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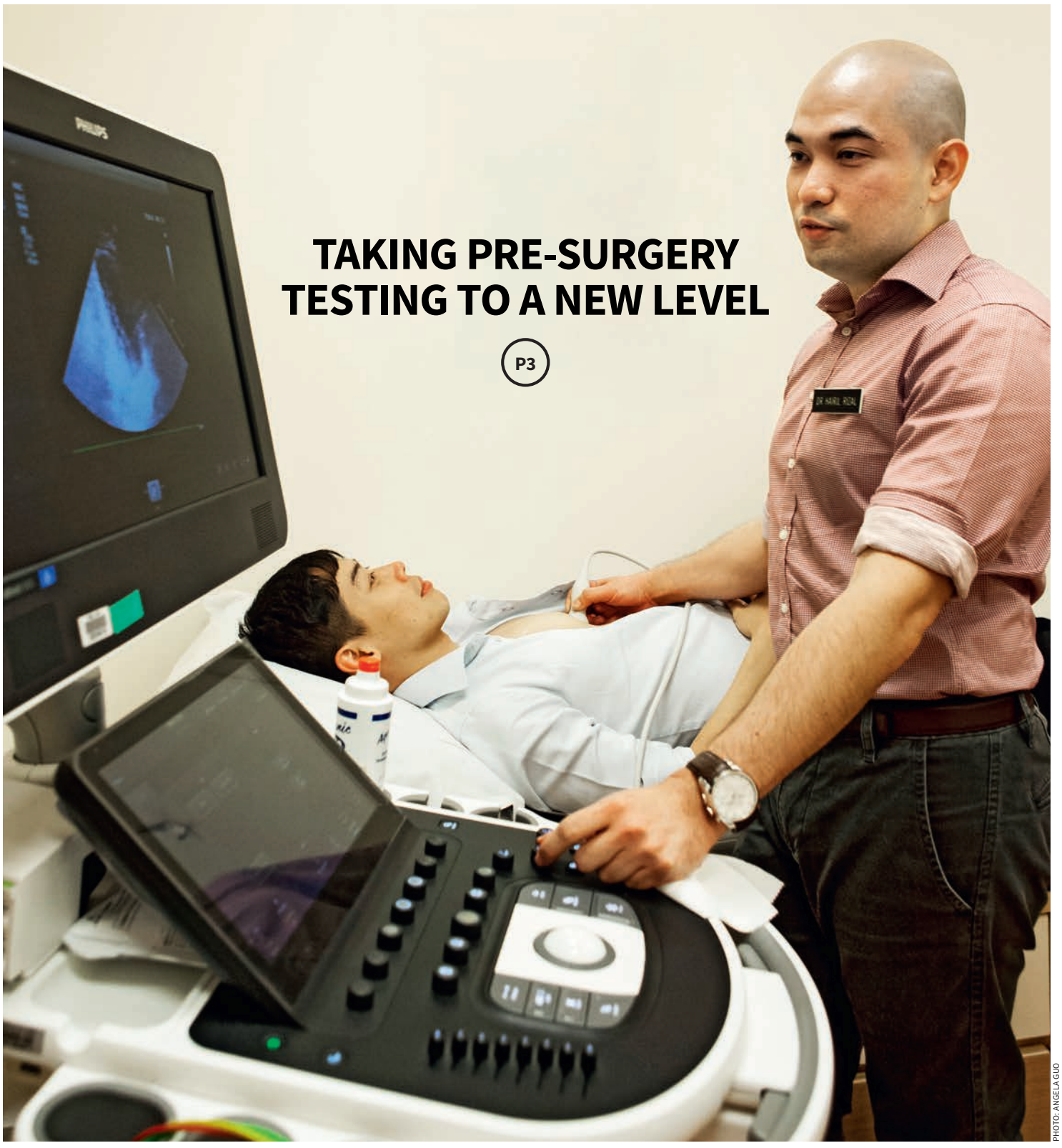

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PHOTO: ANGELA GUO

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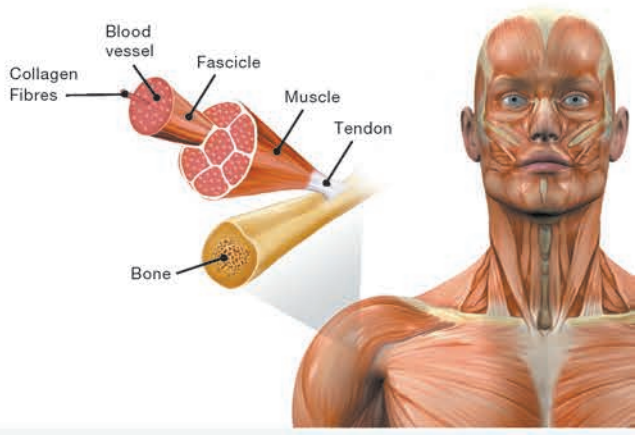

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CONTENT ADVISOR
Tan-Huang Shuo Mei
Group Director, Communications & Service Quality, SingHealth

EDITORIAL TEAM
Angela Ng (SGH)
Lim Mui Khi (SGH)
Ann Peters (SingHealth)

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For editorial enquiries, please email editor@sgh.com.sg

For advertising enquiries, please call 6571-7143 or email stangan@sph.com.sg

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Taking a calculated risk

SGH doctors develop a new risk measurement tool to assess and manage surgery-related risks more accurately and easily, including for people with a high chance of death and need for intensive post-surgery care. By Eveline Gan

MEDICAL ADVANCEMENTS HAVE greatly reduced surgery-related risks, but patients undergoing any form of surgery may still have complications. This is because even with the many tests that patients undergo before surgery, it is still difficult to tell for sure how well they will do, or even if they will die as a result.

To enhance the accuracy of pre-surgery testing, a team of Singapore General Hospital (SGH) doctors have developed a new online tool called the Combined Assessment of Risk Encountered in Surgery (CARES) calculator. It allows doctors to gauge patients' surgery-related risks more accurately and, in turn, predict and manage problems that might develop after surgery.

"With CARES, we can potentially do a better risk assessment and take necessary steps to mitigate some risks or plan for post-surgery care. CARES will also allow better discussions and shared medical decision-making between patients and their doctors," said Dr Hairil Rizal Abdullah, Clinical Director, Perioperative Services, SGH.

The tool is unique to Singapore as it takes into account the local population's environment, lifestyle, genetic make-up and healthcare systems. It may also be the first of its kind in the region, said Dr Hairil, who is also Consultant, Department of Anaesthesiology, SGH.

CARES generates a score based on nine health indicators, including age, gender and anaemia, that allows doctors to gauge patients' surgery-related risks more accurately.

PHOTOS: WINSTON CHUANG

Previous risk prediction models used were developed based on the population and healthcare systems in the West, which are not entirely applicable to Singaporeans, he said.

The team analysed medical records of over 100,000 SGH patients who underwent surgery between January 2012 and October 2016, and found that the accuracy rate of CARES (around 93 per cent) in predicting death and intensive care unit (ICU) admission post-surgery outperformed existing risk assessment methods (87 per cent).

The CARES calculator generates a score based on nine health indicators such as age, anaemia, gender, the presence of congestive heart failure and red cell distribution width (a biomarker that was recently found to predict death risk), among others. The information can be collected during patients' routine pre-surgery assessments.

Patients with high combined CARES score – above 30 – face a higher chance of surgery-related death and will require ICU care post-surgery. In such cases, patients might also be advised about other treatment options, said Dr Hairil, who is currently developing a web-based version of the CARES calculator to validate its effectiveness in other institutions.

Even with an effective risk assessment tool, such risks may remain undetected if patients miss their preoperative evaluation appointment.

At SGH, patients are routinely referred to the Perioperative Evaluation Centre several weeks before their operation date. However, about 15 to 20 per cent of patients do not turn up for their pre-surgery assessment, Dr Hairil said.

