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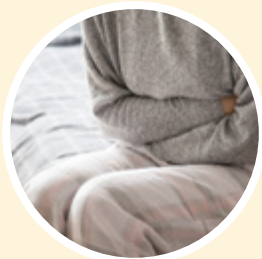
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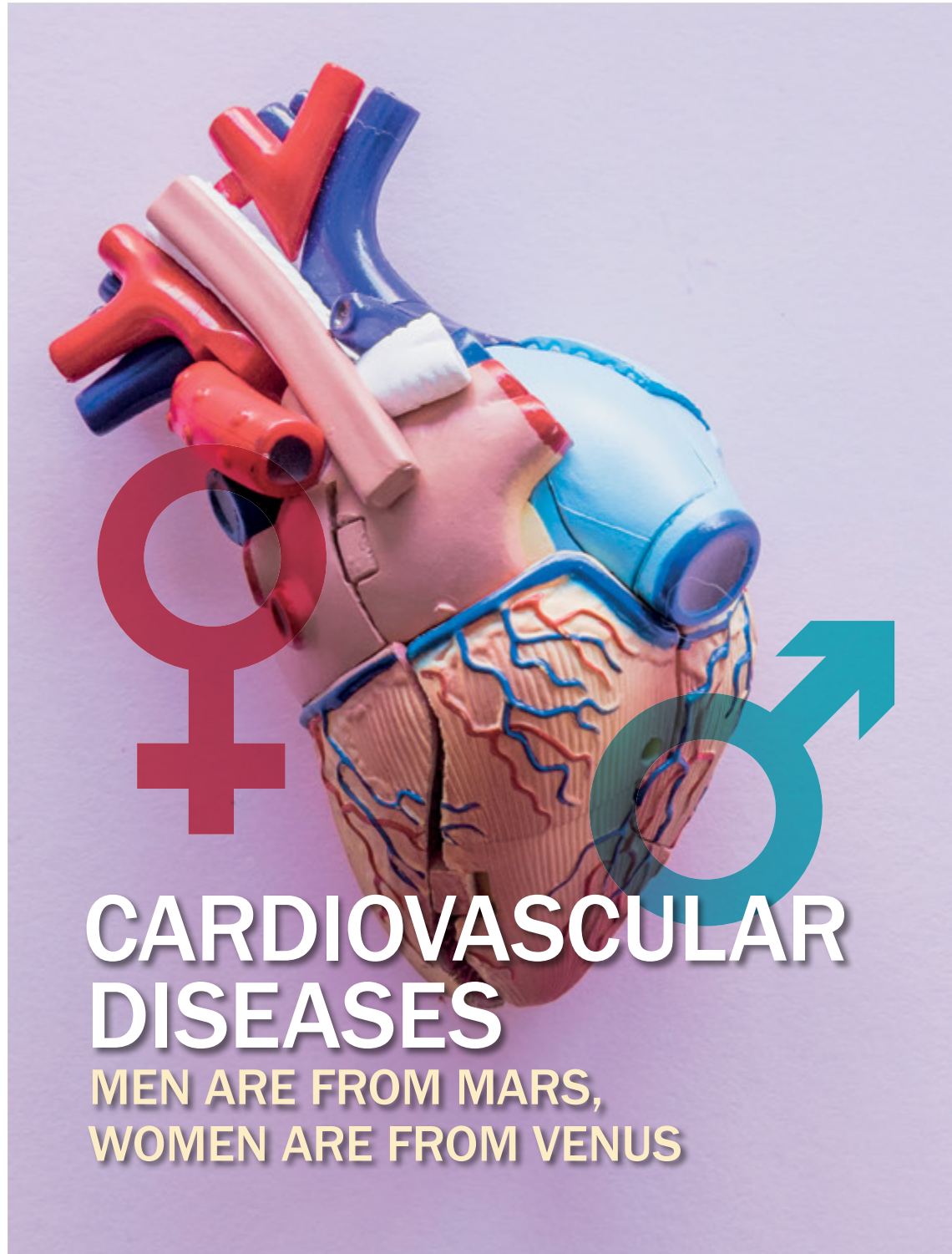
IS SLIPPING RIB
SYNDROME THE CAUSE
OF YOUR ABDOMINAL
PAIN?



