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THE TRUTH ABOUT WOMEN AND HEART DISEASE

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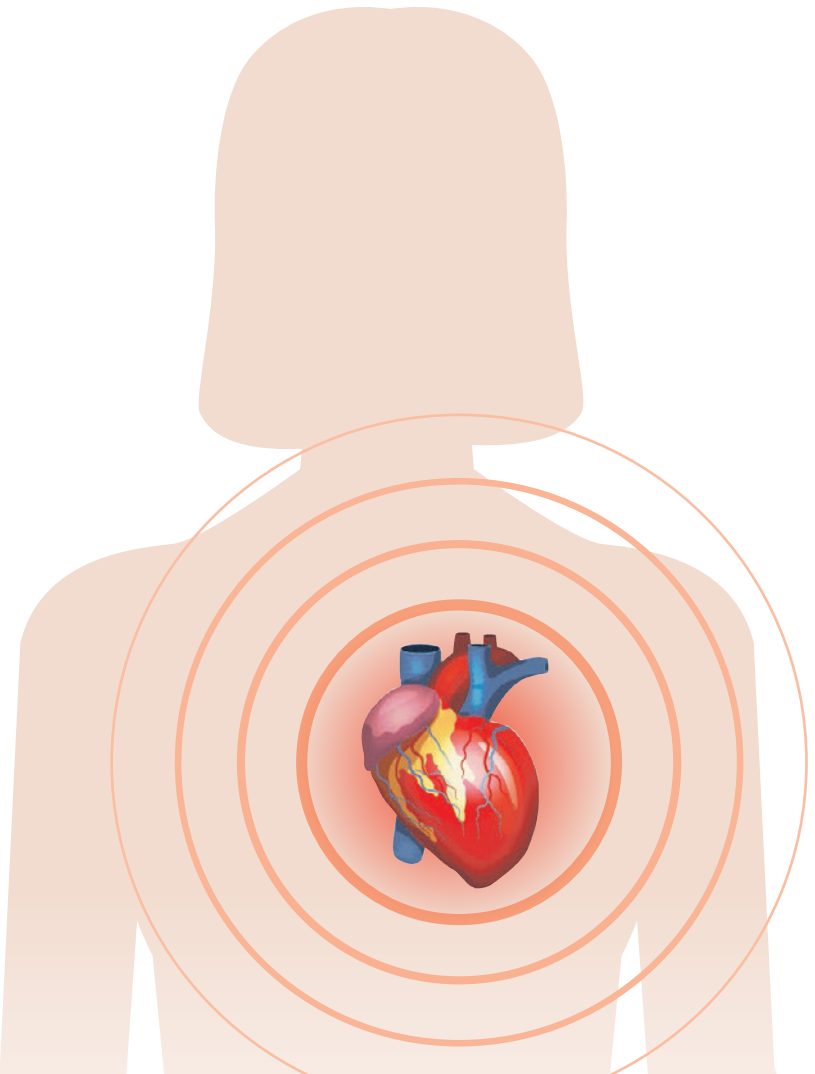

Heart failure is different in women

The illness affects both sexes differently, but may be worse in females because there is no cure for a common type many get (only prevention).

By Suki Lor

MORE WOMEN THAN MEN get a type of heart failure that is less understood, less detected and has no cure yet.

Called heart failure with preserved ejection fraction (HFpEF) or diastolic heart failure, it happens when the heart pumps normally but fails to relax or fill properly because it gets stiff.

It often goes undetected because doctors have traditionally looked at the heart's pumping function rather than the way it relaxes, said Professor Carolyn Lam, Senior Consultant, National Heart Centre Singapore (NHCS), and Professor, Duke-NUS Cardiovascular Academic Clinical Programme.

She said the weakening of the pumping function – called heart failure with reduced ejection fraction or systolic heart failure – which more men than women get, has been better studied, more widely recognised, and has an array of effective drugs to treat it.

But there are no life-saving drugs for HFpEF – the type that many women get – even today. "There are no drugs to improve survival rates for it. That was my inspiration for studying it," said Prof Lam, who set up Women's Heart Clinic at NHCS to offer women comprehensive services catering to their specific needs (see box).

Without an effective drug, doctors can only treat the symptoms and risk factors, and advise patients on preventive lifestyle changes in diet, stress and exercise – the latter being one of the best ways to reduce stiffening of the heart.

"We can manage their risk factors and the haemodynamics. If they have fluid overload, for instance, we give them diuretics. There are things we can do, but there is no magic pill to improve survival."

She said that the problem has been there all along, but women were under-represented in cardiovascular clinical trials for a long time. However, there are now specific efforts aimed at enrolling representative numbers of women and minorities in clinical trials.

There is a glimmer of hope down the road.

A new therapy targeting HFpEF is being tested in ongoing global trials, said Prof Lam, who is on a global committee running these trials in the United States, Europe and Asia, including Singapore. "These trials are at the forefront of research into HFpEF, and there are new drugs on the horizon that may help."

Heart attacks worse in women

When it comes to heart attacks, women may fare worse than men.

A study carried out by NHCS on heart attacks across Singapore showed that women who suffered these were older, had more advanced disease, and experienced more complications than men, resulting in a greater than twofold increase in long-term risk of death compared to men.

Heart attacks in men usually involve big coronary arteries. This can be treated using stents to open up the arteries for blood flow to the heart to resume.

While women's heart attacks can be due to big arteries, it can also involve small arteries (microvascular disease). These blockages cannot be seen on an angiogram, and no stent is small enough to be put inside them.

Another cause of heart attacks in women is stress-induced cardiomyopathy (broken heart syndrome or Takotsubo cardiomyopathy). Here, severe stress triggers a massive heart attack even when there are no blockages in the arteries. More prone to this are older, post-menopausal women receiving severe bad news.

"It's pure stress. The adrenalin and stress hormones can be so strong that they cause the arteries to constrict. When there's no blood supply to the heart muscle, it results in a heart attack."

Symptoms of this disease may also be different in women than in men.

"Women may get central chest pain like men, but more often than men, they experience atypical symptoms such as jaw or neck tightness, back pain and even gastric pain," said Prof Lam.

Diabetes poses a risk

Diabetes and smoking have a worse impact on women than men, despite both genders having the same risk factors.

"We did a study on heart attacks in Singapore, and were shocked that so many of the women were diabetic. And diabetic women with heart attacks

> Continued on page 4

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>
> PROFESSOR CAROLYN LAM, SENIOR CONSULTANT, NHCS, AND PROFESSOR, DUKE-NUS CARDIOVASCULAR ACADEMIC CLINICAL PROGRAMME

Young women can get it too

"One of the big myths is that heart disease does not happen to younger women, or that it is not a big problem for women," said Prof Lam.

She said cardiovascular disease – which includes heart disease and stroke – is also a women's disease and accounts for one third of all female deaths.

Women any age can get it, although fewer young women than young men suffer from it. But even those who are young, lean and look fit may have high blood pressure or high cholesterol, which are the beginnings of cardiovascular disease.

The incidence rises with age, and especially after menopause in women. In old age, the scales are tipped against them. "We not only catch up with men after menopause, we overtake them," said Prof Lam.

She is concerned that women, while dutifully going for regular pap smears and mammograms, neglect to test their heart.

"Take care of your heart. That's the best thing you can do, not just for yourself but for your loved ones."

ILLUSTRATION: 123RF

> *Continued from page 3*

Heart failure is different in women

did badly and were more likely than men to die. So diabetes is particularly bad in women and a strong risk factor," said Prof Lam, who was the co-first author of the study with Dr Gao Fei, Principal Biostatistician, National Heart Research Institute Singapore, NHCS.

She said diabetic women can prevent cardiovascular disease by taking their medicines as prescribed, controlling their diet and sugar intake, and exercising. "The saving grace is that exercise seems to protect women more than it does men."

US guidelines advise women to get at least 150 minutes of moderate exercise a week, but those with heart disease should talk to their doctors before starting an exercise regimen, or be supervised when they do so.

Prof Lam also advises women with a family history of heart disease and those who are at menopause – or reaching it – to go for check-ups to ensure their heart is in good order.

"These problems are best picked up and managed at an early stage. If you have high blood pressure, high cholesterol or diabetes in the early stage, you can't feel it. You have to test for it," said Prof Lam.

Women's Heart Clinic

An encounter with an older female patient inspired Prof Carolyn Lam, Senior Consultant, NHCS, to set up Women's Heart Clinic there.

The patient said apologetically: "I'm sorry to disturb you. I have this strange feeling: It's sometimes here. It's not really a pain. I think it's because I'm stressed. My family members are also going through this stress. I think I need to manage my stress better."

Prof Lam saw that her patient was trying to rationalise away her symptoms. The woman had previously seen many other doctors, who told her it might be stress, or implied that she was neurotic.

"It turned out that she had severe heart artery blockages. Women often experience symptoms differently from that of men. Sometimes it's in the chest. They don't call it pain but discomfort, tiredness, a bit of tightness. Often, it's at the back and they think they need a massage."

By contrast, her next patient, a man, went straight to the point, telling her he had chest pains and needed to have his heart checked.

"I realised right then that we really need to get the message out to empower women. It's as if they think they're not allowed to have chest pain or heart disease because it's a man's disease."

The incident drove home the need for women to get help as soon as possible. She also hopes female advocacy groups can form to support, inform and empower one another regarding women's heart health.

The clinic she set up is not a physical space, but a service focusing on women at risk of heart disease or with symptoms of it. Patients come directly or are referred there by other doctors.

Prof Lam, who has been running the clinic herself once a week, is currently on overseas sabbatical leave but due to return in January 2018.

PHOTO: ZAPHS ZHANG

Prof Carolyn Lam (left) said the saving grace for women is that exercise seems to protect them from cardiovascular disease more than it does men.

Haze can be deadly

Study finds that the regional problem raises the risk of cardiac arrest by as much as 30 per cent when the PSI enters the unhealthy range. By Peter Yeo

THE MISTY GREY CURTAIN of smoke and smell of burning wood that makes a regular appearance, usually in the third quarter of the year, doesn't just irritate throats, sting the eyes or cause breathlessness.

The haze from burning forests in the region can also cause people, especially the elderly, to suffer cardiac arrest, a study by Singapore General Hospital (SGH) has found. Cardiac arrest occurs when the heart suddenly stops beating and the person collapses. Few people survive a cardiac arrest unless they get prompt attention, such as having cardiopulmonary resuscitation (CPR) and/or the use of an automated external defribillator (AED) to restart the heart.

According to Associate Professor Marcus Ong, Senior Consultant, Department of Emergency Medicine, SGH, the study found that the risk of cardiac arrest increased by 10 per cent when air quality was moderate, measured by the Pollution Standards Index (PSI) that Singapore's National Environment Agency uses. When the PSI entered the unhealthy range, the risk of cardiac arrest increased by almost 30 per cent.

The rise in the number of cardiac arrest cases that followed a spike in the PSI lingered over a few days. "This lag effect [of a heightened risk of a cardiac arrest occurring] peaked between day 1 and 3 [of the rise in PSI], and lasted at least five days," said Prof Ong, who is also senior author of the study.

Older people were more vulnerable, with those at least 65 years of age having a 1.41 risk of cardiac arrest when the PSI was in the unhealthy range, compared to 1.27 for those below the age of 65.

As an ecological study, however, it doesn't explain why the risk of cardiac arrest increases with a more polluted environment. "One theory is that when the air is bad, you have to work harder to breathe. That puts a bigger strain on the heart if you already have an underlying heart problem," said Prof Ong.