> Continued on page 4

What to expect at SGH's new Pre-Admission Centre

Singapore General Hospital's (SGH) Pre-Admission Centre (PAC) was expanded last year to oversee and coordinate all matters relating to non-emergency surgeries, from the moment that the doctor confirms surgery for the patient to the time when the patient arrives at his reporting unit.

The Centre – with the units under its ambit, including Admission Services, Same Day Admission Centre and Perioperative Evaluation Centre (PEC) – has streamlined and tightened pre-surgery and admission processes so that instructions are standardised and communicated systemically to patients.

Creating this single point of coordination avoids duplicating counselling, and ensures patients are fit and ready on the day of surgery. This helps cut down on cancellations – a substantial percentage of scheduled surgeries was cancelled because of medical reasons.

Once surgery is confirmed by their doctors, patients are referred to the PAC where they are advised on the following:

- appointments are made for the day of surgery, either for admission a day or two before surgery or the same day; and for preoperative evaluation at the PEC, which includes pre-surgery investigations such as blood tests, chest x-rays and electrocardiogram
- estimated hospital bill size; and financial counselling, including various modes of payment, bed class, subsidies, use of Medisave, Medishield and private insurance, as well as financial assistance for those in need
- average length of stay
- what to expect on the day of surgery, and documents to bring

> *Continued from page 3*

Taking a calculated risk

Some patients think that visiting the Centre for preoperative tests is unnecessary because they have already had the risks relating to surgery explained to them. But in any surgery, the risks are not just from the type of surgery that the patient is undergoing, said Dr Hairil. There are also patient- and anaesthesia-related risks to consider – anaesthesia raises the risk of a stroke or heart attack in older patients, for instance.

While age is something that cannot be changed, some risk factors can be modified, said Dr Hairil. A patient with anaemia, for instance, can be prescribed iron supplements orally or intravenously to raise red blood cell count before surgery.

> **IF I'M TOLD THAT I'M A HIGH-RISK PATIENT, I WOULD NOT WANT TO JUST ACCEPT THE RISKS. I WOULD WANT TO TRY TO MINIMISE MY RISKS FOR THE MODIFIABLE FACTORS BEFORE SURGERY.**
>
> DR HAIRIL RIZAL ABDULLAH, CLINICAL DIRECTOR, PERIOPERATIVE SERVICES, SGH

"If I'm told that I'm a high-risk patient, I would not want to just accept the risks. I would want to try to minimise my risks for the modifiable factors before surgery," said Dr Hairil. For such patients, a preoperative plan is then drawn up and may include exercises or diet to enhance fitness and health before surgery. "High-risk patients may require more investigations and time to carry out certain exercises or nutrition plans to optimise their surgical outcomes. They won't miraculously become low-risk overnight," said Dr Hairil.

"Major surgery is like a marathon. The likelihood of young, fit patients going through and finishing the marathon is much higher compared to those who are sick."

Even the young and fit can benefit from preoperative assessment. Dr Hairil has encountered patients who only found out that they had a medical condition like diabetes or hypertension during their pre-surgery testing. Other young adults may have inherently "difficult" airways that are not detected until they are evaluated, he said. "It is one of the risk factors that can be deadly if the anaesthetist is not prepared for it and is unable to secure the breathing tube [after anaesthesia is administered]."

A good surgical outcome, Dr Hairil pointed out, is not just about survival. "It is also about minimising complications and being able to provide the best quality of life for patients post-surgery," he said.

"With the ageing population, we'll be seeing more complex cases such as elderly patients with multiple medical problems. We need to change their perception that they can just go for surgery without the need for a pre-surgery evaluation."

A chance discovery

By pure accident, a gene mutation in head and neck cancer has been found to respond well to a lung cancer drug. By V. K. Santosh Kumar

PHOTO: ANGELA GUO; ILLUSTRATION: 123RF

A chance meeting between Associate Professors Gopal Iyer (left) and Daniel Tan at a carpark led to the important discovery that a lung cancer drug had a positive effect on patients with head and neck cancer.

IT IS NOT KNOWN WHY THIS LUNG cancer drug works well when given to patients with head and neck cancer.

Discussing this observation, arising from a clinical trial and laboratory models of head and neck cancer, two clinician-scientists from the National Cancer Centre Singapore (NCCS) went on to unravel the basis of what was to become a serendipitous discovery.

The duo are Associate Professors Gopal Iyer and Daniel Tan, Senior Consultants at the Divisions of Surgical and Medical Oncology respectively. The mutation they discovered is found in about 5 per cent of patients with squamous cell carcinomas.

Squamous cell cancers represent 95 per cent of head and neck cancers, 40 per cent of oesophageal and skin cancers, and about 10 per cent of lung and bladder cancers.

In the journal *Nature Medicine*, where they published their findings, an accompanying editorial stated that while the mechanism was not yet understood, the findings could be used to predict a patient's response to the drug gefitinib. It said, in the era of precision medicine, every piece of information is important for increasing the capacity to predict treatment outcomes.

> **THIS IS THE FIRST TIME EVER THAT THIS KIND OF GENE MUTATION HAS BEEN OBSERVED. NOW, RESEARCHERS ALL OVER THE WORLD WILL RE-LOOK AT SILENT MUTATIONS IN DIFFERENT WAYS.**
>
> ASSOCIATE PROFESSOR GOPAL IYER, SENIOR CONSULTANT, DIVISION OF SURGICAL ONCOLOGY, NCCS

The discovery is expected to give impetus to other researchers around the world to better understand this phenomenon, and come out with better and more effective treatment methods.

The duo hope it will lead to better treatment of head and neck cancer patients in the near future.

"This is the first time that this kind of gene mutation has been observed. We have opened up new avenues of research. Now, researchers all over the world will re-look at silent mutations in different ways.

"We've had our moment in the sun. We want to provide better treatment for cancers, so we would be happy if others are able to discover other effective options," said Prof Iyer.

Meanwhile, they are applying for funds to pursue their research and find out if the gene mutation they discovered makes squamous cell carcinoma in other parts of the body, such as the lungs, bladder or oesophagus, also treatable with gefitinib.

They are also developing diagnostic kits to identify patients with these silent mutations, and starting a clinical trial of about 50 patients.

How it all started

Prof Tan said it started with a phase II clinical trial 10 years ago that had "failed" and didn't show a sufficient signal to advance to a later-stage study.

"Only two out of 38 patients responded to the drug. There was no follow-up, but the two patients showed remarkable tumour shrinkage with just a short course of an oral targeted therapy," said Prof Tan.

He continued treating the two patients, who under normal circumstances would have died from the illness.

"I was intrigued by their response to the drug and the fact that they had an excellent outcome after conventional chemoradiation," he said.

The "weird" cases

In 2013, he bumped into Prof Iyer at a carpark and they discussed these "weird" cases. "We decided there must be something there, and so we started looking at it more closely and in detail," he said.

After their discovery, they applied for funds outside NCCS to further their research but were turned down three times, as their discovery was deemed "insufficient or unconvincing".

But with funds from donations to NCCS, they were able to continue their study with nine patients.

All nine were not suitable for conventional treatment like surgery and chemotherapy, but could easily take the lung cancer drug.

After taking gefitinib, two saw a remission of their cancer, and three had it under control. The other four died, but their conditions had improved and they survived longer than expected. Without treatment, the life expectancy of all nine would have been just six to nine months.

"More research needs to be done to find out the precise mechanisms and mediators of response in head and neck and other squamous cell carcinomas. It is exciting that we have uncovered a new class of biomarkers, and there remains a lot more work to see if this paradigm is applicable to other cancers and drug targets," said Prof Tan.

Prof Iyer said target patients would be those who have remarkable reactions to drugs. "We have to learn more from these 'exceptional responders' and then find the means to treat more people. Step by step, we have to try out different permutations and combinations, and in the end come up with a better treatment."

Already, expectations are high. The drug now costs more than $2,000 a month. But when it goes off patent in 2019, the price is likely to fall to about $125.