DIET AND
CARDIOVASCULAR
HEALTH



HEART SCANS AND
CARDIAC RISKS



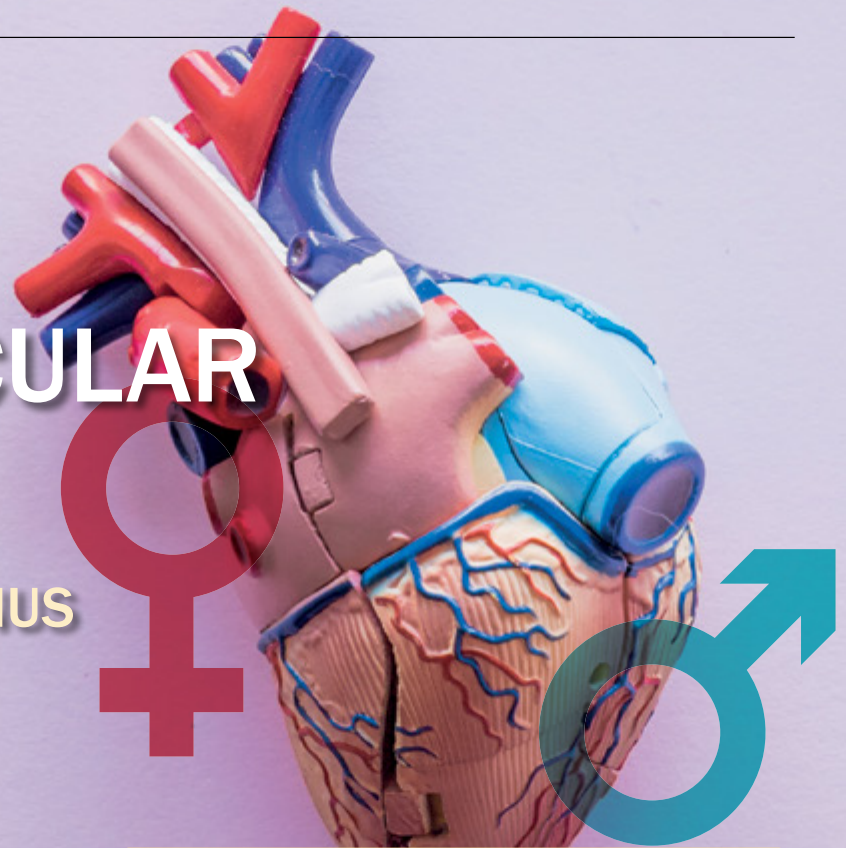
CARDIOVASCULAR DISEASES

MEN ARE FROM MARS,
WOMEN ARE FROM VENUS

CARDIOVASCULAR DISEASES

**MEN ARE FROM MARS,
WOMEN ARE FROM VENUS**

By Asst Prof Chandramouli Chanchal, Research Fellow, NHRIS



Approximately 35% of all deaths in women worldwide are caused by cardiovascular disease. This roughly translates to one in three women we encounter every day.

Global Burden of Diseases Study in 2019 showed that 275 million women were diagnosed with cardiovascular disease (CVD) and 8.9 million demised due to CVD. Despite the advancement in care and therapies over the last 30 years, the benefit seen is limited to developed nations with high socio-demographic indices. CVD in women remains understudied, under-recognised, under-diagnosed, and under-treated.

Cardiovascular risk factors in women

Early detection and management of cardiovascular risk factors are paramount in reducing CVD burden in women. Known classical risk factors of CVD such as hypertension, dyslipidaemia, diabetes, obesity, unhealthy diet, sedentary lifestyle and smoking, which are common to both men and women, however, often affect women differently.

While hypertension is chiefly incriminated as CVD risk, it is the most neglected health burden in women. Women experience more rapid increases of progressive blood pressure, as compared to men, beginning as young as 30 to 40 years. Elevated cholesterol levels are unequivocally recognised as risk factor of myocardial infarction in women, with a more pronounced increase post-menopause. Likewise, type 2 diabetes escalates the risk of CVD by two-fold in men but five-fold in women. Importantly, Asian women are predisposed to a “lean diabetic phenotype”, wherein diabetes is present in absence of an overt body mass index.

In addition to the classical risk factors, sex-specific risk (in women) further increases the risk of CVD later in life. The INTERHEART study documented that CVD in women manifests almost a decade later in women than men¹. Although the risk appears lower in women who are premenopausal (compared to age-matched men), the risk escalates rapidly after menopause. Literature evidence on hormone replacement therapy stand divided, with some observational studies showing benefit but randomised clinical trials have yet to confirm them.

Other pregnancy and reproductive hormone related risk factors in women include pre-term delivery, gestational hypertensive disorders, gestational diabetes, polycystic ovary syndrome, systemic inflammatory and autoimmune disorders.

Beyond these classical and sex-specific risk factors, under-recognised risk factors are also prevalent in women. Depression is an independent and long-term risk factor of both obstructive and non-obstructive coronary artery disease in women. Intimate partner violence and low socioeconomic status disproportionately affect women as compared to men and are emerging as important considerations in the development and manifestation of CVD in women. In the Asian context, sociocultural gender norms and expectations of women to be selfless ‘caregivers’ often confine them to the ‘giving’ end only. Low awareness of self-care and poor CVD health literacy in women also fuel this further.