While there may be multiple factors at play, he added, the results of the study provided "very strong scientific evidence" of a link between air pollution and a higher risk of cardiac arrest.

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> ASSOCIATE PROFESSOR MARCUS ONG, SENIOR CONSULTANT, DEPARTMENT OF EMERGENCY MEDICINE, SGH

In recent years, the government has taken steps to improve survival in cardiac arrests that occur outside hospitals by having programmes that encourage more people to perform CPR and defribillation.

These programmes include simplified CPR training for adults and children; dispatcher-assisted CPR, where trained 995 operators teach phone callers how to perform CPR; myResponder phone app for activating volunteer responders within 400m of a person who has collapsed from cardiac arrest; and more AEDs.

These community programmes appear to have been effective, according to another study by Prof Ong. It found that the survival rate for out-of-hospital cardiac arrests in Singapore improved to 14 per cent in 2014 from 11 per cent in 2011. Bystander CPR rates (50 per cent in 2014 from 22 per cent in 2011) and bystander AED use also increased (3.5 per cent from 1.8 per cent), the study said.

While the incidence of out-of-hospital cardiac arrests is increasing in line with a rapidly ageing population, community-wide efforts are showing an impact, said Prof Ong. He cited bystander CPR, defribillation using an AED by a member of the public or a paramedic, and ambulance response times as the three strongest factors that have contributed to more people surviving a cardiac arrest.

Some CPR better than no CPR

When cardiac arrest occurs, the blood flow stops – meaning the brain isn't getting enough oxygen. When that happens, the vital organs start to die.

"The chances of survival decreases by 10 per cent for every minute that nothing gets done," said Associate Professor Marcus Ong, Senior Consultant, Department of Emergency Medicine, Singapore General Hospital.

While performing CPR properly – pumping the chest down by 4cm to 5cm at 100 times per minute, among other steps – is best, having some CPR done is better than no CPR at all.

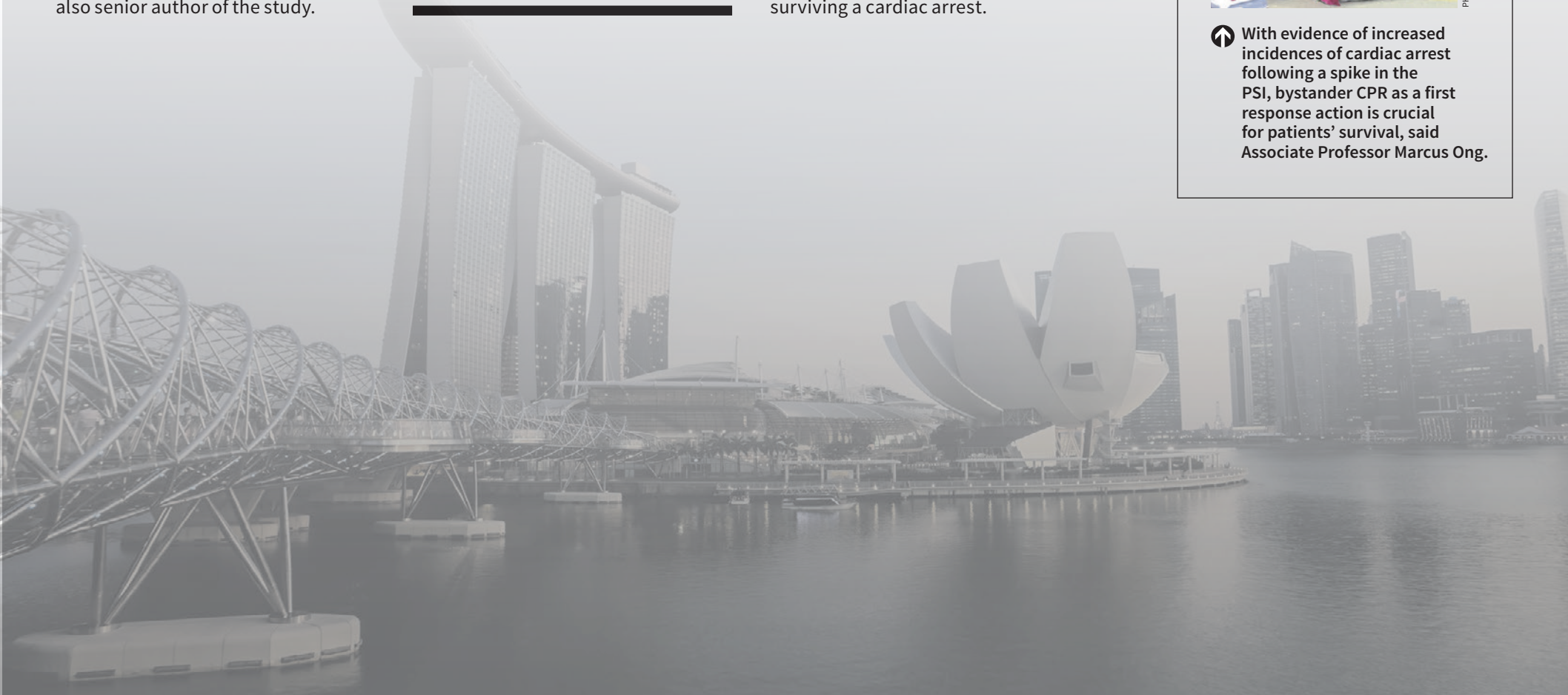
"If the bystander doesn't do anything, the chance of survival is close to zero," said Prof Ong.

"But doing something, even if it's not-so-good CPR, buys the person who has collapsed some time before the ambulance arrives. And that helps.

"Data shows that people who get bystander CPR have a two times higher survival rate than those who don't."

PHOTOS: PETER YEO & 123RF

With evidence of increased incidences of cardiac arrest following a spike in the PSI, bystander CPR as a first response action is crucial for patients' survival, said Associate Professor Marcus Ong.



Health care in the fast track

Doctors are tapping Formula One's technology with the aim of creating an early warning system that can improve patient care. By Thava Rani

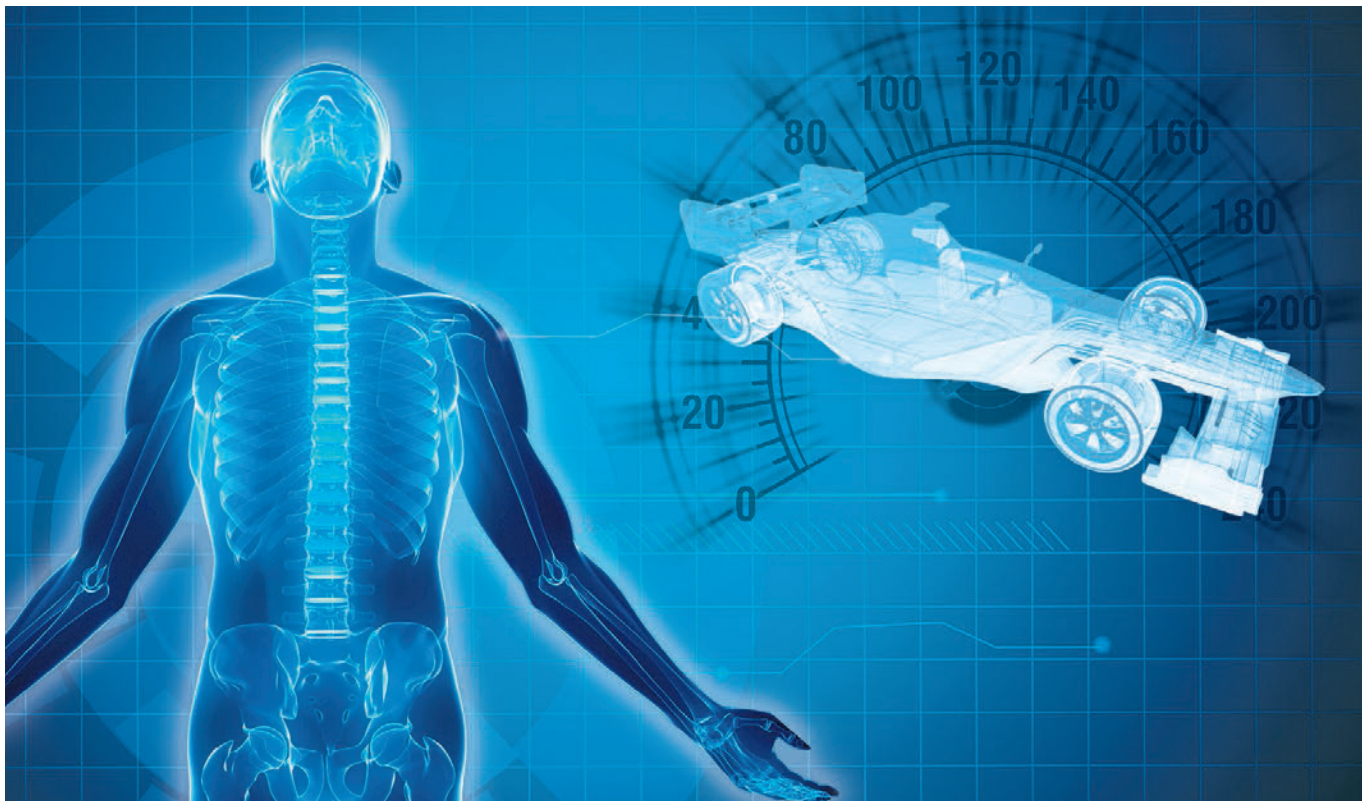


PHOTO: THAVA RANI / ILLUSTRATION: 123RF

One area the technology of predictive analysis and data management in motorsports can be useful is in monitoring accident victims with brain injury in intensive care.

A PATIENT IN THE INTENSIVE Care Unit (ICU) is very closely monitored. The moment something is not right, an alarm goes off. Within seconds, a medical team is by the patient's side.

But what if that "something not right" could be predicted before the alarm actually goes off? Is this science fiction?

This could be a reality sooner than we think, said Dr Jai Rao, Consultant, Department of Neurosurgery and Lead, Head Injury and Trauma Programme, National Neuroscience Institute.

An early warning system

As the first step towards a futuristic scenario, Dr Jai is working with engineers from McLaren Applied Technologies. Over five years, the team aims to harness the predictive analytics and data management technology of motorsport and apply it to patient care.

In McLaren Formula One cars, there are over 300 sensors that generate a huge amount of information about the performance of the car and driver. Predictive models are then built based on these.

"Using these models, the race engineer can assess how hard the body is working, what is the optimum performance level, or when mental or physical fatigue starts to set in during a race," said Dr Jai.

"Certain mechanical elements in the car can then be tweaked so that the driver can complete the race more efficiently."

He and his team hope to set up some sort of early warning system for patients too.

One area where that would be very useful could be in monitoring patients with traumatic brain injury. These are usually accident victims who are in the ICU.

In these patients, routine physiological data such as blood pressure, heart rate, brain oxygenation level and intracranial pressure are monitored continuously.

"If we can develop a dashboard that can analyse the data, and alert us when the patient is at risk of deteriorating in the next 20 minutes, we can move towards preventive rather than reactive care," said Dr Jai. "Basically, it's trying to find changes that may have happened in the trends before clinical deterioration sets in."

A predictive model could be developed and tested against existing data and in the ICU to see how applicable it is.

Another condition that the team is looking into is normal pressure hydrocephalus. One of the typical characteristics of patients with this condition is abnormal gait.

"A patient's encounter with the doctor is only momentary. Doctors usually aren't aware of what happens between consultations," said Dr Jai.

"For the first appointment, the patient may walk in unaided. For the next, he may use an umbrella for support, and by the third, he may come in a wheelchair."