When less is more

PHOTOS: 123RF & JUSTIN LOH

A study sheds light on the difficulties doctors face when it comes to deprescribing, or cutting down on medicines safely, in the elderly. By Denyse Yeo

AS PEOPLE AGE, THEY TEND TO suffer from multiple health problems. As a result, many older people often need to take numerous medications – sometimes as many as 20 a day – at various times and in different combinations.

Polypharmacy or using many different medications can lead to drug interactions and other adverse effects. Indeed, it has become well established that older people become more prone to falls, fractures and repeated hospital admissions as a result.

Given its importance in light of an ageing population, a team of Singapore General Hospital (SGH) internal medicine specialists and pharmacists set out to explore the attitudes and challenges that healthcare professionals face in reviewing multiple medications.

"The study was designed to understand the practice of deprescribing medications, and the challenges faced among senior and junior doctors in our department," said Dr Krithikaa Nadarajan, Consultant, Department of Internal Medicine, SGH, and lead investigator of the study.

Deprescribing refers to the systematic process of reviewing, identifying, altering and discontinuing medications when existing and potential adverse outcomes outweigh the benefits.

According to Ms Yee Mei Ling, Senior Principal Clinical Pharmacist, SGH, deprescribing isn't a new concept, and is part and parcel of what doctors and pharmacists regularly do. Yet, it is often not done.

"So, conducting the survey will not only allow us to understand the issue better, but also create awareness among doctors," she said.

The team found that while doctors favoured deprescribing medications, they were often reluctant to actually do so. "Once the risks of a medication outweigh the benefits, we should consider deprescribing it," said Dr Soong Jie Lin, Principal Clinical Pharmacist, SGH.

> **ONCE THE RISKS OF A MEDICATION OUTWEIGH THE BENEFITS, WE SHOULD CONSIDER DEPRESCRIBING IT.**
>
> DR SOONG JIE LIN, PRINCIPAL CLINICAL PHARMACIST, SGH

The chief obstacle to deprescribing was an unwillingness to stop medications prescribed by other doctors, the study found. "Many of our patients see different doctors, and this fragmentation of care makes it difficult to know what has been prescribed and what is not," said Dr Tharmmambal Balakrishnan, Consultant, Department of Internal Medicine, SGH.

Even when a patient was being seen by doctors within the same hospital and his records were readily available, there was a reluctance among doctors to question the decisions made by their colleagues, especially more senior ones, partly out of respect for their colleagues' professional judgement and autonomy.

Junior doctors were also less confident about deprescribing medicines, while senior doctors suggested that patients and their family might be less willing to accept medication changes because of a lack of trust in an unfamiliar medical team during hospitalisation.

The study used a questionnaire to poll doctors at SGH's Department of Internal Medicine – the largest clinical department with 34 senior doctors and 100 junior doctors (house and medical officers, and junior residents). The department manages some 300 patients a day, including those admitted through emergency services.

As a result of their findings, the team suggested measures to be taken to overcome these barriers, including having pharmacists in medical teams, and heightening patients' understanding of the medications they are taking and their possible side effects.

The team is also testing out an algorithm on deprescribing of anti-hypertensive medications, proton pump inhibitors or PPIs (used mostly for gastric problems) and vitamins and supplements. The algorithm serves as a guideline for more junior doctors and pharmacists on the considerations to be made before deprescribing these medications.

At the same time, Dr Balakrishnan and Dr Nadarajan are helping to teach the younger doctors in their department on the benefits of deprescribing. Workshops are also being held to raise awareness of deprescribing. And a collaborative study with pharmacists from other institutions is underway to investigate the attitudes and beliefs of patients and their caregivers towards medication.

The Attitudes and Beliefs of Doctors Towards Deprescribing Medications study was published in the *Proceedings of Singapore Health*, a peer-reviewed healthcare and biomedical sciences journal published by SingHealth and Sage Publishing in the US.

(From left) Dr Krithikaa Nadarajan, Dr Tharmmambal Balakrishnan and Dr Soong Jie Lin are members of a team that set out to understand the attitudes and challenges that doctors and pharmacists face in systematically reviewing patients' medicines.

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Studying the genetic make-up of Asians

Scientists here are examining the genetic make-up of Singapore's multi-ethnic population to come up with more precise treatments for Asians. By Claire Turrell

PHOTO: THE STRAITS TIMES/SPH

Good health is not determined by good genes alone. Exercise, healthy eating and sufficient sleep can all contribute to a person's health.

THIS STUDY WILL FOLLOW about 1,000 healthy Singaporeans between 18 and 65 years old for two decades.

The scientists will be tracking their heart health and what causes them to get metabolic diseases such as diabetes.

They will be focusing on the interaction between genetics, lifestyle, physical activity and subsequent heart activity.

The study will start with 700 healthy volunteers and eventually follow 1,000 of them for 20 years. During that time, the volunteers will undergo periodic tests on heart rate, heart shape, calcium levels, blood pressure, diet and lifestyle. They will also wear fitness trackers.

This study comes on the heels of a recent one with 200 healthy volunteers who had to wear fitness trackers for a week. Using fitness trackers, MRI scanners and electrocardiograms, researchers found that the devices not only measured fitness but could also differentiate between certain types of heart disease.

Associate Professor Yeo Khung Keong, Senior Consultant, Department of Cardiology, the National Heart Centre Singapore (NHCS), who co-authored that study report, said the new study will build on these volunteers to reach 700 and then 1,000.

Genetic differences matter

Prof Yeo said scientists are looking for the genetic map to collect baseline data on these conditions in Asians, so that personalised treatments can be offered. Currently, most data is from Western research on Caucasians, so treatments are not especially tailored to Asians.

> WE NEED TO PROMOTE A CULTURE OF PARTICIPATION IN OUR OWN DESTINY. IF WE DON'T DO IT, WE'LL BE RELYING ON ICELANDERS AND AMERICANS TO DO IT. IT'S NOT RELEVANT, AND WE'LL BE MISSING AN OPPORTUNITY TO DO GOOD IN OUR PART OF THE WORLD.
>
> ASSOCIATE PROFESSOR YEO KHUNG KEONG, SENIOR CONSULTANT, DEPARTMENT OF CARDIOLOGY, NHCS

He said that while it is incorrect to say that Caucasian studies do not apply to Asians, and vice versa, for certain drugs and diseases, there are clear genetic differences between people of different ethnicities.

"It's the same reason why some of us have lighter hair, dark hair or thin hair. These are manifestations of genetics. For instance, right now I know that the blood pressure medicine I give a patient will work for most people. But maybe I could have started the patient on a different medication that would have been perfect for that patient's genetic profile."

He said Singapore is a good place for the study because although the pool of volunteers may be small, research can be thorough.

"Diversity is a strength. We don't have the luxury of a billion people in our population, so we'll have fewer volunteers but can go into deeper detail about each of them."

A similar genetic research project in the US has already proved invaluable, he said. "They've identified a gene in some patients, which resulted in extremely low cholesterol levels. This led to the development of a class of drugs [the PCSK9 inhibitors] that help lower cholesterol."

He hopes the Singapore study can make such a breakthrough and also create targeted treatments. On a global scale, the results of the study will be significant, but it can only be successful with the support of the volunteers.

"Without their contribution, doctors basically operate on old knowledge. We need to promote a culture of participation in our own destiny. If we don't do it, we'll be relying on Icelanders and Americans to do it. It won't be as relevant, and we'll be missing an opportunity to do good in our part of the world."

PHOTO: ALVINN LIM

Prof Yeo Khung Keong said that while the pool of volunteers is smaller in Singapore, it also means research can be more thorough.

It's not just about genes

Whatever genes you are born with, you can still beat the gene lottery by living a healthy life.

Good health is not determined by genes alone, said Prof Yeo. "We hope to show that even though you're born with a particular set of genes, how you lead your life – namely, having a healthy lifestyle, not smoking, doing exercise, and getting plenty of sleep – can contribute to good health. You do have some degree of control. You can influence the outcome."

Exercise can help with general cardiovascular fitness and boost good cholesterol. In athletes or people who train regularly, the heart is a trained muscle, and so is more effective.