Representation of women in cardiovascular clinical trials

Importantly, women continue to be under-represented in CV clinical trials. In a systematic assessment (study by NHCS and Duke Kunshan University) of 740 completed CV clinical trials registered at ClinicalTrials.gov between 2010 and 2017, it was found that only 38% of the participants were women. Relative to the respective real-world disease prevalence, participation of women was comparable for pulmonary hypertension and hypertension trials but low in stroke, arrhythmia, coronary heart disease, acute coronary syndrome and lowest in heart failure trials. In recent years, there has been significant increases in recruitment of women into stroke and heart failure trials², a commendable effort in the right direction!

The low representation of women in trials were due to various reasons including inadequate information or referrals, the lack of support such as transportation and childcare help and the misperceptions surrounding risks and benefit. Most of these can be

simply addressed by the physician or clinical coordinators spending time to explain the trial and convincing them to participate.

In 2021, Prof Carolyn Lam, Senior Consultant from the NHCS, the only Lancet Commission Ambassador from Asia, together with 16 ambassadors from 11 countries authored the first-ever global report on CVD in women³. This Commission outlines 10 key significant recommendations to overcome inequities in targeting diagnosis, treatment, and prevention to reduce CVD in women. The recommendations span a huge spectrum from increasing awareness, educating healthcare providers and patients on early identification to prevent heart disease in women to scaling up heart health programmes in highly populated and underdeveloped regions; and prioritising sex-specific research and intervention strategies to prevent CVD in women.

Together, these studies serve as a loud and necessary reminder for physicians and the public to be mindful of sex differences in CVD disease diagnosis, manifestation, treatment, and prognosis. Interventions to reduce CVD should be tailored for the most vulnerable populations globally, including women from minority or indigenous populations and those whose roles in society are strongly

defined by traditional or religious norms. The Women's Heart Clinic at NHCS is one such initiative, which aims to empower women to take charge of their heart health through greater awareness of their risk factors and symptoms. The clinic offers end-to-end services, from prevention to diagnosis, treatment and rehabilitation, customised to the specific needs of women using a holistic approach of physical and psychosocial care. At National Heart Research Institute Singapore (NHRIS), there is also a dedicated research theme on "Heart Failure and Women's Health" which rigorously publishes basic, translational and clinical studies on women's heart health.

¹ Yusuf S, Hawken S, Ounpuu S, Dans T, Avezum A, Lanas F, McQueen M, Budaj A, Pais P, Varigos J, Lisheng L. Effect of potentially modifiable risk factors associated with myocardial infarction in 52 countries (the interheart study): Case-control study. *Lancet*. 2004;364:937–952

² Jin X, Chandramouli C, Allocco B, Gong E, Lam CSP, Yan LL. Women's Participation in Cardiovascular Clinical Trials From 2010 to 2017. *Circulation*. 2020 Feb 18;141(7):540-548. doi: 10.1161/CIRCULATIONAHA.119.043594. Epub 2020 Feb 17. PMID: 32065763.

³ Vogel B, Acevedo M, Appelman Y, Merz CN, Chieffo A, Figtree GA, Guerrero M, Kunadian V, Lam CS, Maas AH, Mihailidou AS. The Lancet women and cardiovascular disease Commission: reducing the global burden by 2030. *The Lancet*. 2021 Jun 19;397(10292):2385-438.

⁴ Vogel B, Acevedo M, Appelman Y, Merz CN, Chieffo A, Figtree GA, Guerrero M, Kunadian V, Lam CS, Maas AH, Mihailidou AS. The Lancet women and cardiovascular disease Commission: reducing the global burden by 2030. *The Lancet*. 2021 Jun 19;397(10292):2385-438.

Top 10 Recommendations from Lancet Commission to Reduce CVD burden in Women⁴

Issue	Recommendation
 Accurate data on global prevalence and outcomes of cardiovascular disease in women are absent	Direct funding for real-time and accurate data collection on prevalence and outcomes of cardiovascular disease in women globally
 Women with cardiovascular disease remain understudied, under-recognised, underdiagnosed, and undertreated	Develop educational programmes on cardiovascular disease in women for physicians, scientists, allied health-care providers, and communities
 Sex-specific mechanisms in the pathophysiology and natural history of cardiovascular disease remain poorly understood	Prioritise sex-specific research focused on identifying the pathophysiology and natural history of cardiovascular disease
 Women are under-represented in the majority of cardiovascular clinical trials	Develop strategies to improve enrolment and retention of women in cardiovascular clinical trials
 Socioeconomic deprivation contributes substantially to the global burden of cardiovascular disease in women	Prioritise funding in global health organisations for cardiovascular disease health programmes in women from socioeconomically deprived regions
 Myocardial infarction and cardiovascular disease mortality are increasing in young women	Educate healthcare providers and patients regarding early detection and prevention of cardiovascular disease in young women
 Hypertension, dyslipidaemia, and diabetes are the most crucial risk factors contributing to cardiovascular disease death in women	Establish policy-based initiatives and medical and community-outreach cardiovascular disease risk factor programmes in settings frequented by women
 Sex-specific and other under-recognised cardiovascular disease risk factors, such as psychosocial and socioeconomic factors, appear to contribute to the global burden of cardiovascular disease in women	Research is needed to identify the effect of sex-specific, psychosocial, and socioeconomic risk factors on cardiovascular disease in women, and evaluate intervention strategies
 Age-adjusted prevalence of cardiovascular disease in women is increasing in some of the most populous countries of the world	Scale up healthy heart programmes in highly populated and progressively industrialised regions
 There is no current established global policy to coordinate prevention and treatment of cardiovascular disease in women	Embrace public-private partnerships to develop broad-scale programmes to save lives in women with cardiovascular disease