Although patients with this condition do a standardised walking test at the clinic, it only provides information of their status at that point.

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> DR JAI RAO, CONSULTANT, DEPARTMENT OF NEUROSURGERY AND LEAD, HEAD INJURY AND TRAUMA PROGRAMME, NATIONAL NEUROSCIENCE INSTITUTE

A wearable device

A device that's worn by patients between appointments could help monitor their movements over a longer period.

The data gathered can be analysed by an algorithm and used to alert the doctor if there is a decline in the gait pattern or an increased risk of a fall. Then, if needed, an earlier appointment can be set up for the patient.

So far, just three participants have tried the device at the outpatient clinic. But more data is needed for engineers to come up with an algorithm.

"It could potentially be really beneficial for the patient. I wore the device myself and the data revealed specific periods where I was more tired," said Dr Jai.

He is hoping more patients with the condition will come forward and agree to wear the device. "Ideally, if they can wear it for two to three months, we'll be able to gather a lot of data."

Once an algorithm is created, it could be used in other neurological conditions as well.

"For instance, with back injuries, timing of the surgery is always a question. If the dashboard can show that there's been a substantial decline in walking ability in the last six months, then perhaps it'll be time to intervene," said Dr Jai.

"Clinicians can also use it to monitor other parameters such as tremors in Parkinson's disease to classify severity."

Dr Jai Rao has been working with McLaren Applied Technologies to adapt the technology for patient care.

Avoiding the highs and lows

Glucose variations can indicate hypoglycaemia in diabetes patients, study finds. By AJ Leow

PHOTO: AJ LEOW

The paintings behind Dr Daphne Gardner (left) and Ms Maria Azada are diabetes patients' depictions of their hypoglycaemic episodes. Ms Azada, who was diagnosed with type 1 diabetes as a child, experienced many hypoglycaemic episodes, including being found comatose in bed by her parents.

MEETING THE HbA1c (haemoglobin A1c) target isn't enough to control blood sugar levels of diabetes patients. Avoiding frequent and sizeable changes in blood sugar levels is also important if complications like hypoglycaemia, which can occur when the blood glucose level drops sharply, are to be avoided.

Indeed, blood glucose or glycaemic variability can indicate the onset of hypoglycaemia, according to a study by Singapore General Hospital (SGH). So diabetes patients whose blood glucose values undergo sharp fluctuations should be a target of greater care even if their HbA1c tests show the ideal 7 per cent reading.

"The HbA1c level by itself is not the best predictor. It is only a snapshot and doesn't tell the whole story," said Dr Daphne Gardner, Consultant, Department of Endocrinology, SGH.

"A patient can have a seemingly good HbA1c level of 7 or lower and still develop complications – not just from high glucose levels but also hypoglycaemia. This is because glucose levels can fluctuate and even experience roller-coaster swings – from 2 to 16 – in the period in between their visits."

The cause of frequent hypoglycaemic episodes might not be evident from the HbA1c result, which describes the average blood glucose level of the previous two to three months and not the day-to-day or intraday glucose levels in that period. It is only when a continuous glucose monitoring device or CGM is worn that a more up-to-the-minute picture of the shorter-term swings that can occur is revealed.

When the blood glucose level rises, more insulin has to be taken to reduce it. But studies done in the 1990s found that intensive treatment to reduce HbA1c levels was often associated with a higher risk of hypoglycaemia. As the HbA1c fell closer to 7 per cent, the tendency to suffer a hypoglycaemic episode increased, Dr Gardner said.

Clinicians have also noted that CGM sensor readings and HbA1c levels were often at odds. "So we looked for ways to predict the risks of hypoglycaemia independently of HbA1c readings," she said.

The study, which was carried out by a team of doctors from SGH and the University of Malaysia Medical Centre (UMMC), looked at CGM readings – five minutes apart over a four- to six-day period – of 60 type 1 (from SGH) and 100 type 2 (from UMMC) diabetes patients between December 2016 and February this year.

"The study revealed that one in two [50 per cent] type 1 and one in four [25 per cent] type 2 diabetes patients experienced episodes of hypoglycaemia over the period," said Dr Gardner, adding that hypoglycaemia occurred even though the patients had an average 8 per cent HbA1c reading, which wasn't far from the 7 per cent target.

Glycaemic variations collected by the CGM device, however, tied in more closely with the episodes and duration of hypoglycaemia of both groups.

"The results showed a close correlation with CGM readings – that is, the finger-pricks blood glucose values correlated very well with the continuous glucose monitoring glucose values. So we could potentially use the glycaemic variability from the finger pricks alone to predict hypoglycaemia [mainly in type 1 diabetes patients]," said Dr Gardner.

"We are recommending that physicians look beyond HbA1c. We want to look at not just HbA1c, but also glucose variability. We can't just rely on HbA1c alone," she added.

What is hypoglycaemia?

Also known as low blood sugar, hypoglycaemia occurs when the level of sugar in a person's blood is too low. Injecting too much insulin, not eating enough food, waiting too long between meals, exercising vigorously without eating a snack or adjusting the dose of insulin beforehand, and drinking too much alcohol can bring on the condition in people with diabetes.

People with diabetes experience low blood sugar differently, but generally, early warning signs of hypoglycaemia include feeling shaky, weak, dizzy, irritable and hungry, and having a fast heartbeat, headache, mood swings and a staggering gait. If the condition isn't treated and it becomes more severe, the person can have trouble seeing clearly, feel confused, have a seizure or even pass out.

To confirm the condition, check the blood sugar level with a glucose meter (finger prick). If it is too low (below 4.0 mmol/l), take a sweet drink like a fruit juice or sweets (not sugar-free) to raise the glucose level quickly.

Check the blood glucose level again after 10 to 15 minutes. If it is still low, take something sweet again.

It is important to seek medical attention promptly if the symptoms persist.

Look before you step!

Physiotherapy programme tailored to individual needs found to help some elderly patients avoid falling again.

By Sol E Solomon

PHOTOS: JUSTIN LOH

A series of community- and home-based programmes have been designed to help individuals in the high-risk category of falls gain strength and balance, to avoid future falls.

AS PEOPLE AGE, THEY BECOME weaker. They walk less steadily. They lose their balance. They fall – and fall again.

Indeed, the incidence of falls among the elderly is worrying. According to the World Health Organization, around a third of the elderly fall each year worldwide. Unlike younger people, older folks tend to recover slowly. Falls are a leading cause of death and disability in the elderly, exerting a heavy burden on health care-related costs.

With Singapore's population rapidly ageing, a group of researchers looked into the role of physiotherapy in preventing falls in the elderly.

"Falls can have an emotional consequence. People become fearful of falling, they restrict their mobility, stop leaving their flats, and become less independent and socially isolated. So anything we can do to improve their mobility and reduce their subsequent risk of falls will make quite a difference," said Professor David Matchar, Director, Health Services and Systems Research Programme, Duke-NUS Medical School.

Associate Professor Marcus Ong, Senior Consultant, Department of Emergency Medicine, Singapore General Hospital (SGH), who noted that the hospital's A&E is seeing more elderly for falls, said: "By focusing on these high-risk individuals, we hope to create a programme that can be translated more broadly through Singapore and internationally, reducing the impact of this very serious problem."

In the study, which also involved Changi General Hospital (CGH), St Andrew's Community Hospital (SACH) and Agency for Integrated Care, half the participants were put through therapy that was tailored to each individual by intensity and progression, while the other 177 participants were put into the control group and given standard treatment. The participants were at least 65 years of age and recruited when they sought treatment for a fall or fall-related injury at the A&Es of SGH and CGH.

FALLS CAN HAVE AN EMOTIONAL CONSEQUENCE. PEOPLE BECOME FEARFUL; THEY RESTRICT THEIR MOBILITY. SO ANYTHING WE CAN DO TO IMPROVE MOBILITY AND SUBSEQUENT RISK OF FALLS WILL MAKE QUITE A DIFFERENCE.

PROFESSOR DAVID MATCHAR, DIRECTOR, HEALTH SERVICES AND SYSTEMS RESEARCH PROGRAMME, DUKE-NUS MEDICAL SCHOOL

Mdm Juriah Komzari, a retired teacher and a participant of the study (with Ms Mina Lim), learnt to lift her legs to step over boxes of different heights. She had fallen down the stairs at an MRT station, but said the exercises taught her to look down when walking so that she wouldn't miss a step.

Using a scoring system, intervention-group patients were identified as high- or low-functioning. If they had a low score, they were considered high risk and put on a home-based programme. Lower-risk individuals went into a community-based plan of action.

"The idea is both the home- and community-based programmes were tailored to the individual and based on the notion that each person has to be evaluated; identified at what point he is in his strength, balance and gait; and to provide him with specific interventions to improve his movement and track him," said Prof Matchar.

The programme sets out the exercises to be done to improve areas like endurance, balance and strength. It is also clear about when patients should progress to the next stage. Thus, while it can be personalised for different patients in a group, the programme is also highly structured and consistent in that it sets out the time when patients should step up to different levels of intensity.

"It is like taking medicine. You need to know the correct dose to take, and also when and how often to take it," said Ms Mina Lim, Deputy Director, St Andrew's Senior Care, SACH, and a physiotherapist.

Patients often stop turning up for physiotherapy because they feel that they are doing the same exercises over and over again, Ms Lim said.

"In the study, even if they are in a group doing strength training, each is doing the same exercises at a different level," she added.

Although participation in physical therapy programmes did not reduce the number of falls in the elderly, it did significantly diminish the severity of falls and slowed the deterioration of physical decline, the study found. Specifically, receiving physiotherapy reduced the risk of falls in the elderly that require medical attention or restrict daily activities by almost 50 per cent.

The programme was also found to have most benefit for patients who were relatively fit. Participants who suffer no more than one major illness like stroke, Parkinson's disease or cancer, and who participated in the programme, had significantly fewer falls overall, reducing their fall risk by almost 70 per cent.

"The study showed us who would benefit, what exercises would benefit, and how to deliver some of them. Hopefully, we can convince people that after a fall, you can prevent further falls if you participate in a structured exercise programme at a place near you," said Dr Christopher Lien, Senior Consultant, Geriatric Medicine, and Director, Community Geriatrics, CGH.

Bedok Polyclinic reopens at new site

The clinic now has increased automation and people-friendly features that mean better and faster patient care. By Suki Lor

THE NEW BEDOK polyclinic is only a short distance from its old premises, but streets ahead in processes and services.

It is located on the second floor of the integrated building, Heartbeat@Bedok, which houses other community facilities such as Bedok Public Library, a community club, a sports recreational centre and a senior care centre.

The clinic now offers new services such as physiotherapy, podiatry and diagnostic radiology, as well as team-based care for chronic patients.

Designed with patients in mind, it has little touches to improve their experience, such as sturdy and comfortable chairs, and an activity area with reading materials, vending machines and Wi-Fi connection.

The clinic leverages greatly on technology in its care processes. One example is the new interactive self-help health kiosks where patients can take their own blood and Body Mass Index readings.

More self-service kiosks are also located outside the clinic, which allow patients to make appointments and payments. A new prescription collection service – PILBOX – is also available for patients to collect medication at their convenience.

A new teamlet service has been set up to ensure continuity of care. Patients now see the same team at each visit, and nurses monitor them remotely on a regular basis.

Dr Juliana Bahadin, Clinic Director, SingHealth Polyclinics – Bedok (seen at the child wellness clinic on the right), said the innovations are to ensure a higher level of service quality and patient satisfaction.