But Prof Yeo said even overweight or obese patients who exercise regularly will generally do better than average-sized people who do not exercise at all.

The American Heart Association advises 30 to 45 minutes of moderate- or high-intensity exercise around three times a week.

Those interested to enrol in the study, which is part of the SingHEART programme, can call NHCS Biobank Coordinators at 9159-7029 during office hours (Mondays to Fridays from 8.30am to 5.30pm, excluding public holidays), or email: biobanking_enquiries@nhcs.com.sg.

PHOTO: DARREN CHANG

TO BETTER NURSING

MDIS student and full-time nurse Sim Ying Yen is studying to become better at her job, and one day attain a leadership position to improve nursing as a whole.

When she was studying for her diploma in nursing, Sim Ying Yen remembers fondly being a nurse on the go. Community health nursing being one of her favourite subjects, it meant she learnt on the job as part of a mobile clinic team providing healthcare to rural communities.

"I learned a lot from this experience and felt a real sense of fulfilment from being able to use the limited resources we had to help the impoverished," says Ying Yen, 26, who now wants to be upwardly mobile.

Eager to improve her skills and knowledge in nursing, with an eye on a future leadership position, the Malaysian is now concurrently working at a private hospital in Singapore and studying for a Bachelor of Science Nursing (Top-up) at MDIS.

She started the two-year programme, which is accredited by the Singapore Nursing Board, in January 2018 and will graduate in 2020 with a degree awarded by Edinburgh Napier University in the UK.

Edinburgh Napier is ranked among the top 5 per cent of universities, according to the Times Higher Education World University Rankings 2018.

Ying Yen says she chose this programme because it would help her attain the knowledge and soft skills required to be a nurse leader for tomorrow, such as taking a bigger-picture view of health care as a whole and understanding the processes that can help improve the overall standard of nursing.

"The knowledge and soft skills acquired will allow me to pursue a position of leadership in nursing. Teaching has become a future goal, and I hope to pursue graduate education in the future."

As a Staff Nurse II at a private hospital, Ying Yen's duties include providing routine nursing care in a multidisciplinary ward (general and surgical cases).

"We emphasise patient care by providing focused care to the patients, with a ratio of one nurse to two or three patients. My ward is also known as the 'happy ward' as I take care of maternity [and postnatal] cases too!"

Ying Yen enjoys the content of her classes and the nurturing approach of her lecturers, and she also appreciates the flexibility she has to fit both work and study into her schedule.

"Classes [at MDIS] are scheduled according to the student's flexibility and work hours. Thus, this would include day and night classes to accommodate nurses who are working day or night shifts."

With a commute of up to 30 or 40 minutes from her workplace to school, she has found her programme "challenging but manageable".

"Our lecturers are friendly and very approachable, which creates a safe learning environment for us to make mistakes and learn from them. I look up to them as role models for their professionalism and experience."

What's more, she has found studying while balancing a full-time job beneficial.

"I personally think that studying while working gives me the drive I need and helps me apply what I learn in the wards to my academic knowledge and vice versa. I also think that this has made me become a better critical thinker simply by applying what I learnt in school."

Though nursing was not initially her first career choice – she wanted to be a psychologist – she calls herself blessed and is thankful to have found her vocation.

"I love how this career teaches me to be empathetic and professional with day-to-day challenges. It's a career that offers financial stability and lifelong learning."

As for her current studies, she highly recommends the course to other nurses who wish to challenge their skills and look forward to changing the landscape and practice of nursing for the better.

PHOTOS: VERNON WONG

The fundraising riders with friends. Mr Simon Wong, who lost his wife to cancer and organised the event, is on the extreme right. Ms Juvena Huang, the only female who took part in the ride, is on the blue scooter.

Riding to remember

They rode to honour loved ones lost to cancer, and in the process raised money for cancer research and achieved a record. By Claire Turrell

EVERY ONE OF THEM has a story to tell about someone they lost to cancer. So when tour company owner Simon Wong, whose wife succumbed to the disease, suggested riding vintage sidecars to raise funds and create awareness of the disease, they were game.

A group of seven quickly formed, ready to take on the 500-mile (715km) ride from Singapore to Penang. They chose a more challenging route through the Malaysian countryside, and were not deterred by driving rain, potholes and many breakdowns during the gruelling three-day ride.

In the process, they raised more than $3,000 for the National Cancer Centre Singapore (NCCS), and were recorded in the Singapore Book of Records as the longest expedition by a team in scooters with sidecars.

The ride was the brainchild of Mr Wong, who wanted to give back to NCCS – the hospital that had cared for his late wife, Peikie, who died 10 years ago. Making this journey was a perfect way for him to remember her.

"She was the one that inspired me to travel. She always wanted to explore new places, try new things, and have an adventure," he said.

He knew 500 miles would be the limit for some of the 30-year-old vehicles. So he drew a 500-mile radius on a map around Singapore to see how far they could go. He saw that they could reach Penang, Peikie's birthplace.

"We used to go there regularly, but when she passed away, I didn't want to go back. This was a meaningful way to return," he said.

The six who joined him were nurse Mr James Quah; coffee trader Mr Guilherme Asckar; Modsquad rider and mechanic Mr Yusri Sallim; skateboarding company owner Mr Firdaus Samsuddin; maintenance officer Mr Syafiq Ghani; and Ms Juvena Huang, the only female, who was fresh off a two-year trip on a Vespa from Singapore to Europe.

"Everyone had a personal reason for doing this trip. They all knew someone who had cancer," said Mr Wong.

> **EVERYONE HAD A PERSONAL REASON FOR DOING THIS TRIP. THEY ALL KNEW SOMEONE WHO HAD CANCER.**
>
> MR SIMON WONG, WHO ORGANISED THE 500-MILE RIDE TO RAISE FUNDS FOR CANCER RESEARCH

Ms Huang, who led the riders, and was determined that the team would complete the journey, said: "During my solo journey, I lost three friends to cancer. One of them was my nephew's godfather, who fought stomach cancer for six years and was so positive. I drew a lot of inspiration from him."

The group's videographer, Mr Mingsong Ang, who documented the journey, lost his father and grandparents to the disease. To film the group in action, he had to improvise to get the footage, including riding pillion, sitting in the sidecar, and even clambering onto the support vehicles.

He said: "The team really put their blood, sweat and tears into this ride. Yusri was down with fever the night before we set off, and James' bike broke down twice on the way to meet us in Johor. The effort every member put in to pull this off was amazing."

The riders never buckled even when things got tough, as their thoughts were more on cancer patients and *their* struggles. They were touched by the support they received along the way, including offers of food and accommodation, when people found out the reason for their trip.

But what really took their breath away were the 40 Harley-Davidson riders who met them on the bridge in Penang with toll gate cards.

The three-day ride made it to the Singapore Book of Records as the longest expedition by a team in scooters with sidecars.

"They asked if they could escort us into George Town. We reached the bridge just as the sun was setting. It was phenomenal," said Mr Wong.

Back home, at a presentation ceremony, Professor William Hwang, Medical Director, NCCS, personally thanked them for their efforts.

But the trip's end is not the end of their fundraising efforts. They are organising a longer ride next year from Singapore to Ho Chi Minh City to raise funds, with the possibility of NCCS staff organising cancer awareness and education workshops for locals along the way.

Game for rehab

Physiotherapists developed an app that makes use of simple games to entice patients to stay on the rehab track. By Yong Shu Chiang

PHOTO: DARREN CHANG

Mr Lee Seng Beo and Ms Eleanor Chew demonstrating how the app works. When Mr Lee follows the app's instructions to lift his leg to "fly the helicopter", sensors strapped to his leg send information via Bluetooth to the app, which analyses whether the move has been correctly done.

AFTER AN OPERATION like a knee replacement, patients have to begin their physical therapy almost immediately for better recovery.

But pain can deter even the hardiest patients from getting up and exercising.

As a way of motivating patients, a team of Singapore General Hospital (SGH) physiotherapists came up with the idea of a video game that is both effective and fun. The exercises on their Supergramps app for smartphones or tablets are in the form of a game with progressive levels for patients to work towards.