IS SLIPPING RIB SYNDROME THE CAUSE OF YOUR ABDOMINAL PAIN?

By Rachel Stephens, Physiotherapist, Department of Cardiac Physiotherapy Services

Slipping rib syndrome is a rare condition where the rib slips or moves, leading to pain in upper abdomen or lower chest. The condition often goes undiagnosed¹.

In slipping rib syndrome, the cartilage that holds the lower ribs to the ribcage becomes loose or slips, causing the rib attached to the cartilage to rub against the rib above or below it. This results in pain felt in the upper abdomen or in the chest as the increased movement tend to irritate the nerves of the ribcage².

There is no definitive cause for slipping rib syndrome thus far, but in most cases, issues such as weakness in chest muscles or ligaments were usually evident. Those afflicted with this condition would often present with increased movement of the lower ribs. Other possible factors include chest wall anomalies since birth, injury to the cartilage of the ribs.

Even though the condition is rare, one can look out for these early signs and symptoms of slipping rib syndrome:

1. **Intense pain in the lower chest or upper abdomen**
2. **A tender spot at the border of the rib, and reproduction of pain when pressing the tender spot**
3. **Pain may be present on both sides of ribs, but mostly occurs on only one side**
4. **Pain is often sharp in nature and can progress to a dull pain that can last for hours to week**
5. **Pain may travel from the ribs up to the shoulder blade**
6. **Worsening of pain with certain movements such as stretching, twisting the trunk, bending, carrying heavy loads**
7. **Worsening of pain when doing sports such as swimming, horseback riding and running, which involve the abdomen and heavy breathing**

First Rare Case in NHCS

The Cardiac Physiotherapy Department saw its first case of slipping rib syndrome in 2021 that was referred from Asst Prof Soo Ing Xiang, Consultant with the Department of Cardiothoracic Surgery.

The patient, a female in her 20s, Ms Alice Chan*, was referred for therapy for a pain in her abdomen area. It was a unique and unexpected case, as the department generally sees more senior patients and mainly for heart or lung conditions.

Ms Chan complained of suffering from pain at the lower ribs on both sides for weeks and the pain had become more constant. She experienced pain when performing exercises which required use of the core muscles or bending forward, and that the pain was intense and caused a burning sensation.

Based on the preliminary information provided by the patient, the team of physiotherapists conducted a “Hook Manoeuvre”, a simple diagnostic test to assess if the patient was experiencing slipping rib syndrome³.

The Hook Manoeuvre Test



A ‘Hook Manoeuvre’ can test whether a patient is suffering from slipping rib syndrome.

First, the patient is required to lie flat on his/her back. The physiotherapist will place her fingers along the edge of the last rib and lift upwards and towards the head of the patient.

If this movement causes the patient to experience the same sharp pain or produce a “pop” sound as the rib moves, then the patient is confirmed to be having slipping rib syndrome. The test is highly sensitive and is the only test that can provide an accurate diagnosis of slipping rib syndrome.

Ms Chan was subsequently tested positive to have slipping rib syndrome, as she experienced pain in the right lower rib, and a “pop” sound could be heard in the left lower rib. She was also having pain in both the lower ribs upon rubbing the rib joint.

Personalised Treatment Plan & Exercise Programme

As slipping rib syndrome is usually a result of increased movements of the rib, it is important to strengthen the muscles around the ribs to reduce the movement of the rib and stabilise it.

Upon diagnosis, the patient was provided with a comprehensive treatment plan that includes pain management (such as medications and heat/ cooling therapy) and an exercise programme to strengthen rib and oblique muscles. Ms Chan was advised to rest and avoid strenuous activities so as to avoid any strains on the chest area and abdomen. She was also encouraged to do simple stretching and rotation exercises at home as per instructions given by the therapists. Through the exercise programme, she was guided with simple and easier exercises starting with sitting position to minimise pain, and thereafter gradually progressing to standing position as the pain gets less intense.

Ms Chan’s condition has significantly improved after five months into her treatment. While limiting, she is able to live and work with her condition, enabling her to still have a quality of life.

