



# Murmurs

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## HIGHLIGHTS

- New Heart, New Life
- Sudden Cardiac Death – Is it Really Sudden?



## Race to Save a Life



Angelique (third from right) with her medical team at a special farewell party, celebrating her new lease of life.

Beep, beep, it was 1.15am when Dr Stanley Chia, Consultant, Department of Cardiology, National Heart Centre Singapore (NHCS), got the SMS alert – a young Dutch mum had a massive heart attack. Dr Chia rushed to the hospital. Together with his percutaneous coronary intervention team, they attended to 37-year-old Angelique Schoeber.

### Beating the Clock

Dr Chia performed an angiogram to detect the location and severity of blockages in the coronary arteries. The test showed alarming results. Two major branches of the left main artery were severely blocked by a tear in the wall of the left coronary artery, known as spontaneous coronary dissection. This is a rare and generally fatal condition. About 50% of patients with this condition will die if not treated in time. Dr Chia knew his team had to race against time to stabilise Angelique's condition. He inserted an intra-aortic balloon pump to maintain her blood pressure and performed an emergency coronary angioplasty to unblock her arteries and improve blood flow.

While the angioplasty was successful, the massive heart attack had badly damaged Angelique's heart muscle. Her heart was unable to pump enough blood to meet the body's needs. With her blood pressure remaining dangerously low, the surgical emergency team was activated. Dr Tan Teing Ee, Senior Consultant, Department of Cardiothoracic Surgery, NHCS responded to the call. After assessing Angelique's condition, he immediately put her on a short-term resuscitative support system – the extracorporeal membrane oxygenation (ECMO).

Dr Tan explained, "Our goal then was to save her life. By supporting her heart and lung functions on the ECMO, we can stabilise her condition and preserve the function of her major organs, especially her brain. Only when her condition is stable, can she be assessed for more permanent lifesaving measures like the heart assist device followed by a heart transplant."

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Angelique and Mark with their baby, Kyra sharing a light-hearted moment with the doctors, Dr C Sivathasan and Dr Stanley Chia.

The medical team worked tirelessly through the night. By 6am the next morning, they were able to transfer Angelique to the cardiothoracic surgery intensive care unit for observation.

### Prolonging Life

For nine days, the doctors monitored Angelique closely for signs of heart recovery. Unfortunately, while her other organs were functioning well, her heart did not recover. She needed a heart transplant. The team then decided to put in a longer-term support device – a left ventricular assist device known as HeartMate II as a bridge to transplant. The team carried out the operation on 19 May 2010. With the device taking over the function of Angelique's failing heart, it helps to buy time and improve her quality of life while waiting for a heart transplant.

Dr C Sivathasan, Co-Director, Heart and Lung Transplant Programme, NHCS who was also involved in Angelique's care added, "NHCS has a robust mechanical device programme since 2001. Last year, we did our first HeartMate II case. This device has a smaller pump and is made to be more durable. Hence it is more suitable for adults with smaller build, such as Asians and female patients. It can potentially be used for chronic long-term support of patients with irreversible heart failure. We have used the device in seven patients so far and all of them are recovering well."

### Mama's Drama

For Angelique, her life took a 360-degree turn in one week. It was a Saturday night and the young mother-of-three had just finished breastfeeding her one-week old baby girl, Kyra. Suddenly, she felt a pressure in the chest, which made breathing difficult, and a tingling sensation in her left arm

Sensing something was wrong, Angelique woke her husband up and asked him to send her to the hospital. Within a short span of 10 minutes, her condition deteriorated rapidly – from being able to dress herself, to totally dependent on others to help her out of the cab when she arrived at the hospital.

### The Sweet End

After a slew of emergency treatments, Angelique was saved from the brink of death. Her recovery came in several stages: sitting up for a couple of hours in the first week, walking along the corridor with assistance in the second week, to walking independently for half an hour by the third week.

During her hospitalisation, Angelique was granted home leave and enjoyed a short family gathering at Singapore's newest tourist attraction, Marina Bay Sands. Grateful for this gesture, Angelique said, "I feel that this is a good strategy to get patients ready to go home and continue their normal life. I know that I have got constraints like not being able to shower, swim and go for skydiving. But I have the confidence to pick up life again."

Six weeks after her heart attack, Angelique was discharged from NHCS and had returned to the Netherlands with her doctors and family on a commercial flight. She is currently managed by the University Medical Centre Utrecht while waiting for a new heart.

## New Heart, New Life

Whenever 26-year-old Pek Xue Qian leaves his home, he takes extra care to avoid crowded and dusty places. As a heart recipient who is on long-term anti-rejection drugs to prevent his body from rejecting his transplanted heart, he wears a mask to reduce the risk of infection.