"We wanted to do something with technology because we know it can help patients in many meaningful ways. Our objective was simply to use tech to increase each patient's level of activity [during their recovery]," said Ms Eleanor Chew, Principal Physiotherapist, SGH.

Patients can work on the exercises with minimal supervision, as the app is capable of indicating if they are not performing the tasks properly – like not lifting the leg high enough, not applying enough strength or not moving the leg correctly. It is also safe, as patients, even the elderly and frail, can do them in bed or while seated. Still, said Ms Chew, "It's not a silver app per se but is for general strengthening for everyone. We needed the exercises to be done safely, so it's for almost anyone to use."

> **IT'S NOT A SILVER APP PER SE BUT IS FOR GENERAL STRENGTHENING FOR EVERYONE. WE NEEDED THE EXERCISES TO BE DONE SAFELY, SO IT'S FOR ALMOST ANYONE TO USE.**
>
> MS ELEANOR CHEW, PRINCIPAL PHYSIOTHERAPIST, SGH

Sensors strapped to the legs send information via Bluetooth to the app. For instance, one exercise urges the patient to "lift [his] legs to fly the helicopter." "If he isn't doing this correctly, the helicopter won't move," said Ms Chew.

The app is also able to collect and store the data for analysis so that the physiotherapist is able to track the patient's progress. This feature is also useful for ensuring that the patient is doing his exercises at home.

Together with a former colleague, Mr Derek Lee, Ms Chew hit upon the idea for the app as their contribution for a hospital hackathon in 2017. After coming in first in one of the categories, they took their idea to a private software developer, Taggle Pte Ltd, that specialises in healthcare-related products to help them develop the app for trial with patients to test its effectiveness.

The longer-term goal, however, is for the app to be used more widely, not just within SGH. Indeed, for Mr Lee Seng Beo, Director, Taggle, the app's potential – not just as an easy and effective resource, but also for its commercial viability – was what drew him to the project. He said the gaming element was important in engaging patients in a fun way.

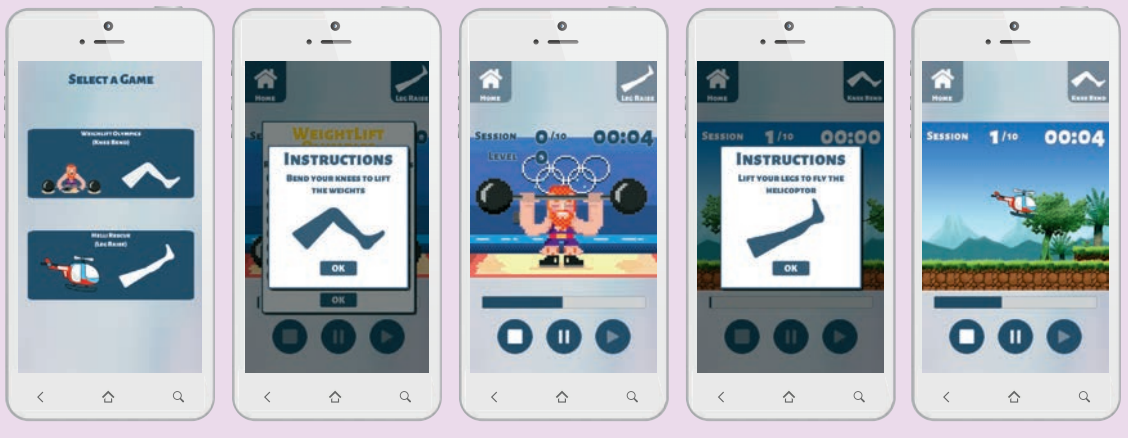
"A game is more fun or easy to follow. It also gives the player a target to work towards. When you reach a target, it motivates you. Then you level up," he said, adding that using an app like this can empower patients to take charge of their own well-being.

The app offers only two sets of exercises aimed at flexibility and strengthening of the lower limbs for the trial. They should take five to 10 minutes to do. Further down the road, the app can include exercises for different areas of the body. So far, only SGH staff have tried the app, but when it goes to trial, knee replacement patients are likely to be the target group. They will be required to raise their legs to move the helicopter, as well as bend their knees to get an on-screen character to lift weights.

"At the end of the day, this may not only benefit the patients and therapists at SGH, but it could serve the needs of other patients and hospitals in the region or worldwide," said Mr Lee of Taggle.

Get app and go, go, go

The app offers two sets of exercises which aim to strengthen and improve flexibility in the lower limbs.



Recycling antibiotics to battle resistance

An SGH study finds positive results in combating extensively drug-resistant bacterial infections by using systematic concoctions of antibiotic combinations. By Jeanne Wong

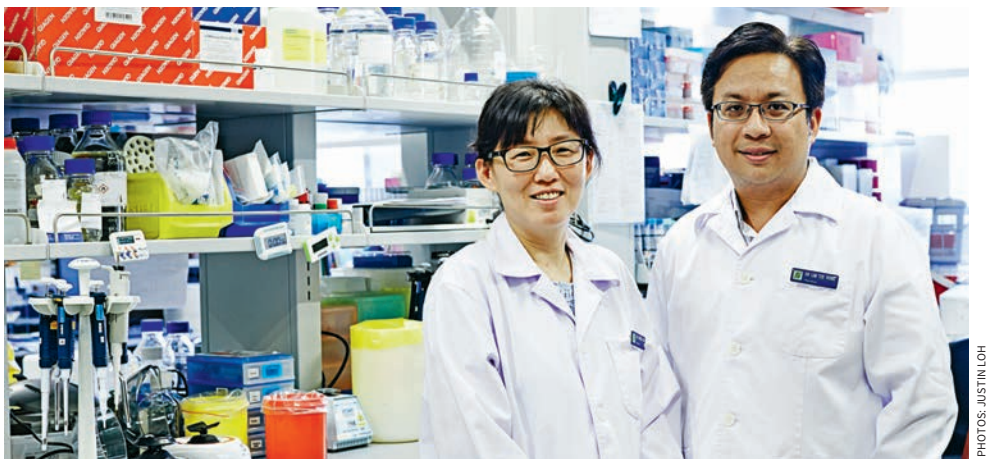


PHOTO: JUSTIN LOH

Dr Andrea Kwa (left) and Dr Lim Tze Peng aim to reduce the time taken to test and identify the best antibiotic treatment from 48 hours to less than 36.

THE WORLD IS RUNNING OUT of antibiotics, but a team of Singapore General Hospital (SGH) researchers may have hit upon a solution.

The researchers found that the incidence of deaths from extensively drug-resistant infections dropped markedly when patients were treated with a combination of two or three existing antibiotics in specific doses and concentrations.

"These antibiotics are otherwise ineffective for such infections when used alone. A possible solution is to combine existing antibiotics that work well together for better efficacy," said Dr Andrea Kwa, Pharmacy Clinician-Scientist, SGH, and senior author of the study.

"Extensively drug-resistant infections often lead to higher medical costs, longer hospital stays and more deaths, simply because there are very limited options left to treat such infections. We are fast running out of ammunition to fight the war, especially when there is a lack of new antibiotics."

She added that even if no new antibiotics come onto the market in the next few years, with the SGH approach – known as guided polymyxin-based antibiotic combination – it is still possible to fight those infections that are resistant to many or even all available antibiotics. The drugs used by the team include polymyxins, a potent group of antibiotics discovered in the 1950s. Because polymyxins are very toxic, they are little used now except as a last-resort treatment for extensively resistant infections.

The team from SGH's Pharmacy, Infectious Diseases and Microbiology departments studied three groups of patients who were admitted to SGH between 2009 and 2014 for extensively resistant infections. The patients, about 300 of them, were treated with polymyxins alone, polymyxins and other antibiotics, or guided polymyxin-based combinations. The patients had an average age of 60 years, and suffered from medical conditions such as diabetes and heart diseases, which made treatment even more challenging.