Asst Prof Soo, who has since started seeing a few more similar cases, explained that in general, the recovery period for slipping rib syndrome varies depending on the severity. “Slipping rib syndrome is not commonly seen as it often goes underdiagnosed. In severe cases, surgical treatment may be considered to alleviate the symptoms,” shared Asst Prof Soo.

If you experience any of the sign and symptoms referred to in this article, please seek medical attention.

*Patient’s name has been changed to protect her identity.

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Strengthening Exercises for Slipping Rib Syndrome (within limitation of pain)

For lower rib muscles



Breathing exercises with a towel



Seated rotation exercises



Seated back stretch



Seated back forward bend

For oblique and core muscles



Heel tap while lying



Bird-Dog position

Remember to avoid exercises that put strain on the chest area and abdomen. Exercises should be done in a tolerable range and intensity. Stop exercises if pain or symptoms worsen and consult your doctor or physiotherapist.



DIET AND CARDIOVASCULAR HEALTH

As the old adage goes, ‘We are what we eat’ – what we put into our body directly influences our health. More importantly, besides commonly known risk factors for cardiovascular disease such as high blood pressure and high blood cholesterol, diet is another major risk factor closely linked to diabetes and obesity which further increases one’s risk of getting heart diseases.

A Heart Healthy Diet

Dr Huang Zijuan, Consultant from the Department of Cardiology advises individuals with risk of heart disease to switch to a heart healthy diet and make deliberate changes to lower or control their cholesterol. She explains more below.

Q What foods increase risk of heart disease?

A Foods that were found to be linked with worse outcomes for your heart would be red meat, processed meat, animal oils like butter, foods with high glycaemic index and refined starchy foods. Even though white meat like chicken is better than red meat, it is still advisable to consume in moderation. A meta-analysis based on available evidence suggested that we could take up to three servings of white meat a week. It did not find an association with increased cardiovascular disease with such moderate amounts of intake of white meat. Fish on the other hand, was found to have beneficial effects for heart health¹.

Q If I’m at risk of heart disease, what dietary changes should I take note of?

A A heart healthy diet is one that is more plant-based, meaning it contains more plant-derived foods². A plant-based diet emphasises more peas, legumes, nuts, grains, fruits and vegetables³. It refers to a wide range of diets, from those including a small amount of animal products like meat and dairy (lower in amount than in the standard western diet) to the other end of the spectrum where the diet solely contains plant products. A popular example is the Mediterranean diet.

It has been found that the greater the amount of healthy plant-derived foods such as whole grains, fresh fruits, green vegetables, legumes, peas and root vegetables, the greater the associated benefit on cardiovascular health. On the other hand, less healthy plant-derived foods such as fries (made with potatoes), cakes (made primarily with flour which comes typically from wheat grains) as well as cookies, doughnuts and soft drinks⁴, do not have the same beneficial effects. Hence we should try to consume a whole food plant-based diet and not just plant-based foods.

Q What is a whole food plant-based diet and how does it affect my heart?

A Whole food plant-based diets emphasise the use of fresh fruits, vegetables, seeds, nuts, roots, legumes and wholegrains, rather than refined, processed foods like white rice, added oil, added sugar and foods made with white flour. A whole food plant-based diet is rich in fibre, anti-oxidants, plant protein, phytochemicals, vitamins and minerals. When such nutrients are taken in their natural state in a plant-focused diet, rather than from supplements, they have been shown to be associated with a decrease in the incidence of diabetes, obesity, high bad cholesterol levels, hypertension, heart disease,

stroke and cancer^{2,5}. Randomised controlled trials have also shown a decrease in blood lipids (bad cholesterol-LDL and fats-TG), Hba1c (a long-term measure of blood sugar), BMI (body mass index), waist circumference and blood pressure, with whole food plant-based diets⁵.

Studies have reported reversal of coronary artery blockages using whole food plant-based diets with vegan⁶ and intensive low fat vegetarian⁷ approaches. Such full plant-based diets aimed at reversal of coronary artery disease, would need to be done with adequate knowledge and guidance on supplementation from health professionals (like dietitians)⁸.

Q What is the best way to reduce the amount of cholesterol in a diet?

A A common assumption is that cholesterol intake causes higher blood levels of cholesterol. However, it is actually the saturated fat consumed that causes more effects. Saturated fat consumption increases the amount of bad cholesterol we produce and release into our bloodstream. Saturated fat is more commonly found in animal fats, red meat, egg yolks, butter, cream, and also in certain plant oils like coconut milk/oil and palm oil.