Sharing his story at the National Heart Centre Singapore's 20th Heart Transplant Anniversary on 10 July 2010, Xue Qian said that this is a small price to pay for his new life. When he was 16, Xue Qian suffered chest pains and palpitations. He was diagnosed with heart enlargement due to unknown cause known as idiopathic cardiomyopathy.

To prevent sudden cardiac death, his doctors implanted an artificial implantable cardioverter defibrillator in his chest. This device detects abnormal rapid heartbeats and will give his heart an electrical shock to reset the rhythm. Xue Qian described the feeling as 'being kicked hard by someone in the chest'. Despite his illness, he managed to complete his 'O' Level examinations and diploma course. In 2004, his heart function had declined so much that he suffered from swollen feet and was unable to walk. Forced to stay home, he spent the next four months waiting for a new heart.

*"I am very grateful to the donor of my new heart. I owe my new life and hopes to this person and I will always treasure this gift of life".*



26-year-old Pek Xue Qian, heart transplant patient

On 31 December 2004, Xue Qian got his heart transplant and became one of the youngest heart transplant patients in Singapore, at a tender age of 20.

Today, armed with a bachelor degree in digital system security, the Singapore Management University graduate landed his dream job with an IT security firm. For this young man, infinite possibilities lie ahead of him.

## Heart Transplant Programme in Singapore Celebrates its 20th Year

July 2010 marked the 20th heart transplant anniversary in Singapore. The first heart transplant was successfully performed on 6 July 1990. NHCS has since performed 48 heart transplants with a 52.1% 10-year survival rate, comparable to international standards. Dr Lim Chong Hee, Director of NHCS's Heart and Lung Transplant Programme attributed the improvement to better medication and accumulated experience over the past 20 years. "This means that doctors at the centre are able to anticipate, spot and address possible problems in heart transplant patients," said Dr Lim.

Dr Bernard Kwok, Director of NHCS Heart Failure Programme and transplant cardiologist added, "The newer anti-rejection drugs are working so well at preventing the patient's immune system from attacking the new heart that we see a decrease in rejection rate. But there is also an increased chance of getting an infection as these drugs act by lowering the immune response. So the challenge for us now is to detect the infection early and treat appropriately."



NHCS heart transplant patients and staff celebrate the 20th heart transplant anniversary on 10 July 2010 at the Singapore Flyer.

The good news extends to patients waiting for a heart transplant. They can expect to live longer with the help of the Mechanical Heart Device Programme, which NHCS started in 2001. Previously, three in 10 heart failure patients died while waiting for a transplant. Now, devices such as the new HeartMate II, are helping more patients stay alive, and enable them to recover faster after the operation. Dr C Sivathasan who started the programme, said "The current devices are more portable and patients can lead a largely normal life while they wait for a transplant."

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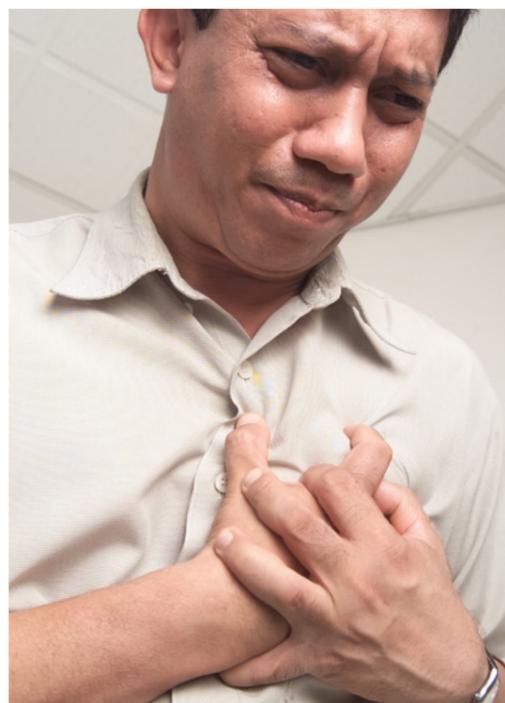
### ADVANCED TREATMENT MODALITIES @ NHCS

- Heart and lung transplant programme
- Mechanical heart assist device programme
- Extra-Corporeal Membrane Oxygenator (ECMO) in patients with acute heart failure and cardiogenic shock as a resuscitative measure
- Robotic-assisted minimally invasive cardiothoracic surgery
- Complex atrial fibrillation ablation
- Percutaneous aortic valve replacement (transfemoral and transapical)
- Aortic aneurysm endovascular exclusion
- Mitral valve surgery (repair/replacement) with simultaneous surgical radiofrequency ablation of associated atrial fibrillation
- Watchman device closure of left atrial appendage for prevention of stroke from atrial fibrillation

For a comprehensive list of NHCS services and specialists, please visit [www.nhcs.com.sg](http://www.nhcs.com.sg)

# Sudden Cardiac Death – Is it Really Sudden?

We often read in the news of young athletes who die suddenly while training. But is sudden cardiac death really sudden? Hear from our expert, Dr Reginald Liew, Consultant, Department of Cardiology, NHCS.