The overall infection-related death rate of the patients was more than 20 per cent, the study found. However, the group of patients who received guided polymyxin-based combinations had significantly lower infection-related deaths – at over 10 per cent – compared to 25 per cent and 23 per cent in the non-guided polymyxin-based combination and polymyxin-only treatment groups respectively.

Key to the SGH approach is the method used in the hospital to test and identify the effectiveness of different combinations and concentrations of antibiotics in killing the bacteria that are causing the infections. For the study, the team worked with 12 antibiotics, producing over 100 possible combinations.

"We had to perform a lot of experiments to prove that the combinations work. We designed experiments to prove that a particular combination works, not just for one day but for a week, and after a week, that it doesn't give rise to further emergence of resistance," said Dr Kwa.

Bacteria change and adapt to their surroundings very quickly, and are able to multiply every 20 minutes. If they are not killed quickly and completely by an antibiotic, they will be able to mutate, becoming resistant later to that antibiotic.

"We need to get the right combination for the right kind of bacteria, using the right amount [of the antibiotics] and the right duration. It cannot be anything less or anything more – otherwise we will be running into issues like not killing the bacteria or inducing resistance, which will become harder to treat later," said Dr Lim Tze Peng, Senior Principal Pharmacist Researcher, SGH.

The team is continuing to test antibiotic combinations, and is aiming to cut down the time taken to test and identify the best antibiotic treatment from 48 hours to less than 36.

Dr Kwa stressed that their antibiotic combinations are not meant for infections that can still be treated with existing antibiotics, but for those that resist the most powerful of antibiotics.

Getting the cocktail just right

Testing and identifying which combinations – including concentrations and doses – will work is a rigorous, time-consuming process.

Bacteria from a sample taken from a patient are added to a prepared 96-well culture plate containing at least 80 different types of antibiotic combinations.

The plate is left in an incubator for the bacteria to grow.

After 24 hours, the plate is examined to identify the antibiotic combinations that have stunted or prevented bacteria from growing. These are the wells that look clear, or have no visible bacteria.

Samples are taken from every clear well and diluted for the next round of tests.

The bacteria samples are transferred to petri dishes and incubated overnight.

Bacteria, which show up as spots in the petri dishes, are counted manually, and the optimal combination of antibiotics is the one with the least or no spots.

An easy new way to diagnose glaucoma

A pen-size camera is making detecting the disease a breeze.

PHOTO: NTU

The GonioPEN is a new invention that takes high-resolution images of the eye's drainage canal without making contact with the eye.

CALLED THE GonioPEN, it is the latest tool in the battle against glaucoma, an eye disease that has no early symptoms but can cause blindness if left undetected.

The device – co-invented by the Singapore Eye Research Institute and Nanyang Technological University (NTU) – takes high-resolution images of the eye's drainage canal without making contact with the eye.

It scans the eye in just three minutes, making it faster and more comfortable for patients than the current method used by eye specialists to make a visual diagnosis. The current method is done by pressing a handheld gonioscope lens against the patient's eyeball, while the specialist peers through an attached microscope. The 15-minute process can cause discomfort to the patient.

While conventional machines can also capture images of the eye at an angle with or without direct contact with the eye, the GonioPEN, at an estimated $5,000, is three to five times cheaper.

The device, connected to a computer via a USB cable, can also store images digitally while the software allows analysis for signs of glaucoma. A technician can use the gonioscope and collate images for later review and in-depth analysis by the eye specialist. Doctors can also better track changes in their patients' condition over time.

> **IN THE DIGITAL ERA OF HEALTHCARE AND FUTURE TELE-OPHTHALMIC CARE POSSIBILITIES, SUCH A DEVICE WILL ADVANCE THE STANDARD OF MEDICAL CARE.**
>
> PROF AUNG TIN, DEPUTY MEDICAL DIRECTOR (RESEARCH), SNEC

The invention makes it easier to detect and treat glaucoma earlier. Professor Aung Tin, Deputy Medical Director (Research), the Singapore National Eye Centre (SNEC), said that in the digital era of healthcare and future tele-ophthalmic care possibilities, such a device will advance the standard of medical care.

"The GonioPEN, with its compactness and integration to our electronic medical records, will achieve such goals for the future model in Singapore," he said.

Associate Professor Murukeshan Vadakke Matham, Director, Centre for Optical and Laser Engineering, NTU, and head of the joint research team that developed the device, hopes that it will soon be included in routine eye checks.

"Its ease of use means it can be used by primary, secondary or private eye-care physicians, while its compact size makes it portable for all healthcare set-ups. The cost is also kept low because a microscope is no longer required," he said.

In Singapore, around 3 per cent of people over the age of 40 (about 65,000) have glaucoma, while others are unaware they have it.

Glaucoma is a leading cause of blindness worldwide. It occurs when fluid build-up in the eye due to poor drainage puts unnecessary pressure on the optic nerve fibres. Damage to these delicate fibres, which carry visual impulses from the eye to the brain, will lead to vision loss.

East meets West in eye care

A new method of treating dry eyes puts Western medicine and traditional Chinese medicine on the same page.

EYES AND ACUPUNCTURE have not gone together… until now.

In a one-of-a-kind study, Western medicine was combined with traditional Chinese medicine (TCM) to treat dry eyes.

A total of 150 patients aged between 40 and 85 years old with dry eyes were involved in the study, which was conducted by the Singapore Eye Research Institute (SERI) and the Singapore Chung Hwa Medical Institution (SCHMI).

All participants were given artificial tears. Some additionally got acupuncture and others oral herbal medication.

The SERI researchers used high-tech equipment to measure progress, specifically the effect on the conjunctiva, cornea and tear functions/components. They found those treated with acupuncture and eye drops showed the most improvement, such as reduced eye redness and inflammation. Participants also found the acupuncture relatively pain-free.

Principal investigator, Associate Professor Louis Tong, Senior Ophthalmologist & Principal Clinician Scientist, Singapore National Eye Centre (SNEC) and SERI, said: "Dry eye is very much a condition that stems from modern living. We hope this partnership has illustrated the importance of cross-institutional efforts in bringing about high-impact research."

The study's Principal Collaborator and Chief Physician, Dr Pat Lim, TCM Ophthalmologist & Board Vice Chairman, SCHMI, agreed.

"TCM ophthalmology has been established more than 1,000 years ago and we believe, by integrating the strengths of Western and traditional Chinese medicine, we can develop the ultimate solution for serving our eye patients in the near future."

> **WE HOPE THIS PARTNERSHIP HAS ILLUSTRATED THE IMPORTANCE OF CROSS-INSTITUTIONAL EFFORTS IN BRINGING ABOUT HIGH-IMPACT RESEARCH.**
>
> ASSOCIATE PROFESSOR LOUIS TONG, SENIOR OPTHALMOLOGIST & PRINCIPAL CLINICIAN SCIENTIST, SNEC & SERI

PHOTO: 123RF

Researchers found that those treated with both acupuncture and eyedrops showed the most improvement.

Dry eyes are common in middle-aged people and are prevalent among Asians. The condition occurs when the eyes do not produce enough tears or if tears become unstable or evaporate too quickly. These in turn cause redness and irritation, and eyes tend to be tired easily.

Dry eyes can be caused or aggravated by certain medical conditions, ageing, prolonged exposure to digital screens, pollution, poor diet, sleeping habits, and even the use of contact lenses.

PHOTO: SNEC

Prof Louis Tong oversaw the research into dry eyes, which paired high-tech equipment with traditional Chinese medicine.

It's good to talk

She is on the phone with patients all day, but it is not aimless chit-chatting.

PHOTO: ALVINN LIM

Ms Sharon Ong, one of 14 telecarers at the Health Management Unit, monitors, supports and checks on chronically ill patients through phone calls to their homes.

ALTHOUGH IT SOUNDS like a walk in the park, her job as a telecarer is hard work.

But Ms Sharon Ong, Telecarer (Senior Staff Nurse), Changi General Hospital (CGH), enjoys it.

One of 14 telecarers in the Health Management Unit, she monitors, supports and checks on patients through phone calls to their homes.