Often times, we do not realise how much saturated fat we are taking at each meal. Cardiac guidelines recommend 10% or less of our energy intake to be made up of saturated fat³ to lower the chances of developing cardiovascular disease. To achieve this, we can follow some basic principles – to eat more foods like whole grains, fresh fruit, vegetables, legumes, peas, tofu, tempeh and root vegetables, and avoid excessive oil or cream in our food. Even healthier oils like olive oil contain saturated fat, so it is good to be careful about added oil in our diet, especially if you already have heart disease. The exception to oils is where it comes to fish, especially oily fish such as salmon, which is beneficial for heart health. Fish or seafood can be taken twice a week for cardiovascular benefits.

The individual’s genetic makeup is one other important factor affecting the amount of cholesterol you produce, and this may result in high bad cholesterol levels in your blood even if you are already controlling the amount of saturated fat in your diet. High levels of bad cholesterol that are undiagnosed and untreated, may lead to cardiovascular events like strokes and heart attacks.

¹ Riccardi G, Giosuè A, Calabrese I, Vaccaro O. Dietary recommendations for prevention of atherosclerosis. *Cardiovasc Res*. Published online July 6, 2021. doi:10.1093/CVR/CVAB173

² Patel H, Chandra S, Alexander S, Soble J, Williams KA. Plant-Based Nutrition: An Essential Component of Cardiovascular Disease Prevention and Management. *Curr Cardiol Rep*. 2017;19(10). doi:10.1007/s11886-017-0909-z

³ Visseren FLJ, Mach F, Smulders YM, et al. 2021 ESC Guidelines on cardiovascular disease prevention in clinical practice. *Eur J Prev Cardiol*. Published online September 24, 2021. doi:10.1093/EURJPC/ZWAB154

⁴ Satija A, Bhupathiraju SN, Spiegelman D, et al. Healthful and Unhealthful Plant-Based Diets and the Risk of Coronary Heart Disease in U.S. Adults. *J Am Coll Cardiol*. 2017;70(4):411-422. doi:10.1016/J.JACC.2017.05.047

⁵ Craig WJ, Mangels AR, Fresán U, et al. The Safe and Effective Use of Plant-Based Diets with Guidelines for Health Professionals. *Nutrients*. 2021;13(11). doi:10.3390/NU13114144

⁶ Esselstyn CB, Ellis SG, Medendorp S V., Crowe TD. A strategy to arrest and reverse coronary artery disease: A 5-year longitudinal study of a single physician’s practice. *J Fam Pract*. 1995;41(6):560-568.

⁷ Ornish D, Scherwitz LW, Billings JH, et al. Intensive lifestyle changes for reversal of coronary heart disease. *JAMA*. 1998;280(23):2001-2007. doi:10.1001/JAMA.280.23.2001

⁸ Mariotti F, Gardner CD. Dietary Protein and Amino Acids in Vegetarian Diets-A Review. *Nutrients*. 2019;11(11). doi:10.3390/NU11112661

HEART SCANS AND CARDIAC RISKS

While there may be varied diagnostic and screening tests available for heart disease, it is imperative to assess and consider one's symptoms and risk factors to determine the types of tests appropriate so as to manage a heart condition effectively.

For the detection of heart disease such as coronary heart disease or the narrowing of the heart's arteries, a wide array of tests is available, from treadmill electrocardiogram (ECG) test to invasive angiogram. Each test has its own strengths and limitations, and provides different types of information on the heart.

For the detection of heart disease such as coronary heart disease or the narrowing of the heart's arteries, a wide array of tests is available, from treadmill electrocardiogram (ECG) test to invasive angiogram. Each test has its own strengths and limitations, and provides different types of information on the heart.

To detect the presence of narrowing heart arteries, certain tests such as the computed tomography angiogram (CTA) would be suitable. Correspondingly, to evaluate the functional effect of narrowing on

blood flow in the heart, other tests such as stress echocardiography test or stress nuclear would be useful. No single test can provide both types of information, as such, often times more than one test may be needed.

Various international expert guidelines¹, including the latest American College of Cardiology guidelines², recommend considering patients' symptoms, risk factors and their probability of developing cardiovascular disease, when deciding on a suitable diagnostic test.



For patients with no symptoms



For patients with a very low likelihood of heart disease (for example, poking or musculoskeletal chest pain)



For patients with chest pain and suspected heart disease

It is recommended to test for risk factors such as high blood pressure, cholesterol, sugar, and manage these risk factors.	Testing has limited value and often can be deferred.	It is recommended to use either stress imaging or a CTA. Both tests have their strengths and weaknesses.
Routine testing for heart disease with tests such as the CTA is not encouraged for these individuals.	If needed, a treadmill test or coronary calcium scan can be considered.	A CTA has higher sensitivity, while stress imaging is able to assess the effect of blood flow to identify which patients might benefit from intervention.

As such, choosing a diagnostic test should be based on how it can lead to better outcomes for the patient. In the largest study, the PROMISE Trial compared CTA to stress imaging in 10,000 patients with chest pain, and discovered no difference in clinical outcomes, for death, heart attack or hospitalisation after following up for two years³. Therefore, both test approaches would be reasonable and recommendable.