"We wanted to tackle the conundrum of access and quality," she said.

Patients can use the self-help health kiosks to take their own blood pressure readings while waiting to see the doctor.

The Heartbeat@Bedok building, which houses the polyclinic, the library and several other community facilities.

PHOTOS: ALVINN LIM

A LOOK AT THE FACILITIES:

Conducive environment
Green plants create a conducive environment for patients who can also watch TV programmes. Water and chewy bars are also provided for fasting patients who have done their blood test. Processes were enhanced so that patients with fasting appointments can be attended to earlier.

Activity area
A place to wait with free Wi-Fi, TV, phone-charging points and tables for laptops. Drinks and snacks are available from vending machines.

Support services
Physiotherapy, podiatry and diagnostic radiology are new services now available at the clinic.

Toilet transfer
Patients no longer need to carry their urine samples to the lab themselves. They can deposit their urine specimen in a latched compartment in the toilet while the staff at the other end retrieves them.

Enhanced design
Consultation rooms are designed to promote patient engagement and equal partnership between doctor and patient. Instead of sitting face to face across a table, they sit at a 45-degree angle. One of the two customised computer screens is tilted to allow sharing and discussion of medical information with patients.

Child wellness clinic
It's a child-friendly place for newborns to four-year-olds to get their vaccinations and development tests in a safe environment, away from the main thoroughfare of the polyclinic. The design of the place also helps to allay anxieties of both parent and child.

Community collaboration
"Being part of an integrated complex allows the clinic to collaborate with partners in the same building on programmes and outreach activities that benefit patients and the larger community," said Dr Juliana. "These include health education talks at Bedok Public Library, healthy cooking classes at the People's Association's culinary studio downstairs, and an exercise programme at the sports centre."

Championing rheumatological research

About 100 participants, including swimming greats, turn out to raise money to find cures for hard-to-treat group of diseases.

PHOTO: JASPER YU

Among the participants swimming to raise funds for rheumatology research were (top row, from left) Dr Andrea Low, Professor Kenneth Kwek, Dr Chew Li-Ching, Professor Julian Thumboo, Mr Ang Kwok Ann, and (in pool, from left) current and former national swimmers Ms Roanne Ho, Mr Clement Lim, Mr Joel Tay and Mr Russell Ong. Prof Kwek is SGH's Chief Executive Officer and Mr Ang is its Chief Financial Officer. Drs Low, Chew and Thumboo are from the Department of Rheumatology and Immunology.

HE KNOWS HOW IT FEELS TO suffer from pain so intense that it makes getting out of bed unaided difficult. Former national swimmer Clement Lim suffers from ankylosing spondylitis, which, like other autoimmune conditions, has limited treatment options.

To help raise awareness and funds for rheumatology research, Mr Lim joined some 100 other participants, including his former teammates, in early September at Singapore General Hospital's (SGH) inaugural Swim for Rheumatology! 2017.

Mr Lim, 24, who continues to swim competitively in spite of his disease, said: "My doctor encouraged me to continue to keep active, and swimming is a good exercise for those with ankylosing spondylitis."

People with this condition suffer persistent lower-back pain and stiffness because of inflammation of the spine. In severe cases, the disease can cause immobility and deformity as a result of spinal fusion. It can also affect other organs like the eyes and heart.

Over 600,000 people in Singapore suffer from rheumatological diseases, many of which are complex autoimmune conditions. In these conditions, the body's immune system turns on itself, attacking the joints, skin, heart, lungs, brain, kidneys or other parts of the body. Autoimmune diseases often strike people in their prime, even children.

The more common autoimmune diseases are systemic lupus erythematosus (lupus), rheumatoid arthritis and osteoarthritis, while systemic sclerosis, also known as scleroderma, is rarer.

"My colleagues and I have seen for ourselves how crippling rheumatological diseases can be," said Dr Andrea Low, Head and Senior Consultant, Department of Rheumatology and Immunology, SGH.

"Treatment options remain limited for many of these conditions, which can sometimes be life-threatening. We need to do better for our patients. That becomes our driving force to better understand these diseases, and to uncover new treatments and cures through research."

The event raised around $103,000 for the hospital's Reverie Rheumatology Research Fund, which was established in 2014 to support research in rheumatology, specifically lupus, scleroderma, osteoarthritis, rheumatoid arthritis and spondyloarthritis. The fund hopes to raise $12.5 million in the longer term.

To donate to the Reverie Rheumatology Research Fund or for more information, go to https://give.asia/story/reverie_rheumatology_research_fund.

Is your employee health-care coverage enough?

Corporate health insurance plans can vary not only from firm to firm but also within the ranks of a company. It pays to know what you are covered for.

By AJ Leow

DESPITE THE MANY PERKS given to encourage people to have more babies, the insurance that companies provide their staff might not cover maternity-related expenses.

Indeed, while the majority of companies in Singapore will provide some form of employee health insurance, the plans vary greatly in their coverage, insurance experts said.

So understanding what employers provide in terms of health-care insurance can help people decide if they need additional protection for serious diseases like cancer, injuries from accidents, long-term illnesses like diabetes, and pregnancy.

Insurance is a staff benefit, and so apart from the basic protection against the possibility of hospitalisation, surgery, death and disability, other health-care-related costs such as for consultations at polyclinics, general practitioners (GPs) and specialists are added on at the discretion of the company.

"There is no fixed 'recipe' when it comes to employment insurance," said Ms Kabita Karthigeyan, Vice President and Head of Employee Benefits Solutions, Prudential Singapore.

"Coverage depends on the type of industry and the working environment a company is operating in. Hence, the level of employee benefits varies from company to company.

"Employees working for an employer with a generous insurance budget tend to enjoy more comprehensive medical cost coverage compared to those under a lower cost plan."

For instance, many companies don't offer maternity insurance. Having a baby can be a risky affair, both for the mother as well as the child. If company insurance doesn't cover maternity, additional insurance can be bought by the individual to cover congenital defects in the child, and for complications that can arise during pregnancy and delivery.

Insurance is also available to cover IVF (in vitro fertilisation) pregnancies and multiple births, where the risks associated with carrying twins or triplets are higher.

Typical plans included in employee insurance coverage in Singapore

- Group Term Life and Total Permanent Disability
- Group Accidental Death and Dismemberment
- Group Critical Illness
- Group Long Term Disability
- Group Hospitalisation and Surgical
- Group Major Medical
- Group Maternity
- Specialist Outpatient
- Clinical Outpatient

The ones that do cover maternity usually cap the amounts that can be paid out, said Mr Lenin Chong, a certified associate wealth planner with the Financial Planning Association of Singapore. Company insurances that don't include the costs of having a child tend to cover miscarriages, as they are considered a form of accidental injury.

The comprehensive corporate insurance plans offered to employers by insurers such as AIA, Prudential and Aviva can comprise a range and variety of insurance products tailored to suit a company's specific needs.

Some corporate plans have different tiers of coverage and benefits for top and middle management, and the rest of the rank and file staff.

"For companies with more than 100 employees, we typically customise the benefits based on the company's philosophy, budget and employee profiles. For example, a more egalitarian model could mean the same benefits for all staff, while a more traditional benefit philosophy differentiates according to job hierarchy," said Mr Alvin Fu, Chief Corporate Solutions Officer, AIA Singapore.

Policies with comprehensive coverage extend beyond outpatient GP visits to specialist consultations and even dental work, with some plans covering spouses and children of staff as well. Coverage for visits to a specialist clinic also varies from employer to employer. Some companies offer 100 per cent coverage for referrals by a panel GP, while others may limit the number of specialist consultations per year or not cover them at all.

There are also differences in outpatient coverage. Some companies pay for all visits to approved GPs and put a reimbursement cap of, say, $35 per visit to non-panel GPs, while others offer a fixed deductible per GP visit.

The type and amount of benefits that companies offer are usually customised according to the budgets companies allot to staff benefits, said Mr Chong.

Should employees – both new and existing – take up additional cover then? A personal health policy to augment those by companies will stand the person in good stead in the event of an unexpected long-term illness as well as retrenchment or retirement. Medishield Life can act as a buffer to an extent, but the coverage is minimal. Medishield Life is a basic health insurance plan to help pay for large hospital bills and some costly outpatient treatments, so pre- and post-hospitalisation expenses, for instance, aren't covered, said Mr Chong.

Some personal plans come with both savings and protection components, with the premiums waived if the policyholder is retrenched (for a limited period) or has early stage cancer.

"As employment insurance policies are often non-transferable when an employee leaves a company, we recommend additional personal insurance plans be taken up," said Ms Karthigeyan.

Mr Chong added: "If you have pre-existing medical conditions, the insurer for your next company may exclude expenses arising from those very conditions. Furthermore, your employer's insurance coverage may also dictate the different types of hospital accommodation – such as a six-bed, four-bed or single room. You will have to pay cash or tap into your Medisave accounts if you opt for a higher tier not covered by your company."

ADVERTORIAL

Preventing Muscle loss: The 'new key' to healthy ageing

Article written by:
Dr. Robert Corish M.D.
Medical Advisor for AstaRael

Sarcopenia is a degenerative condition recognised as a central factor in age-related diseases and overall declining health promoting frailty, disability and death. It is best characterised as loss of:

- Strength
- Muscle mass (size)
- Muscle performance

Sarcopenia has also been called "muscle wasting", "frailty syndrome" and "muscle atrophy", but all of these terms do not convey the far-reaching effects of sarcopenia's true impact. Up until now, Sarcopenia has been largely dismissed by the medical establishment as a natural occurrence of the ageing process that eventually leads to frailty, disability and long-term needs. This is partially true as sarcopenia actually begins earlier, around 30 years of age and gathers speed and consequences with time.

What causes Sarcopenia:

- Low muscular activity
- Poor nutrition
- Cellular ageing
- Illness
- Hormonal disturbances

Myokines:
Research has recently discovered that active working muscles release 'chemical signals' during muscular contractions called 'Myokines'. Myokines are specialised signals that travel from muscles to other organs and tissues, sending vital instructions and information to the organ systems, supporting their roles and function.

To date, over 200 myokines have been discovered and their particular functions are being studied. Science has uncovered myokines that are crucial for strong bones and prevention of osteoporosis[1]. Sarcopenia precedes osteoporosis and it may exacerbate the loss of bone mineral density leading to osteoporosis. Indeed, studies reveal that preserving muscle size and strength promotes bone density and prevents early onset osteoporosis[2, 3, 4].

Measuring Sarcopenia:
Handgrip Strength (HGS) determines overall muscle strength using a special tool called a dynamometer. The recorded number is then compared to standardised tables for age, gender and nationality, and provides a risk profile for sarcopenia and its associated morbidities.

Another technique is measuring the walking speed using a treadmill by measuring the distance walked within six minutes. Other tests include the DEXA scan which provides information about muscle mass[5].

Degenerative condition:
Active muscles impact other organ systems through myokine signals. Reduced muscle activity often precedes and may contribute to other health problems such as osteoporosis, heart disease and dementia. It is imperative that we initiate a strategy to prevent muscle loss and to boost myokine signalling. Indeed, we are learning that myokines are crucial for good health.

How to combat sarcopenia:

- Endurance type exercises (requireing moderate effort for an extended time) stimulate significant myokine production.Exercises such as brisk walking, cycling, swimming and jogging stimulate significant myokine production.
- Resistance exercises or weights, also generate significant myokines and growth factors and are important for those of us over 50 years of age.