These are patients with chronic illnesses such as diabetes, chronic obstructive pulmonary disease, heart failure, hip fracture and acute myocardial infarction (heart attack) who may have been recently discharged, re-admitted to hospital, with worsening conditions, or missed their regular check-ups.

She is in charge of about 400 of them, keeping tabs on their medical conditions, medication and doctor's appointments. She also tries to find out if they have any issues, and then try to link them to appropriate resources in the community.

On a typical day, she calls 10 to 15 patients and speaks to each for at least half an hour. Telecarers follow up on the same patients, with each getting at least one call a month or more, if their condition warrants it.

What telecarers do

Calls are not as simple as a chat on the phone. Before the call, Ms Ong reviews the patient's medical notes. After the call, she records details of the conversation.

Her main job is to empower patients with the knowledge and skills to manage their condition themselves, so as to prevent it from worsening.

"We show them how to take charge of their illness, such as being able to recognise and manage symptoms of a worsening condition, and how best to manage it," she says.

"For example, if a diabetic patient can recognise symptoms of hypoglycemia [very low sugar in blood], he would know that he should take a sugary drink to prevent serious complications from happening."

But the telecare line is not an emergency hotline. "We advise them to call if they have doubts about their conditions. For instance, if a diabetic patient feels unwell, but his blood sugar level is normal, he can call us. However, if he feels unwell during the weekend, he should go and see a doctor."

The support has resulted in fewer re-admissions to hospital and shorter stays. Only about 5 percent of patients call the line, indicating that the telecarers' scheduled calls are enough to monitor and provide patients with ample opportunity for consultation in the comfort of their own home.

Ms Ong thinks it is not enough to manage the disease alone, but to manage patients holistically. According to her, some elderly patients want to be re-admitted because they feel lonely at home.

She finds it helpful to build a rapport with patients because it encourages them to open up and talk about their social, family and financial issues. These are also sometimes picked up during the conversation. "We can connect them with resources they may need, like seeing a medical-social worker who can help with financial issues."

One gratifying case was helping a single mother who was at the end of her tether, and desperately in need of help and a break. Suffering from a chronic illness herself, she was juggling work, caring for her mother who had dementia, and raising a young daughter.

Ms Ong connected her with a family service centre, where professionals counselled her, and things improved.

"A year later, the rest of her family became more involved in caring for the mother, and the woman even managed to go on a holiday with her child."

Although she does not meet her patients personally, she feels close to them by taking care of them on the phone. "I enjoy calling and helping them. In the wards, they won't share their personal problems with you. But over the phone, I have the luxury of time to converse more with them. They too have more time, in the comfort of their own homes, to share with me."

> **IN THE WARDS, THEY WON'T SHARE THEIR PERSONAL PROBLEMS WITH YOU. BUT OVER THE PHONE, I HAVE THE LUXURY OF TIME TO CONVERSE MORE WITH THEM. THEY TOO HAVE MORE TIME TO SHARE WITH ME.**
>
> MS SHARON ONG, TELECARER (SENIOR STAFF NURSE), CGH

However, at the end of the day, how does someone whose job is to "chat" on the phone all day feel about talking?

"Not much," laughs Sharon.

She unwinds by jogging with her husband. Married for two years, they also like cooking together, baking (she especially loves making her favourite desserts) and, yes, chatting too.

Still solving puzzles

Dr Joanne Ngeow's knack for genetic sleuthing has helped patients and families shed light on their hereditary conditions. By Eveline Gan

GROWING UP, DR JOANNE NGEOW loved solving puzzles – the more difficult, the better. Today, this clinician scientist is still solving puzzles, but of another kind.

Now, she pieces together clues from patients' medical histories and genetics, connecting the dots so that families can have a clearer picture of the genetic basis for their conditions.

Dr Ngeow is Senior Consultant, Division of Medical Oncology, the National Cancer Centre Singapore (NCCS), and Associate Professor of Genomic Medicine, Lee Kong Chian School of Medicine, Nanyang Technological University.

Trained in clinical cancer genetics and genomic medicine at the Cleveland Clinic in the US, she returned to Singapore in 2014 to lead the Cancer Genetics Service at NCCS.

An expert on rare genetic disorders or hereditary cancers, she said 10 per cent of cancers fall into this category, but the risk is higher depending on which organ is involved. For example, close to 20 per cent of ovarian cancers have an underlying genetic risk factor, while 70 per cent of adrenal cortex tumours have a genetic risk factor.

"Even though the number of patients with an inherited pre-disposition to cancer is not in the majority, it's the group we can do the most for. If we know who has an increased risk, we can provide early intervention and screening," she said.

For example, about 5 per cent of colorectal cancer patients have an inherited condition, called Lynch syndrome, which raises their risk of getting colon and other cancers. "If we knew that ahead of time and actively screened family members early, we can quite readily prevent them from getting colorectal cancer."

Why genomics?

Her keen interest in the genetic drivers of cancer led her to the niche field of genomic medicine (using a patient's DNA to provide personalised healthcare), which she describes as "turning on the headlights to see where you're going".

"It's a tool that provides answers on why some cancers happen. It arms patients and doctors with information to better manage their condition, and in some cases prevent disease."

> MEDICINE IS BOTH SCIENCE AND ART. YOU ALSO NEED A DOSE OF INTUITION. IT GIVES YOU A SENSE OF WHAT TO CHASE, HOW TO CONNECT THE DOTS/ PEOPLE, AND WHAT MIGHT HAVE A MEANINGFUL IMPACT.
>
> DR JOANNE NGEOW, SENIOR CONSULTANT, DIVISION OF MEDICAL ONCOLOGY, NCCS

A good part of her current research involves studying cancer clusters in families, young adults and families with a history of multiple or rare cancers. This investigation empowers doctors and patients to make better choices, and offers insights into other non-hereditary cancers.

Breast cancer is an example. She said knowledge of the genetic pathway (that people with inherited genetic mutations tend to develop breast and ovarian cancers at a younger age than those who do not have them) led scientists to develop a drug that is now used to treat ovarian and breast cancer.

A curious childhood

She believes her childhood, living with aunts who were educators, played an important part in her career choice.

Instead of burying her head in books and homework, her aunts ensured that she spent most weekends exploring, with frequent visits to the zoo, bird park and science centre. On weekdays, it would be extracurricular activities such as netball, badminton, theatre and the science club.

"They were big on experiential learning, which instilled in me a love of exploration. My varied experiences early in life made me comfortable in very different fields of study," said Dr Ngeow.

Now, at work, she is comfortable with a broad range of research activities, which include clinical, translational and health services research. Part of her job also involves advocating for patients, and educating medical doctors, patients and the public on the importance and role of genomics in their medical care.