Keeping heart diseases at bay

While heart attacks, also known as myocardial infarction, may occur unexpectedly due to a sudden obstruction of blood flow in the coronary artery, one might wonder if it is possible to perform a heart scan to rule out the possibility of a blocked artery to prevent a heart attack, even when the individual had no symptoms. Yet, many studies have shown that screening for blockages in individuals without symptoms is not effective at lowering the risk of a heart attack.

Two large randomised controlled trials evaluated the routine use of screening tests such as CTA4 or nuclear stress tests⁵ for asymptomatic diabetics, showed no benefit in preventing heart attacks or cardiac events. There may be several reasons why such screening approaches do not work, even when targeted at individuals with a higher risk of heart attack.

Heart attacks are usually caused by a sudden obstruction of blood flow in the coronary artery, triggered by a rupture or tear of a cholesterol deposit. It is the unpredictable nature of the rupture, followed by the sudden blood clot that blocks the entire lumen of the artery, which causes the heart attack and not merely the gradual narrowing of arteries.

Additionally, focusing on prevention measures through controlling risk factors, such as ensuring a healthy blood pressure, cholesterol and blood sugar, and no or reduced smoking, would be more effective than relying on occasional cardiac scans. This is because narrowing of arteries can develop over time and cannot be monitored through a scan. The absence of severe narrowing during the point of scanning does not mean that the narrowing will not develop or rapidly worsen later.

In conclusion, a heart scan reflecting healthy results, may give a false sense of security, leading the person to ignore risk factors such as high cholesterol or smoking. On the other hand, an abnormal test may be due to a false positive result, leading to unnecessary anxiety and more tests being done, even when the actual risk is lower than it appears. In individuals without symptoms for heart disease, instead of undergoing screening that yields little to no benefit, it is recommended to focus on prevention measures, through a healthy lifestyle, such as exercising, having a healthy diet, and smoking cessation, and control risk factors, such as treating cholesterol, blood pressure, blood sugar.

¹ 2019 ESC Guidelines for the diagnosis and management of chronic coronary syndromes. European Heart Journal (2019) 00, 1-71

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WOMEN'S HEART CLINIC

The Women's Heart Clinic aims to empower women to take charge of their heart health through greater awareness of their risk factors and symptoms. The clinic offers end-to-end services, from prevention to diagnosis, treatment and rehabilitation, customised to the specific needs of women.

OUR FEMALE SPECIALISTS

Prof Carolyn Lam Su Ping	Senior Consultant, Director of Women's Heart Health
Assoc Prof Ding Zee Pin	Senior Consultant, Advisor of Echocardiography
Assoc Prof Ewe See Hooi	Senior Consultant, Director of Echocardiography
Assoc Prof Tan Ju Le	Senior Consultant, Director of Adult Congenital Heart Disease Programme
Asst Prof Angela Koh Su-Mei	Senior Consultant, Cardiac Imaging
Asst Prof Ho Kah Leng	Senior Consultant, Electrophysiology and Pacing
Asst Prof Tina Koh Puay Theng	Senior Consultant, Thoracic Oncology
Asst Prof Go Yun Yun	Consultant, Echocardiography
Asst Prof Ho Jien Sze	Consultant, Cardiovascular Rehabilitation and Preventive Cardiology
Asst Prof Khoo Chun Yuan	Consultant, Heart Failure
Asst Prof Laura Chan Lihua	Consultant, Heart Failure
Dr Alicia Chia Xue Fen	Consultant, Cardiac Surgery (Adult)
Dr Audry Lee Shan Yin	Consultant, Heart Failure
Dr Chong Jun Hua	Consultant, Cardio-Oncology
Dr Huang Weiting	Consultant, Echocardiography
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Dr Teo Hooi Khee	Associate Consultant
Dr Yan Limin	Associate Consultant

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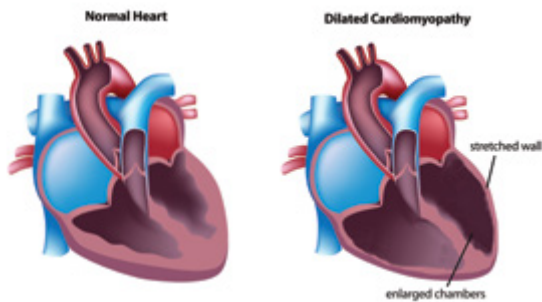
UNDERSTANDING DILATED CARDIOMYOPATHY

What happens when your heart muscle becomes stretched and thin, and cannot pump blood effectively? Asst Prof Khoo Chun Yuan, Department of Cardiology, NHCS, shares with us the most common type of the heart muscle disease.

What is dilated cardiomyopathy? What are the symptoms?