Nutrition:
Balanced nutrition with adequate protein is essential for muscle maintenance. 1 gram of protein per kg of lean body weight each day is recommended, and this may need to increase as we age. Leucine-rich branched chain amino acids are essential building blocks for muscles, and can be obtained from leanprotein such as meat and fish or from whey protein and pea protein shakes.

Targeted Antioxidants:
Research has shown that antioxidants play a crucial role in muscle health and ageing. Astaxanthin is a powerful antioxidant that has been shown to protect muscles from oxidative stress. Research points to astaxanthin's ability to suppress sarcopenia, even during times of disuse (no exercise). However its greatest effects were realised when astaxanthin was taken in combination with an exercise program. Clinical studies have shown that astaxanthin improves muscle strength, size and performance (increased walking times & distances)[6, 7].

In separate clinical trials astaxanthin reduced inflammation, muscle soreness and increased recovery times.

Bottom line:
The signs and symptoms of Sarcopenia are insidious and may initially present as: fatigue, loss of muscle tone & strength, even weight gain. Sarcopenia is often overlooked due to other overlapping conditions. Indeed, sarcopenia precedes other medical conditions such as: Osteoporosis, Dementia and Cardiovascular diseases.

New knowledge about muscle-myokines, sarcopenia and the aging process has helped researchers and clinicians to find solutions. The combination of selective exercises, a balanced protein diet together with a targeted antioxidant, Astaxanthin, has been shown to suppress sarcopenia and promote healthy ageing.

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3. Jean-Yves, et al., Curr Opin Clin Nutr Metab Care, January 2016, 19(i): 31-36
4. Chahal J, et al., October 2014, 67: 41-5
5. Cruz-Jerolt, et al., Age and Ageing (2010), afq 034
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7. Interim results of clinical study showing Astaxanthin Plus exercise significantly improved muscle strength. Reference: http://www.astareal.net/news

A carer's personal journey

Caring for an elderly parent who faces frailty and functional decline can bring a family closer.

By Dr Joseph Leong

MY FATHER WAS BORN in 1940 to a fairly well-to-do Hainanese family. He had studied overseas and trained as a chef in Europe, working in several hotel kitchens before running his own coffee shop.

He worked long hours – more than 100 a week – but decided to retire when an unexpected incident led to the closing of his coffee shop. He was about 55 years of age and unprepared for retirement. He fell into depression, and began slowing down mentally and physically.

Following my suggestion, he started working part-time at a neighbourhood Pizza Hut restaurant. He became "alive" again, happy with the tips from generous customers. He became the poster boy for Pizza Hut hiring older persons. He officially retired at 65.

In 2010, when he was 70, he went to the SkyPark at Marina Bay Sands for coffee on his own to prove his independence. In reality, however, he had been suffering more and more falls. Years earlier, he had slipped and fallen while walking home in the rain. He only saw a Chinese physician for a couple of months because seeing a Western doctor was, to him, a waste of time and money. His badly injured ankle eventually became deformed. His gait became increasingly unsteady.

My mother confined him to the house in 2013, prompting his moodiness to return with a vengeance. Stressed and tired out from looking after my father, my mother left him to us while she took a break.

I tried to persuade my father to use a wheelchair. It wasn't easy. Many of his generation think that wheelchairs are for the disabled and handicapped – equating sitting in a wheelchair to admitting that you are crippled or disabled.

It took a fun trip with his grandchildren to the Singapore Zoo and River Safari to get my father to see mobility aids in a new light.

Increased mobility went a long way towards improving his mood. He did not feel crippled, and he even attended an inter-religious harmony walk in his wheelchair.

Looking back, I realise that decisions affect not just the individual but the family and community. The decisions that my father made, be it to retire early or to not seek proper treatment for a fall, had an impact on our family.

At the same time, the experience of caring for my father had matured us, and we grew into a more caring family. We also came to realise that we were not alone in this journey. When my father got seriously ill with an infection in September 2016, the community came together for him. Pastors visited and prayed for him and our family. We even set up a WhatsApp group – "Peace at Home" – to support one another through prayer and practical help.

On a hospital visit, I had a vision of my father restored as a young, handsome, smiling man – much like how he looked in his wedding photo – which encouraged us to carry on.

We repaired our frayed relationships and had fewer disagreements about care arrangements as we learnt to make more decisions as a family, rather than let my father make them alone. Likewise, we have discussed the topic of dying well. My father now suffers from dementia, but my family sees him as "happily demented".

Although there is no cure for dementia and death, there is hope for families to stay united and caring while looking after their loved ones, as my own family has found out.

Growing old and frail isn't just a physical issue, but encompasses the mental, emotional, social and spiritual aspects of ageing in the community. It is wonderful that we have options like step-down care and day activity centres, mobility aids, wheelchair-friendly buildings, dementia-friendly businesses, as well as a future city for all ages.

As health-care professionals, I believe it is our duty to know and understand the various programmes and services the government has put in for active ageing. That way, we can make recommendations beyond just medications to our patients to enable them to enjoy happier and healthier living.

Dr Joseph Leong's children helped his elderly father overcome his bias against wheelchairs. Being pushed on a wheelchair with his grandchildren on his lap became such fun, he stopped associating the device with disability.

Dr Joseph Leong is Deputy Chief, Community Psychiatry of the Institute of Mental Health, and is also a Distinguished Public Service Star Awardee 2013. He is an expert adviser to Caregiver Alliance, Club HEAL, FAME Club, St Andrew's Nursing Home and Hougang Care Centre, and serves as the vice-president of the Association for Psychiatric Rehabilitation Singapore and as a board member of the Singapore Association for Mental Health.

This article was adapted from Living with Frailty: A Caregiver's Personal Journey, *published in the April 2017 issue of* SMA News.

Fascinated by hospital ops

Ms Chen Sijie stumbled into her job by chance, but she might have found her calling after finding hospital operations delightfully complex and interesting. By Thava Rani

PHOTO: JUSTIN LOH

Confident and diplomatic Ms Chen Sijie does not allow her youthful looks to come in the way when asserting herself in her supervisory role.

LOOKING LIKE A SCHOOLGIRL when you're in your late 20s isn't always a blessing.

Indeed, Ms Chen Sijie's vivacious and lively demeanour poses a challenge: How to convince her older colleagues at Singapore General Hospital's (SGH) Pre-operations and Admitting Services Department she is competent enough to supervise them?

The pint-sized Senior Admissions Office Executive already thinks managing people to be the most challenging aspect of any job. "Looking rather young is a bit of a disadvantage. It takes time to gain [colleagues'] respect and to prove [my ability]," she said.

But it helps that Ms Chen has a strong conviction about how she should do her job. "You have to strike a balance between standing firm when you think something is right and not being too hard on the team. You can't force your way through, but you have to communicate in a way that wins them over."

Ms Chen fell into her job by chance. A poorly performing economy at the time of her graduation meant few jobs to choose from. She had a degree in statistics, so was put in the analytics unit, scrutinising hospital data relating to patient admissions and bed management. But in the nearly five years that she has been with the department, she has come to realise that it's not just about vacating and filling beds, but how complex – and interesting – hospital operations are.

> LEARNING DRIVES ME, SO I'M NOT SO CONCERNED ABOUT CLIMBING THE CORPORATE LADDER BUT WHAT NEW THINGS I CAN LEARN.
>
> MS CHEN SIJIE, SENIOR ADMISSIONS OFFICE EXECUTIVE, PRE-OPERATIONS AND ADMITTING SERVICES DEPARTMENT, SGH

"If the hospital is expected to face a tight bed situation next week, what can be done? Can the doctors moderate admissions? Can we facilitate the discharge of long-staying patients? I try to zoom in on the reasons and take preemptive measures," she said.

From the comfort of looking at numbers on her computer screen, she next moved to the department's Bed Management Unit, where she got her first taste of leading an operations team. Assigning beds to patients scheduled for procedures seems straightforward, but there's actually more to it, she said.

Even after a patient has been given the go-ahead for discharge, his bed may not be immediately available for the next patient. He can't vacate his bed until the pharmacist has come round and dispensed his medication, the housekeeping services have done their job, and so on.

A willingness to take on fresh challenges and an ability to adapt led to her current role supervising a team of "frontliners" who register patients for admission, including advising them on the types of accommodation available, their costs and payment methods.

The registration process doesn't usually take long, but patients can sometimes wait hours before they are assigned a bed. Understandably, some get upset. "Staying composed when patients are shouting at you isn't easy, but the main thing is to hear them out," she said.

Although she hasn't encountered many such incidents, managing the day-to-day issues is exhausting and mentally draining. By the weekend, she is usually all set to sleep in and recharge.

"Once in a while, if I'm feeling particularly energetic, I will go trekking with my friends or family," said Ms Chen, who lives with her parents, elder brother and sister.

Contrary to her earlier expectations, she sees herself staying firmly on at SGH. "Learning drives me, so I'm not so concerned about climbing the corporate ladder but what new things I can learn," said Ms Chen, adding that she's grateful to her supervisors for giving her the many opportunities to learn and do new things. Those opportunities, she added, are what's keeping her at SGH.

Given a second chance to save others

Following a horrific accident, Dr Kenneth Tan chooses emergency medicine as a way of making a difference.

By Thava Rani

IN HIS EARLY 20s, Dr Kenneth Tan was in a traffic accident so serious that people who saw his vehicle thought he didn't survive.

Miraculously, he did. That experience also changed his views on life, and was the reason he decided to specialise in emergency medicine.

"After that accident, I realised that life was very fragile. I was given this second chance, so I wanted to make a difference as best as I could," said Dr Tan, who is Consultant, Department of Emergency Medicine, Singapore General Hospital (SGH).

Although he had considered specialising in other disciplines, the fast pace of the A&E (accident and emergency department) and the satisfaction of stabilising the conditions of very ill patients got his adrenalin going. "I felt like I had found my calling," said Dr Tan.

Still, he sought the agreement of his wife and parents in his career choice, knowing how the irregular hours – Dr Tan once went 36 hours without a break – and high stress environment can place a toll on family life. To this day, they remain a pillar in times of emotional need.

To survive in the emotionally charged, fast-evolving, life-and-death situations of the A&E, being able to keep a clear head, stay calm and make snap decisions are some prerequisites of an emergency medicine doctor. He must also be able to "reset" his emotions so that he can think straight and move on to the next patient, he said.

He recalled one Father's Day when the family was out for a meal. But he couldn't bring himself to celebrate the occasion when he thought of the parents of a young patient who had died earlier. His family didn't try to cheer him up but let him talk about the incident. "That [listening ear] is what keeps me going," said Dr Tan, adding that he often turns to his wife – a former nurse whom he met at SGH – to de-stress.

PHOTO: FRENCHESCAR LIM

Dr Kenneth Tan, who decided to specialise in emergency medicine following a serious accident in his 20s, is today a consultant in the department as well as part of the planning committee for the expansion of the A&E.

> OUR ENVIRONMENT IS ALWAYS VERY TENSE, SO IT'S IMPORTANT TO HAVE PEOPLE TO TALK TO. THAT SUPPORT SYSTEM HELPS US AVOID BURNING OUT. IN THAT WAY, WE CAN GIVE THE BEST CARE TO OUR PATIENTS, WHO TRUST US.
>
> DR KENNETH TAN, CONSULTANT, DEPARTMENT OF EMERGENCY MEDICINE, SGH

His colleagues also encourage one another at such times. "I like the camaraderie and friendship that we have. Our environment is always very tense, so it's important to have people to depend on and to talk to. That support system helps us avoid burning out. In that way, we can give the best care to our patients, who trust us," he said.

Dr Tan sits on a committee planning for the expansion of the A&E, which will be built alongside the upcoming Outram Community Hospital and is expected to open in 2021. The committee works with medical designers and architects to plan the layout.

