity Award 2013: Assoc Prof Lim Soo Teik (2nd from right), Ms Ho Ai Lian (4th from right), and Ms Lee Kwee Huey (5th from right) with President Tony Tan (5th from left) and NHCS Medical Director, Assoc Prof Koh Tian Hai (far right).

PROMOTIONS



ASST PROF CHIN CHEE TANG
Senior Consultant
Department of Cardiology
Sub-specialty interest:
Interventional Cardiology



DR HO KAH LENG
Senior Consultant
Department of Cardiology
Sub-specialty interest:
Electrophysiology and Pacing



DR TAN BOON YEW
Senior Consultant
Department of Cardiology
Sub-specialty interest:
Electrophysiology and Pacing



DR FAM JIANG MING
Associate Consultant
Department of Cardiology



DR NADIRA HAMID
Associate Consultant
Department of Cardiology

APPOINTMENT HOLDERS FOR THE CARDIOVASCULAR ACADEMIC CLINICAL PROGRAM

Assoc Prof Koh Tian Hai	Academic Chair, Cardiovascular Academic Clinical Program Academic Vice Chair, Clinical Services
Assoc Prof Terrance Chua	Academic Vice Chair, Research
Asst Prof Kenny Sin	Deputy Academic Vice Chair, Clinical Services
Assoc Prof Lim Soo Teik	Deputy Academic Vice Chair, Training and Education
Asst Prof Kurugulasigamoney Gunasegaran	Academic Vice Chair, Training and Education
Dr Tang Hak Chiaw	Director, Allied Health and Nursing Program
Dr Jack Tan	Director, Cardiology Residency Program
Dr Yeo Khung Keong	Director, Cardiology Senior Residency Program
Dr Soon Jia Lin	Director, Cardiothoracic Surgery Residency Training Program
Dr Ho Kay Woon	Director, Medical Student Training
Dr Victor Chao	Co-Director, Residency Program Surgical – Cardiac
Dr Tan Boon Yew	Deputy Director, Cardiology Senior Residency Training Program
Assoc Prof Tan Ru San	Director, Clinical Trials Director, Cardiac Mechanics, Engineering and Physiology
Assoc Prof Philip Wong	Director, Research and Development Unit

ADVISOR	Assoc Prof Koh Tian Hai
MEDICAL EDITOR	Dr Ewe See Hooi
EDITORIAL TEAM	Yvonne Then Jessica Koh Lim Peizhen

We value your feedback. For comments or queries on Murmurs, please email us at nhcs@nhcs.com.sg.

All rights reserved. No part of this publication is to be quoted or reproduced without the permission of National Heart Centre Singapore (Registration no. 199801148C). The information in this publication is meant for educational purposes and should not be used as a substitute for medical diagnosis or treatment. Please consult your doctor before starting any treatment or if you have any questions related to your health or medical condition.

A RAZORSHARK Design