In cases of apparently healthy athletes who die suddenly while training, the causes include heart muscle disorders (e.g. hypertrophic cardiomyopathy, myocarditis) and congenital cardiac ion channel diseases (such as long QT syndrome and Brugada syndrome). Such cases are rare compared with the number of cases who die suddenly from coronary artery disease. Often, there are clues from the history or electrocardiogram (ECG) that indicate a cardiac problem in these individuals, prompting the need for further specialist assessment.

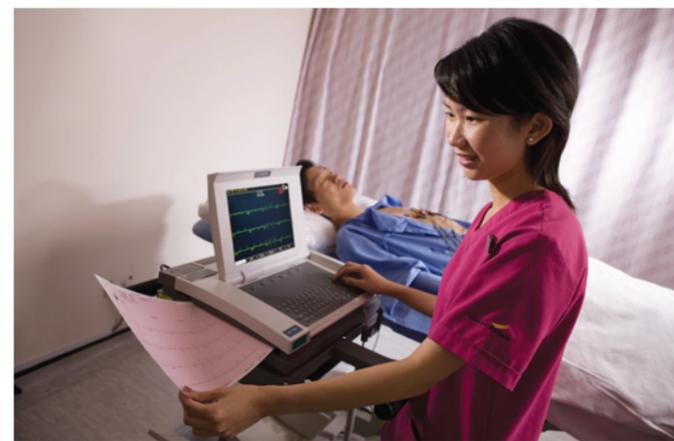
## Who is at Risk?

Individuals at greatest risk are those with significant coronary artery disease, especially those who have suffered a heart attack or heart failure (depressed left ventricular ejection fraction [LVEF]). As not all patients will experience symptoms, it is important that those with risk factors are properly assessed and measures taken to aggressively treat them. This will help to prevent development or progression of coronary artery disease. Typical risk factors include diabetes, high blood pressure, high cholesterol level, smoking and a family history of ischaemic heart disease.

## Which Tests Can Predict Risk?

There are a number of tests that can be performed to decide if someone is at high risk for cardiac arrest. These include:

**ECG** – electrodes are attached to the patient's chest to record the electrical activity of the heart. This detects abnormal heart rhythms or other features that suggest an underlying cardiac problem.



**Echocardiogram** – ultrasound waves are used to create a moving picture of the heart. The test can measure the LVEF (which is the single most important determinant of sudden cardiac death in patients with ischaemic heart disease) and identify other structural problems, such as aortic stenosis, which may also increase risk.

**Holter monitoring** – a small pocket-size recorder is attached to the patient's chest for one to two days, recording a longer sampling of their heart rhythm. After the recorder is removed, the tape is analysed for signs of arrhythmia and other indices that may be related to increased risk of sudden cardiac death.

**Electrophysiology study (EPS)** – This test is performed usually in a specialist cardiac centre. Local anaesthesia is used to numb areas in the groin or neck and thin flexible wires called catheters are positioned in the heart to record its electrical signals. During the study, the electrophysiologist studies the speed and flow of electrical signals through the heart, identifies rhythm problems and pinpoints areas in the heart that may be the sources of abnormal electrical signals that trigger arrhythmias. The doctor can also determine if a patient has had a prior heart attack or evidence of prior heart damage without knowing it.

## How Can We Prevent Sudden Cardiac Death?



- Eat healthily – Reduce fat, salt, sugar intake. Choose a variety of fruits, vegetables, and grains



- Be active - Exercise regularly for at least 30 minutes, four to seven times a week. Avoid overly strenuous activity especially for beginners
- Quit smoking
- Manage your stress
- Limit your alcohol intake to one glass of wine or 2/3 can of beer
- Maintain a healthy weight – Body Mass Index (BMI) between 18.5 – 22.9

## What are the Treatments for Survivors?

Patients who survive a heart attack are at risk for another attack and require active measures to decrease this risk (called secondary prevention). These measures include treatment of any significant coronary artery stenoses (with percutaneous coronary intervention or coronary artery bypass surgery), powerful cardiac medication and insertion of an implantable cardioverter defibrillator (ICD), which is an implantable device that can shock patients out of a dangerous life-threatening ventricular arrhythmia.