The current A&E is very small, so when it gets an unusually large number of patients, resources will become stretched. "We are taking this opportunity when planning the new building to address such issues," he said.

Not only will the new A&E be much larger, it will also have a bigger emergency observation ward and a new acute medical ward (AMW). A&E patients who are not critically ill and yet not well enough to be sent home may be treated at the short-stay AMW. "Patients will get faster care, and early discharge or admission to [regular] wards for further treatment," said Dr Tan.

A&E doctors don't only deal with everyday emergencies like cardiac arrests and accident injuries. They also handle disasters and large-scale casualties, so one floor in the new building will be used for this purpose.

They will take the lead in managing such situations, initiating colleagues from other departments as needed, said Dr Tan, whose sub-speciality in toxicology will put him in good stead in crises involving biological or hazardous materials, given the current "not if, but when" fear of an attack.

Focus, not act on urge

"Mindfulness" is a word we've been hearing often lately. Now, a small British study shows using mindfulness for 11 minutes, and focusing on the "now" helps reduce the urge to drink alcohol. Researchers at University College London enlisted 68 heavy drinkers and divided them into two groups. Each group was given a different audio file to listen to. One taught them relaxation strategies to control the urge to drink, and the other, mindfulness where they were asked to focus on the urge, but not act on it. It was found that those who practiced mindfulness fared better because being aware of their bodily sensations helped them dismiss their urge as temporary. They also drank significantly less the week after the study. There was no significant drop in alcohol consumption in the other group. Although the test period was too short to be conclusive, the researchers hope further studies will replicate their findings.

Source: The Huffington Post

PHOTOS: 123RF

Eat your greens!

How often are we told this? A study by the University of Illinois and the University of Georgia found that including leafy greens and egg yolk in your diet can help supercharge your focus because they are rich in lutein – the key antioxidant nutrient in the brain. Although a certain amount of natural decline was expected, researchers found that middle-aged participants who had high concentrations of lutein, had similar neural responses as their younger counterparts. Lutein accumulates in the eye and brain tissue, and is easily measured without invasive methods. The body cannot synthesize lutein on its own, so the best way to get it is through a healthy diet.

Source: Science Daily

EVENT CALENDAR

The Art of Ageing Gracefully

DATE/TIME: Nov 4, Sat; 12.30pm-4pm
VENUE: Learning Space, Block 6, Level 1 Singapore General Hospital
FEE: $5
REGISTRATION: To reserve a place, call 6576-7658 (Monday-Friday, 9.30am-5.30pm), or email your details to public.forum@sgh.com.sg

Are bladder and bowel control problems a given as you grow older? Learn how to keep the leaks at bay and age gracefully at the pelvic floor disorders public forum.

Lose Weight, Gain Life

DATE/TIME: Nov 18, Sat; 8.30am-12pm
VENUE: Academia, Level 1, Auditorium SGH Campus (opposite SGH Block 7)
FEE: $5
REGISTRATION: Call Cindy Yeong at 6321-5563 or Pauline Lim at 6321-3564 (Monday-Friday, 10am-4pm). Email UGIB.Enquiry@sgh.com.sg.

Don't let obesity define your life. Learn how bariatric weight loss surgery can change your life. Patients will share their experience.

Visit www.singhealth.com.sg/events or the websites of respective institutions for any changes, more information and other listings.

Mend a flat head

Preventing cot death by putting baby to sleep on its back can lead to another phenomenon – flat head syndrome.

By Wong Sher Maine

PHOTO: 123RF

PUTTING A BABY TO SLEEP on the stomach is a no-no because of the risk of sudden infant death syndrome. But putting a baby to sleep on its back can lead to a flat head (or positional plagiocephaly).

A baby's skull is made of soft, malleable bones, and sleeping on its back can lead to a flattening of the back of the head.

In most cases, the condition isn't serious and the flattening is mild. Any imbalances will even out as the baby starts to lift its head more, starts sitting up at around six months, and spends less time lying down, said Dr Ng Wei Di, a Senior Resident who was recently with Singapore General Hospital's (SGH) Department of Neonatal and Developmental Medicine.

When sleeping too, a baby will change its position more often than when it was a newborn, alleviating the pressure on the back of its head.

"A baby might start to develop flat head syndrome before birth if its skull is pressured by the mother's pelvis or a twin," said Dr Guadalupe Viegelmann, who was also a Senior Resident at SGH's Department of Neonatal and Developmental Medicine.

Premature babies are more prone to flat head syndrome as they have softer skulls and don't turn much when sleeping. Babies with tight neck muscles are also prone to the problem as they tend to keep their heads turned to one side, Dr Viegelmann said.

Treatment is usually not needed as the condition usually corrects itself with time. However, in severe cases, repositioning therapy or cranial remoulding with corrective helmets may be needed, the doctors said.

When the condition is severe, the two sides of the face may not be symmetrical, with the ears and other features on one side of the face misaligned with the other. One ear might stick out more or be positioned differently from the other ear, the forehead might be uneven, or the cheek, face and jaw are different from the other side.

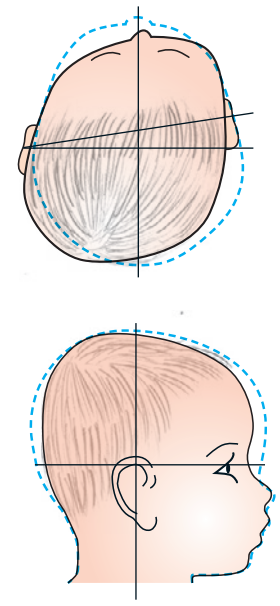
When babies are seen for the problem before they reach the age of six months, repositioning therapy is usually recommended.

This involves changing the position of the baby's head during sleep or playtime to avoid pressure on the flattened area, said Dr Ng. When done regularly, repositioning therapy can correct most flat head problems.

If flat head syndrome persists beyond the age of six months, cranial remoulding with corrective helmets might be used to correct the shape of the head.

Treatment is best done before the age of 12 months when the skull begins to harden. So if flat head syndrome is suspected, a specialist should be consulted when the baby is between four and eight months of age.

Flat head or plagiocephaly



Sleeping on its back for a long period of time can cause a flattening of the head. Plagiocephaly, however, does not affect the development of the brain, but can affect physical appearance in adulthood.

There is much that can be done at home to ensure that a baby has a head with a well-rounded shape.

When the baby is awake, put it on its stomach for supervised "tummy time", and take it out of the pram or car seat when not travelling. This will ensure that it isn't lying on its back for long periods, and avoids excessive pressure on the back of the head.

When the baby is asleep, gently change the position of the head so that the flattened side is facing up.

Babies have a natural tendency to look out of their cribs at its surroundings, so if the crib is placed against a wall, change the sleeping position so that the baby has to turn its head to look at things around it.

While there are pillows on the market for flat head syndrome, doctors discourage their use as these pillows are not scientifically proven to mitigate flat head syndrome.

They also contravene American Academy of Pediatrics guidelines, which include recommendations for babies to always sleep on the back on a flat, firm surface without duvets, quilts, blankets, wedges, bedding rolls or pillows.

When the lungs affect the heart

It is a rare, chronic and life-threatening disorder, but early treatment may improve patients' life expectancy and quality of life. By Annie Tan

PHOTO: 123RF

Unexplained breathlessness on exertion is among the earliest signs of pulmonary arterial hypertension, and should be attended to at the earliest possible time.

CALLED PULMONARY ARTERIAL hypertension, it is characterised by abnormally high blood pressure in the lung arteries. This weakens the heart and deprives the body of oxygen.

The disease happens when blood vessels connected to and in the lungs become narrow, making it hard for the heart to pump blood through the lungs.

Patients suffer shortness of breath; chest pain; fatigue; dizziness; fainting spells; swelling in the legs, ankles and abdomen; and, eventually, heart failure.

Over time, the disease becomes more severe because constricted blood vessels stiffen and thicken, and further restrict blood flow.

This causes pressure in the lungs to build up to dangerous levels and heart muscles to weaken. The heart becomes enlarged and less able to pump blood through the lungs. Eventually, this vicious cycle may lead to a fatal heart failure.

A rare disease, it affects around one in 15,000 people here, and tends to be more common in women aged between 30 and 50.

In many cases, doctors are unable to find the cause of the disease. But some common factors that put a patient at risk include congenital heart disease, connective tissue disease and a family history of the disease.

Symptoms appear late

Survival rates and quality of life can improve through early diagnosis, but it is often diagnosed late because symptoms do not appear until the disease is at an advanced stage. It is not uncommon for it to be diagnosed 2½ years after its onset when it has already progressed significantly.

Diagnosis is also challenging because the debilitating symptoms are very similar to those of other more common heart and lung problems.

But early diagnosis is important because without proper medical care, the disease tends to progress, and only 30 per cent of patients are expected to survive up to five years.

With medical care, more than 80 per cent of patients are expected to live beyond the five-year mark. This is a significant improvement from the survival rate without treatment (30 percent). Treatment can also significantly relieve debilitating symptoms and enhance patients' quality of life.

Among the earliest signs of the disease is breathlessness on exertion. When a person experiences unexplained exertional breathlessness, early medical consultation is recommended.

If common causes of breathlessness are excluded by thorough history taking, physical examination, blood tests, chest x-ray and electrocardiogram, further work-up will be undertaken to exclude rarer causes. Screening for pulmonary arterial hypertension is best done using echocardiography (an ultrasound scan of the heart).

Timely treatment needed

Vital to addressing the cause of the condition and slow down progression of the disease is timely and good medical care. It can also provide relief from common symptoms such as breathing difficulties. As the disease is uncommon, management is best coordinated in the so-called "pulmonary hypertension centre".

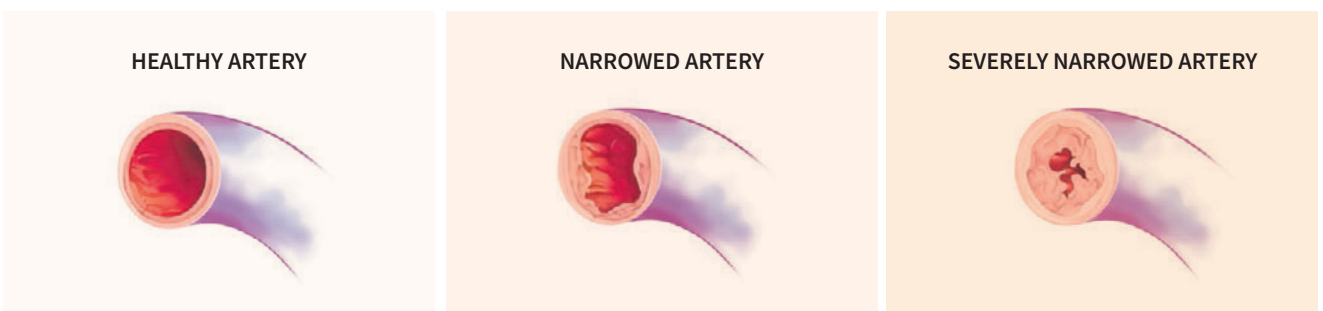
Treatment includes a combination of pills, inhalers and IV drugs that may help reduce blood clots, lower blood pressure, prevent arteries in the lungs from constricting, improve heart function, relax blood vessels and reduce excess cell growth within arteries. In severe cases, the specialist may also suggest lung surgery or a transplant.

Medication is aimed at reducing constriction or promoting dilatation of the lung arteries. There have been significant advances in the medical treatment of pulmonary arterial hypertension in the recent past.