Cardiomyopathy is a disease of the heart muscle. Due to various causes, the heart muscles become weak and/or stiff. This makes it harder for the heart to pump sufficient blood to supply the body's needs. One of the most common types of cardiomyopathy is dilated cardiomyopathy. In this condition, the heart muscle becomes stretched and thin. This causes the heart pump chambers to become enlarged or dilated. The stretched and enlarged heart becomes weak and is unable to pump blood normally. When the heart is unable to pump enough blood for the body's needs, it could result in heart failure.

Patients may develop decreased stamina, breathlessness, legs/ankles/abdominal swelling, fatigue and sensation of abnormal heartbeat (palpitations).



Comparison of a normal heart (left) and heart with dilated cardiomyopathy (right).

What causes dilated cardiomyopathy?

Dilated cardiomyopathy mostly occurs in adults aged 20 to 60 years old. Common causes include excessive alcohol intake, genetic cause (whereby the condition is passed down in families), diabetes, obesity, thyroid disorders, heart rhythm abnormalities, virus infections causing heart muscle inflammation, and certain drugs used to treat cancer and complications during pregnancy. Often, the exact cause of dilated cardiomyopathy may not be known even after investigations.

How do we treat this condition?

It is important to start treatment as soon as possible, as dilated cardiomyopathy causes increased risks of death and hospitalisation. Studies have shown that on average, one out of five patients pass away from their weak heart function within a year of diagnosis¹. Nearly half of all patients may get readmitted within a year.

Patients also usually experience distressing symptoms such as breathlessness, swollen legs and fatigue.

There are proven medications (guideline-directed heart failure therapy) that can make the patients feel better and reduce the risk of hospitalisations and death from this condition. Use of guideline-directed heart failure medications in combination can potentially reduce risk of death by approximately 70%. It is important to take the medications regularly and as prescribed. In recent studies involving new classes of medications (such as SGLT-2 inhibitors^{2,3} and vericiguat⁴), there have been promising results showing the potential benefits to patients with dilated cardiomyopathy and heart failure. Treatment of underlying conditions such as heart rhythm abnormalities, thyroid disorders, cessation of alcohol and optimisation of diabetes, cholesterol and blood pressure control are also essential. Importantly, lifestyle measures such as reduced salt intake, management of fluid intake, smoking and alcohol cessation and prescribed physical activities also play an important role in the management of this condition.

If the heart pumping function remains severely depressed despite the above interventions, there is increased risk of abnormal heart rhythms occurring. The abnormal heart rhythm can lead to fainting episodes and/or sudden death. The cardiologist may discuss the options of implantation of specific devices such as implantable cardioverter defibrillator (ICD) and cardiac resynchronisation therapy (CRT). These devices may reduce risk of sudden death due to dangerous heart rhythm.

In the event that patient's condition is worsening despite medications and lifestyle measures, heart transplant or implantation of an artificial heart pump (left ventricular assist device) may be an option after careful consideration.

Prevention

While for some individuals, dilated cardiomyopathy may be genetic and not always preventable, it is important to maintain a healthy lifestyle such as balanced diet, adequate exercise, and avoidance of smoking and excessive alcohol so as to reduce risk of heart failure and occurrence of the condition. Good control of medical conditions such as diabetes, blood pressure and thyroid disorders is also essential.

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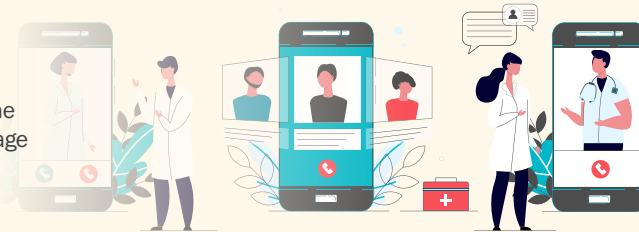
Learn what is Extracorporeal Membrane Oxygenation (ECMO), and how to manage patients on ECMO.

Date & Time: 23 April 2022, 8am

Diabetes and Hypertension – How They Can Affect Your Vision and What You Can Do About It (For Public)

Untreated high blood pressure and poorly controlled diabetes can damage the blood vessels in the eye (retina). Join us to learn more about the dangers of high blood pressure and diabetes, and its effects on your body and eye.

Date & Time: 23 April 2022, 9.30am



NHCS GP CME Webinar 2022 – Aortic Dissections and Aneurysms (For General Practitioners)

Disease in the aorta can cause narrowing or abnormal dilation of the artery. Two main conditions, which can be life-threatening, include aortic dissections and aortic aneurysms. Join us to learn more!

Date: June 2022

APPOINTMENTS & PROMOTIONS



Asst Prof Chin Chee Yang
Senior Consultant,
Department of Cardiology



Asst Prof Lau Man Chun Jeffrey
Senior Consultant,
Department of Cardiology



Asst Prof Lim Chun Yih Paul
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