## Take-home Points

- Sudden cardiac death rarely occurs in young fit individuals. Over 90% of sudden cardiac death in adults above 30 years old is related to coronary artery disease.
- To reduce your risk, adopt a healthy lifestyle and aggressively control risk factors for coronary artery disease.
- In patients who have survived a cardiac arrest or at high risk of sudden cardiac death, additional measures, such as insertion of an ICD, should be considered.



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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

## Our Specialists (Electrophysiology & Pacing)

### SENIOR CONSULTANT AND DIRECTOR, ELECTROPHYSIOLOGY AND PACING

Dr Teo Wee Siong

### CONSULTANT AND CO-DIRECTOR, ELECTROPHYSIOLOGY AND PACING

Dr Ching Chi Keong

### CONSULTANTS

Dr Reginald Liew

Dr Ho Kah Leng (away for HMDP)

Dr Tan Boon Yew

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## Research Publications Jan - Jun 2010

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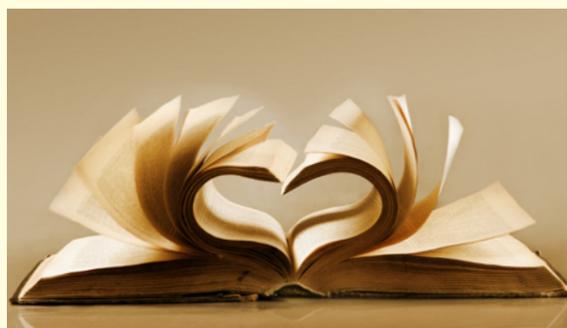
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## Hall of Fame



May Day CBF Model Partnership Awards 2010 – Individual Category winner, Mr Chia Li Sen, Patient Care Assistant.



PS 21 Star Service Award 2010 – Acting Nurse Clinician Jasmine Lee.



From left to right: Healthcare Humanity Awards 2010 winners, Dr C Sivathasan, Co-Director, Heart and Lung Transplant Programme, Acting Nurse Clinician Jasmine Lee and Senior Staff Nurse Loo Yu Jen.

## Appointments and Promotions

### Appointments with the Duke-NUS Graduate Medical School



**DR K GUNASEGARAN**  
Senior Consultant,  
Department of Cardiology  
as Assistant Professor



**DR ROHIT KHURANA**  
Consultant,  
Department of Cardiology  
as Assistant Professor

### Appointments with the NUS Yong Loo Lin School of Medicine



**DR CHUA YEOW LENG**  
Senior Consultant,  
Department of  
Cardiothoracic Surgery as  
Associate Professor



**DR FELIX KENG**  
Senior Consultant,  
Department of  
Cardiology as Adjunct  
Assistant Professor

### Promotions



**DR LIM YEONG PHANG**  
Senior Consultant,  
Department of  
Cardiothoracic Surgery



**DR CHIN CHEE TANG**  
Consultant,  
Department of Cardiology



**DR PETER TING**  
Consultant,  
Department of Cardiology



**DR TANG HAK CHIAW**  
Consultant,  
Department of Cardiology  
(away for HMDP)

## PACES for Cardiology 2010

64 junior doctors attended the PACES for Cardiology 2010 on 15 May 2010 at the National Heart Centre Singapore. During this one-day preparatory course, participants gained a useful hands-on experience through examining and communicating with heart patients.



A junior doctor listening to the patient's heart murmurs, while Dr Tan Ju Le, Senior Consultant, Department of Cardiology, NHCS assesses her performance.

## A Hearty Treat



NHCS patients getting a healthy snack treat – oat crunch crackers, sponsored by Munchy Food Industries Sdn Bhd.

## GP Heart Care Symposium on Sudden Cardiac Death



NHCS held its GP Heart Care Symposium on Sudden Cardiac Death: Risk Assessment and Prevention on 22 May 2010. The session was well attended by 200 participants. The robust programme clarified doubts on cardiac death and provided a timely update on the disease.

## Upcoming Events



### SingVALVE 2010 - Symposium of Heart Valve Therapies

**Date** 16 - 18 September 2010 (Thursday - Saturday)

### NHCS Basic and Advanced ECG Course 2010

**Date** 10 October 2010 (Sunday) **Venue** College of Medicine building, MOH

For registration and event details, please check out [www.nhcs.com.sg](http://www.nhcs.com.sg).

For feedback on Murmurs, please direct to

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