However, even with medication, the disease may worsen. For better disease management, patients can exercise moderately as advised by their doctors.

Patients should also consider simple lifestyle changes, such as reducing strenuous household chores and physical activities. If the disease is at the advanced stage, rearranging the living space to limit physical exertion may minimise discomfort.

With good treatment and a little planning, patients with pulmonary arterial hypertension may continue to enjoy a fulfilling life doing the things they love.



ILLUSTRATIONS: NHCS

Pulmonary arterial hypertension develops when blood vessels connected to and in the lungs become narrow due to high blood pressure, making it hard for the heart to pump blood through the lungs.

Adapted from Murmurs, *a publication of the National Heart Centre Singapore (NHCS), with expertise from Dr Lim Soo Teik, Deputy Medical Director and Senior Consultant, NHCS, and Adjunct Associate Professor, Duke-NUS Medical School.*

It's too good to be true

Beware of do-it-yourself braces, which promise a lot but can ruin teeth and gums, and even kill. By Thava Rani

A MALAYSIAN TEENAGER learnt about an online "dentist" who could fit people with braces cheaply. All it took was an appointment in a motel room.

She went for it, and ended up with teeth that were glued together, learning the hard way that something too good to be true probably is.

Sadly, two Thai teenagers were not as fortunate. They died from infections caused by shoddy fake braces bought from a market.

Unorthodox do-it-yourself (DIY) braces started becoming trendy about five years ago with the rise of social media, said Dr Priscilla Lu, Associate Consultant, Department of Orthodontics, National Dental Centre Singapore (NDCS).

"There are now numerous trendsetters who give their followers everything from beauty regimens to makeup tutorials online. The first reported DIY braces tutorial was by a YouTube star who demonstrated how to use hair ties to close the gaps between her teeth. Since then, several videos have crept up on social media," said Dr Lu.

The results are unpredictable

"The force used is uncontrolled, as those applying the rubber bands have little knowledge about what lies beneath the teeth. They may unknowingly cause great damage to the gums and bone."

There is also a risk of the rubber band sliding under the gum, not only making it difficult to retrieve but also causing severe gum inflammation. Over time, it could destroy the supporting ligaments, resulting in a loose tooth or, worse, a tooth that falls out.

PHOTOS: JUSTIN LOH

They look alike but are very different. (Top) DIY braces in pink, which can be bought online or at street markets in South-east Asia. Photo shows them being attached to the gum wrongly, which may cause serious damage. (Below) Proper braces prescribed by an orthodontist, after a series of examinations and measurements before being ready for use.

Dr Lu said fashion braces, also known as "fake braces", are becoming popular in South-east Asia and are readily available in markets or pushcarts along the streets of Thailand and Indonesia. Usually made from craft wire or even a paper clip, they have orthodontic brackets attached to the wire with colourful rubber bands to make them look like the real thing (see braces in photo marked X).

"As the wire sits on the gums and is hooked between the teeth, the force of inserting and removing the wire could damage the gums. The brackets could also easily dislodge from the wire and become a choking hazard. Also, the materials used may contain poisonous metal or come from unsanitary sources."

She thinks wearing these DIY braces probably stems from the idea that people who wear braces are of a certain socio-economic class. "And these youngsters want to portray themselves as belonging to that class."

Dr Priscilla Lu warns that DIY braces, or those fitted by uncertified orthodontists, can cause irreparable damage to teeth and gums.

Unqualified brace fitting

She said there is also an increasing number of untrained people offering "braces fitting" services online. Some promise to "fix" a smile after just one session. Others are full-fledged companies that provide their clients with orthodontic aligners (removable braces) through the mail.

"This service is not available in Singapore, but like any disruptive technology, I believe it will make its way to us soon," she said.

All the client needs to do is send an impression of their teeth through a home-kit order that the company sends them. A technician from the company will then create a digital copy of the impression to move the teeth virtually on the computer, which may not be accurate in reality.

She said with no monitoring by an orthodontist, teeth may be pushed out of bone, or not move according to the virtual plan, resulting in bite problems. With no follow-up consultations, people may end up with a worse bite than before.

She warned that DIY braces may cause serious and irreversible problems. Damaged gums may not heal, permanent tooth discolouration cannot be reverted, bone loss is not replaceable, and root resorption could affect tooth longevity.

Dr Lu said she has not seen any DIY brace users at NDCS, and there are no reports of them in Singapore generally, but it may be a matter of time before it happens. "I really hope Singaporeans are a bit more discerning than that. Consulting a qualified orthodontist for braces treatment is still a safer bet."

A task for the professional

An orthodontist is a dental specialist in braces treatment and undergoes a minimum of 12 years of rigorous professional study and training. On average, a braces case takes two years. To manage a variety of different cases, an orthodontist needs to accumulate experience. This takes time. Identify an orthodontist on the Association of Orthodontists (Singapore) website at www.aos.org.sg.

An orthodontist will first do a thorough facial and dental examination, looking at deviations in facial symmetry, the relationship between the upper and lower jaw, the position of the lips, and characteristics of the smile. He will also check for tooth decay, gum problems and failing restorations, and deviations from the ideal bite.

A customised plan is devised after dental X-rays, dental photographs and impressions of the jaws are taken. It is a long-term commitment (most cases take around two years), and patients have to learn correct brushing techniques.

After the braces are fixed, a follow-up review is done every four to eight weeks. It may involve changing of wires, power chains (orthodontic rubber-bands) or aligners to keep the teeth moving in the right direction.

ILLUSTRATION: 123RF

Just one of those days, or is it depression?

Feeling down for a prolonged period is one sign that the mood isn't just an occasional case of the blues. By Wong Ker

AFTER MR S WAS LAID OFF from work, he found himself struggling with sleep. His appetite took a beating. So did his routine – not just daily activities, but the 55-year-old also started losing interest in things he used to enjoy, like playing chess.

When he found himself contemplating suicide a few times, he knew he had to confide in someone. He mustered up the courage and shared his feelings with his wife, who had already sensed something was amiss in his life.

Like Mr S, many people find themselves feeling down at some point in their lives. But how do general feelings of sadness or disappointment grow to become paralysing – and potentially devastating – depression?

While it is normal to experience a low mood when faced with disappointments and defeats, this should not last more than a few days, or become so overwhelming that the individual is incapacitated with negative thoughts, said Dr Poon Shi Hui, Associate Consultant, Department of Psychiatry, Singapore General Hospital.

"If the negative emotions – such as hopelessness and worthlessness – persist and last more than two weeks, you may be suffering from depression," said Dr Poon.

Depression, she added, is a mental illness that requires not only professional help but also support from family and friends. Asking someone who is suffering from depression to "snap out of it" or "don't think so much" about the unhappy things in their lives is easier said than done, said Dr Poon.

"Well, the truth is, as much as they wish to, they are unable to," she said.

Handling depression

SIGNS AND SYMPTOMS

- Feeling down, sad or empty most of the time and over an extended period.
- Losing interest in daily activities.
- Gaining or losing significant weight – more than a 5 per cent change in body weight in a month is considered significant.
- Losing sleep or sleeping excessively.
- Feeling tired nearly every day.
- Feeling pessimistic, worthless or guilty.
- Can't concentrate.
- Thinking repeatedly of suicide.

HOW YOU CAN HELP

- Don't treat depression symptoms lightly, but offer support and encouragement.
- Don't judge, but lend a listening ear.
- Encourage exercise to boost "feel good" hormone levels.
- Help establish a routine of activities to keep busy and improve sleep.
- Keep a close watch on their safety and of those around them.
- Encourage them to seek professional help if feelings of sadness persist and if they appear to have suicidal and/or homicidal thoughts.

AVAILABLE TREATMENTS

- Antidepressants work by correcting the functioning of the brain's neurotransmitters. Once a drug starts to work, most symptoms disappear after around two months. But the medications have to be continued for nine to 12 months after symptoms disappear, to avoid a relapse.
- Psychological treatments encourage sufferers to talk about their problems. This approach works best for people willing to talk about what they are going through.
- Electroconvulsive therapy (ECT), while extreme, is the most effective treatment for those who are severely depressed and whose symptoms have become so overwhelming that they are life-threatening. ECT is used to rapidly alleviate symptoms, and could be a crucial step in preventing those who are suicidal from taking their lives.

A dementia that can be prevented

Vascular dementia can potentially be averted because its causes are different from other forms of the disorder.

By Wong Ker

ILLUSTRATION: 123RF

VASCULAR DEMENTIA LOOKS like other types of dementia, but it has different causes. Because of this, it can possibly be prevented.

As its name suggests, it originates in the vascular system – the network of vessels carrying blood around the body. The brain, with its own rich network of blood vessels, is especially vulnerable.

According to Dr Adeline Ng, Consultant, Department of Neurology, National Neuroscience Institute (NNI), vascular dementia is caused by a sudden or step-by-step reduction in blood flow to the brain after a major stroke or a series of minor "silent" strokes.

"Blood carries essential oxygen and nourishment to the brain, and without it, brain cells can get damaged or die," said Dr Ng.

Its symptoms are quite similar to Alzheimer's disease. There is memory loss, disorientation and problems with communication. Patients may become slower in thinking and processing, and experience personality changes, including depression and apathy. There may be other specific symptoms, but they differ, depending on the area of the brain affected.

"Symptoms get worse over time, progressing over several years, but varying in speed from person to person. There may be a sudden or gradual change after a stroke," said Dr Ng.

Dementia, on the other hand, results from a gradual degeneration of the brain over time. It is characterised by memory loss, impaired judgement, disorientation and behavioural changes severe enough to cause loss of function that affect work, hobbies, shopping, cooking, dressing, eating, bathing and toileting. Although not a normal part of ageing, it is more likely to happen to the elderly.

> VASCULAR DEMENTIA CAN POTENTIALLY BE PREVENTED WITH GOOD CONTROL OF THE UNDERLYING CAUSES SUCH AS BLOOD PRESSURE, DIABETES AND HIGH CHOLESTEROL.
>
> DR ADELINE NG, CONSULTANT, DEPARTMENT OF NEUROLOGY, NATIONAL NEUROSCIENCE INSTITUTE

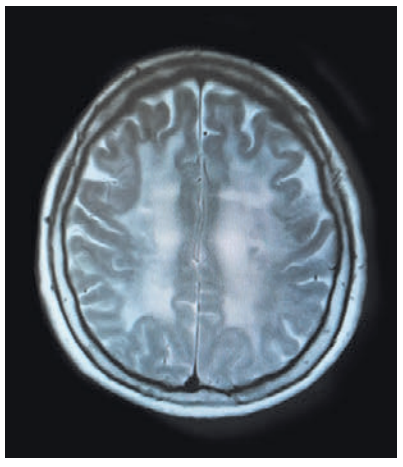


PHOTO: NATIONAL NEUROSCIENCE INSTITUTE

An MRI brain scan of a patient with vascular dementia. All the white areas in the brain, including the two prominent parallel white areas, show abnormalities.

Why it is preventable

Dr Ng said that vascular dementia can potentially be prevented with good control of the underlying causes such as blood pressure, diabetes and high cholesterol. "In exceptionally rare cases, vascular dementia can be caused by an inherited genetic disorder, but most cases are sporadic and due to these underlying chronic diseases," she added.

People most at risk of strokes are those with high blood pressure (hypertension), and those over 60 years old who are overweight, smoke, drink excessively, and have heart conditions, high cholesterol or diabetes.

"Many cases of vascular dementia are caused by small, silent strokes for which high blood pressure is the biggest factor. It leads to the narrowing of blood vessels and raises the risk of a stroke."

Other threats to blood vessel damage in the brain include smoking, high cholesterol, diabetes, obesity, a sedentary lifestyle and heart problems.

"Although these risk factors can have a genetic basis, managing high blood pressure and high cholesterol might help to lower the risk of vascular dementia," said Dr Ng.

But control must start at an early age because the effect is cumulative.

Research suggests that regular exercise and a healthy diet, especially in midlife and beyond, might help to lower our risk. Controlling chronic ailments – for example, quitting smoking and engaging in regular cognitive stimulation – could delay the onset of dementia.

Treatment, if prevention fails

If the primary care physician suspects dementia, patients may be referred to a specialist clinic, where they will be given physical and memory tests, and brain scans, which help the doctor identify cognitive problems and the likely cause.

"Brain scans such as CT [computerised tomography] or MRI [magnetic resonance imaging] are helpful in diagnosing vascular dementia because they allow doctors to look for changes in blood vessels common in this type of dementia. Scans also help doctors rule out other conditions that could cause similar symptoms," said Dr Ng.

There is currently no specific treatment for vascular dementia, but doctors will address the underlying related conditions.

They could prescribe medication for diabetes, stroke, high blood pressure, high cholesterol, heart problems or the same medication used to enhance cognition in Alzheimer's disease.

Dr Ng said some of the symptoms may be managed by physiotherapy, occupational therapy or speech therapy. Patients may also benefit from cognitive therapy (activities designed to stimulate thinking skills and engage people).

"They are often group-based and include games, with an emphasis on enjoyment. They help to provide consistent mental and physical stimulation to slow down or prevent cognitive decline."

Types of vascular dementia

According to Dr Adeline Ng Consultant, Department of Neurology, NNI, there are two main types:

Stroke-related dementia

This occurs when parts of the brain become damaged after a major stroke. It usually occurs when blood supply to a part of the brain is suddenly cut off. It may also be a result of bleeding in the brain, called a haemorrhagic stroke. Depending on which part of the brain is affected, the person may experience problems with movement, coordination, speech and sight.

Subcortical vascular dementia

This is the result of the cumulative effect of a series of small, "silent" strokes, which cause progressive changes in small blood vessels deep in the brain. The sufferer usually does not notice these changes, but over time, these strokes can damage parts of the brain that are important for attention, memory and language.

HEALTH XCHANGE

No time for exercise

I want to be fitter as I'm worried about developing metabolic diseases like diabetes and hypertension. But I don't have much time to exercise, so am keen to try Tabata, the very intense but short duration workout. Can it help prevent diseases like diabetes?

Tabata is a type of high-intensity interval training or HIIT, comprising bouts of high/maximal effort exercise with periods of rest in between. HIIT can improve fitness as much as, if not more than, exercises done at moderate intensity, such as brisk walking and jogging.

HIIT-based exercises like Tabata are an effective, time-saving exercise option to keep fit, but they have not been shown to be more effective than moderate-intensity exercises like walking or jogging in preventing metabolic diseases.

If you are not fit enough to undergo high-intensity exercise, the likelihood of health complications and injury to your muscles and joints is higher than moderate-intensity exercise. So be sure to always speak to your doctor and physiotherapist before embarking on a new exercise programme, especially if you haven't been exercising regularly and have a medical or musculoskeletal condition.

To keep metabolic diseases at bay, healthy adults should do moderate-intensity aerobic exercise three to five times a week, each time exercising 20 to 60 minutes, for a minimum 150 minutes a week. Moderate-intensity exercises are activities that cause slight breathlessness like brisk walking, jogging and cycling.

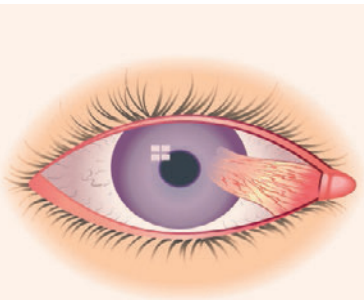
Depending on your fitness level and how long you need to recover from your exercise, you can also add high-intensity exercise one to four times a week.

Strengthening exercises using dumbbells, medicine balls or elastic resistance bands keep muscles strong, and should be done two to three times a week. Walking throughout the day – 10,000 steps a day – has also been shown to reduce the risk of obesity and metabolic diseases.

Take regular breaks when watching television or working at your desk, as studies have shown that sitting for long periods of time increases the risk of metabolic diseases, even if you do exercise. Taking as little as a two-minute walking break after every 20 minutes sitting down can improve blood sugar and body weight.

A healthy diet and lifestyle is also important in preventing diabetes and other metabolic diseases. Obesity, for instance, increases the likelihood of type 2 diabetes developing.

Mr Aaron Yeo, Physiotherapist, Singapore General Hospital



What is pterygium?

I was diagnosed with pterygium and will get an eye infection at times. With such a condition, can I still wear contact lenses or do Lasik? And how can I reduce the possibility of the infection recurring?

If you have a history of eye infections, I suggest that you discontinue wearing contact lens.

Pterygium is a fleshy growth on the surface of the eye – if it causes recurrent red eye or blurring of vision, then surgery may be necessary. If you have not consulted an eye specialist, I suggest doing so.

Usually pterygiums do not cause eye infections. Contact lens wearers have an increased risk of corneal infections.

An eye specialist can assess and determine your suitability for Lasik if you are diagnosed with pterygium.

Dr Anshu Arundhati, Senior Consultant, Corneal & External Eye Disease Dept, Singapore National Eye Centre

ILLUSTRATIONS: 123RF

A private issue

I have been suffering from itching in the testicular area recently, and am worried I might have a sexually transmitted infection. What are the different infections and their symptoms?

Itch in the pubic area can be due to a variety of causes, including inflammatory skin diseases, fungus, viral infection and pubic lice. While viral infection and lice infestation are usually sexually transmitted, the other skin conditions have non-sexual causes.

Pubic lice or crabs are tiny parasites that attach themselves to the pubic hair of humans, and are often spread by sexual contact with an infected person. Symptoms include itching in the pubic area, bloodstains or bloody spots on the underwear, as well as black dots, which are the faeces of the lice.

Molluscum contagiosum, another sexually transmitted viral infection that looks like tiny pearls, can also cause itch in the pubic area. It sometimes appears on the shaft of the penis.

Some other sexually transmitted infections are genital herpes, which causes blisters, and genital warts, which may be associated with discharge and itching.

Candidiasis, psoriasis, scabies (caused by tiny mites) and contact dermatitis (caused by soap, urine and rubber products) are non-sexually transmitted infections that cause itching in the male genital area.

Whatever the cause, it is best to consult a doctor and seek a proper medical diagnosis instead of trying to treat the problem with over-the-counter skin creams.

Dr Pang Shiu Ming, Senior Consultant, Department of Dermatology, Singapore General Hospital

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Winners will be notified by phone or email. Please remember to send in all the details indicated above. Incomplete or multiple entries will not be considered.

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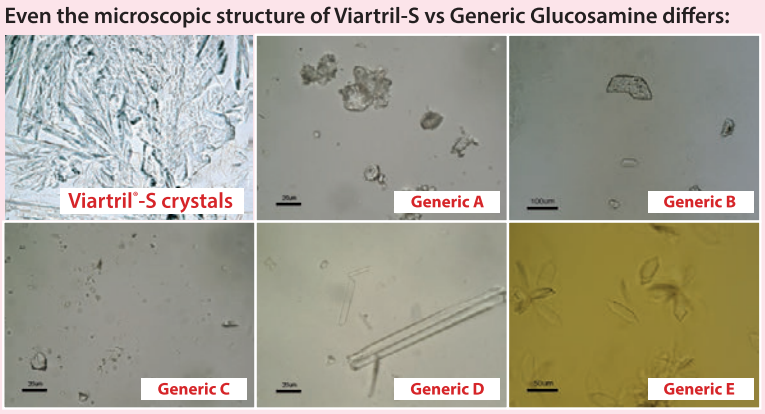

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Quoted from a European guideline:
"The European Society for Clinical and Economic Aspects of Osteoporosis and Osteoarthritis (ESCEO) advocates *the differentiation of prescription patented crystalline glucosamine sulphate from other glucosamine preparations*"

O. Bruyere et al, Seminars in Arthritis and Rheumatism 2014

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1) The role of diet and exercise and of glucosamine sulfate in the prevention of knee osteoarthritis: Further results from the PRevention of knee Osteoarthritis in Overweight Females (PROOF) study. **Seminars in Arthritis and Rheumatism, 2016.**
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2) An algorithm recommendation for the management of knee osteoarthritis in Europe and internationally: a report from a task force of the European Society for Clinical and Economic Aspects of Osteoporosis and Osteoarthritis (ESCEO). **Seminars in Arthritis and Rheumatism, 2014.**
- Brand Used: Viartril-S

3) Glucosamine therapy for treating osteoarthritis. **Cochrane Database, 2009.**
- Brand Used: Viartril-S

4) Total joint replacement after glucosamine sulphate treatment in knee osteoarthritis: results of a mean 8-year observation of patients from two previous 3-year, randomised, placebo-controlled trials. **Osteoarthritis and Cartilage, 2008.**
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5) Glucosamine sulfate in the treatment of knee osteoarthritis symptoms: a randomized, double-blind, placebo-controlled study using acetaminophen as a side comparator. **Arthritis & Rheumatology, 2007.**
- Brand Used: Viartril-S

6) Glucosamine sulfate use and delay of progression of knee osteoarthritis: a 3-year, randomized, placebo-controlled, double-blind study. **Archives of Internal Medicine, 2002.**
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7) Long-term effects of glucosamine sulphate on osteoarthritis progression: a randomised, placebo-controlled clinical trial. **The Lancet, 2001.**
- Brand Used: Viartril-S

Please consult your health professional for more clinical papers.

The Netherlands study* reported in CNA, analysed only 5 out of 21 eligible studies. The 5 studies which found glucosamine to be INEFFECTIVE are:

*Ref : http://dx.doi.org/10.1136/annrheumdis-2017-211149

1) Glucosamine and chondroitin for knee osteoarthritis: a double-blind randomised placebo-controlled clinical trial evaluating single and combination regimens. **Annals of the Rheumatic Diseases, 2015.**
- Brand Used: Generic Glucosamine

2) Clinical efficacy and safety of glucosamine, chondroitin sulphate, their combination, celecoxib or placebo taken to treat osteoarthritis of the knee: 2-year results from GAIT. **Annals of the Rheumatic Diseases, 2010.**
- Brand Used: Generic Glucosamine

3) Effect of glucosamine sulfate on hip osteoarthritis: a randomized trial. **Annals of Internal Medicine, 2008.**
- Brand Used: Generic Glucosamine

4) Glucosamine, chondroitin sulfate, and the two in combination for painful knee osteoarthritis. **The New England Journal of Medicine, 2006.**
- Brand Used: Generic Glucosamine

5) Effectiveness of glucosamine for symptoms of knee osteoarthritis: results from an internet-based randomized double-blind controlled trial. **The American Journal of Medicine, 2004.**
- Brand Used: Generic Glucosamine

A recent response to the Netherlands review quoted+:

"Glucosamine products other than prescription* crystalline glucosamine sulfate are not effective in hip or knee OA pain and function."

Unlike in Singapore, Viartril-S is a prescription patented crystalline glusosamine sulphate in some countries, including many European countries.

+ *Different glucosamine sulfate products generate different outcomes on osteoarthritis symptoms. Annals of the Rheumatic Diseases, 6 Sept 2017.*

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