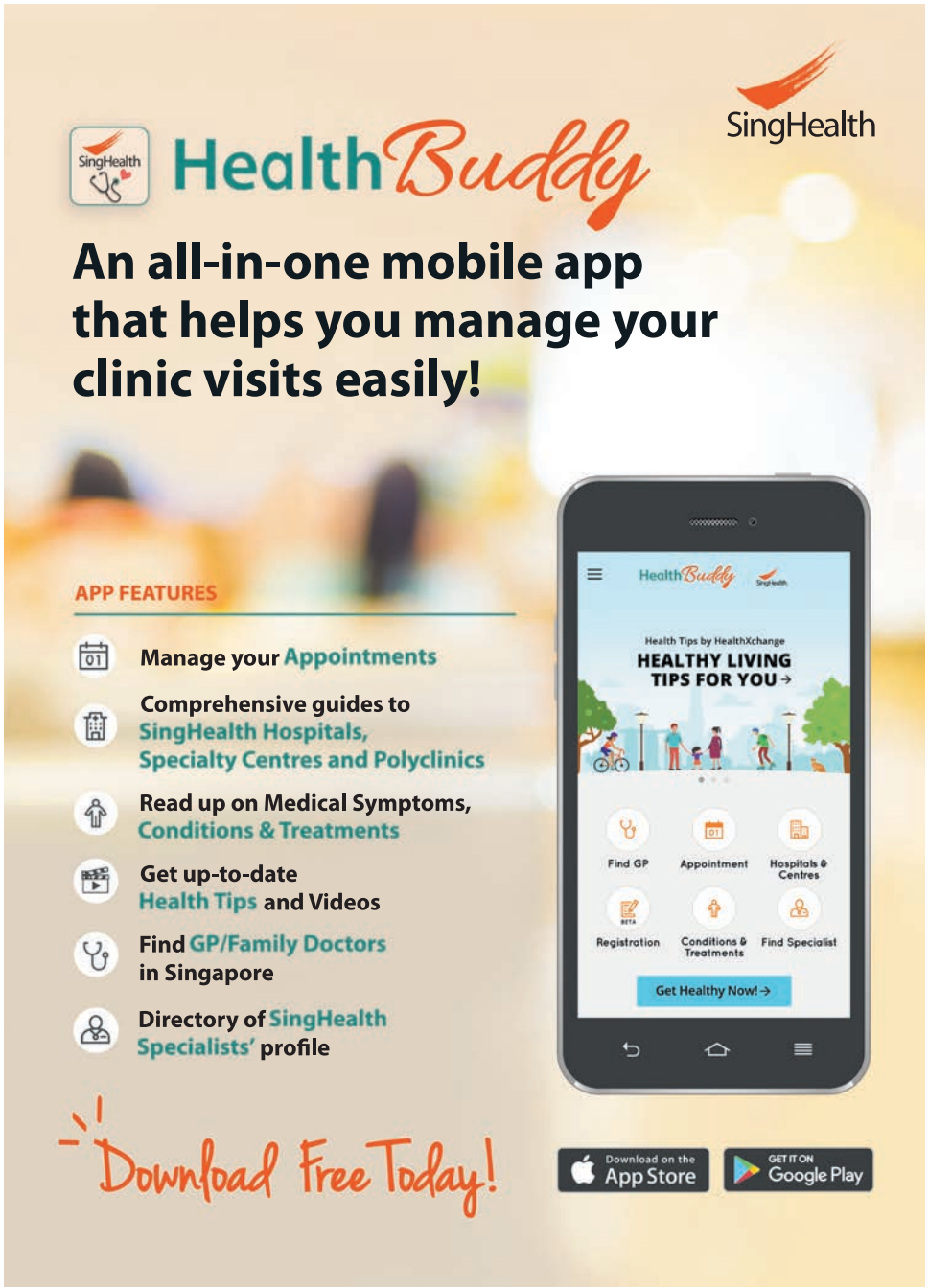
Medicine to her is both science and art. "You also need a dose of intuition. It gives you a sense of what to chase, how to connect the dots/people, and what might have a meaningful impact."

Working with patients who have hereditary and rare cancers can be challenging because of the many unknowns that patients (and clinicians) have to deal with, and which require further research to unravel. But she believes in being honest about the science and with patients.

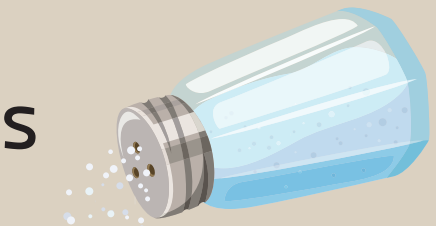
"It's a privilege to have their trust. Being honest about what we know or don't know helps. Most patients appreciate this, and that we're always trying our best to get answers for them."

PHOTO: WONG WEI LIANG

Dr Joanne Ngeow credits her aunts, who were educators, with her career choice because they emphasised experiential learning.



Don't take this with a pinch of salt



Too much salt – a cause of hypertension – may also be bad for the brain, and affect mental performance.

A new study found that mice fed a very-high-salt diet showed signs of memory and thinking problems within two to three months. They had trouble telling new and familiar objects apart, failed to respond normally to whisker stimulation, and found it harder getting through mazes.

"We translate that in humans to activities of daily living, and that's what we would call severe cognitive impairment or dementia," says Costantino Iadecola, a professor of neurology and neuroscience at Weill Cornell Medical College in New York City and the study's lead researcher.

For humans, the impairment would include memory problems, disorientation, and not being able to carry out daily activities such as paying bills.

The study, published in the *Nature Neuroscience* journal, sheds light on the links between what we eat and how well we think, and the role the immune system plays in that communication.

Despite the grim findings, the study ended on a positive note: When the high-salt diet was discontinued, cognitive performance was restored.

Source: WebMD

Bright side to dark chocolate

It is well known that eating dark chocolate is good for you, and new studies show it can also support cognitive, endocrine and cardiovascular health.

According to *Science Daily*, the studies found that eating dark chocolate with a high concentration of cacao could positively affect stress levels, inflammation, mood, memory and immunity.

A major source of flavonoids, cacao has extremely potent antioxidants and anti-inflammatory agents known to be beneficial for brain and cardiovascular health.

Past research has shown that the sugar content in dark chocolate can affect moods – the more sugar, the happier we are.

"This is the first time that we have looked at the impact of large amounts of cacao in doses as small as a regular-sized chocolate bar in humans, over short or long periods of time," said Principal Investigator Dr Lee S. Berk, a researcher in psychoneuroimmunology and food science from Loma Linda University in California. "These studies show us that the higher the concentration of cacao, the more positive the impact on cognition, memory, mood, immunity and other beneficial effects."

Source: Science Daily

ILLUSTRATIONS & PHOTOS: 123RF

Running into trouble with cushioned shoes

Those who rely on cushioned running shoes for track and field activities may face an increased risk of foot injury and leg pain.

New research shows that "maximal shoes" put more, not less, stress on bones, muscles and joints, and may cause joggers to develop plantar fasciitis, a stabbing pain in the foot, or tiny fractures in the shin bone or tibia.

The study, conducted by the Orthopaedic Research Centre of Excellence Lab at Oregon State University, involved participants wearing neutral running shoes for one test, and repeating it later with cushioned shoes.

In the test, they had to run over a plate that recorded pressure applied as the foot hits the surface.

Professor Christine Pollard, the centre's director, said: "We thought the highly cushioned shoe would actually reduce those forces that have been associated with injury. But what we found is those forces go up. So, that would suggest increased risk of injury."

Her team's study was published in the *Orthopaedic Journal of Sports Medicine*. Previous research on running has suggested that going barefoot could be comparatively better.

Source: MailOnline

Bathe your way to a good heart

Taking a hot bath at least five times a week could help to prevent heart attack or stroke in the elderly.

A study in Japan found that a regular dip in the tub, at 41 deg C and lasting around 12 minutes, is good for the heart and reduces the chances of blocked arteries. Researchers believe that being immersed in water shifts blood flow from the legs and abdomen to the heart, while the high temperature may reduce blood pressure.

The study, led by a team from Ehime University, asked 873 participants, aged between 60 and 76, about their hot-water bathing practices, with hot water defined as 41 deg C, and a single hot bath as lasting 12.4 minutes on average.

They found that people who took at least five hot baths every week had significantly lower markers of atherosclerosis and cardiac loading.

"Favourable effects of sauna bathing on cardiovascular disease have been demonstrated. Hot-water bathing is an alternative, and could also have similar effects," said the study, which was published in the journal *Scientific Reports*.

Source: Medical News Today

EVENT CALENDAR

Swim for Rheumatology 2018

DATE/TIME: Sep 15, Sat, 3pm-7pm
VENUE: Methodist Girls School swimming pool
FEE: Free, open for donations
REGISTRATION: To donate and/or register for the swim/talks, go to www.giving.sg/sghhdf/sfr2018.

Rheumatological diseases can be disabling and life-threatening. See how you can make a splash and raise funds to find better treatments for this group of diseases, which affects close to 600,000 people in Singapore. Activities include talks by doctors and dietitians on rheumatoid arthritis, osteoarthritis and gout.

Healthy Pregnancy, Healthy Baby

DATE/TIME: Sep 15, Sat, 1.30pm-4.30pm
VENUE: KKH Auditorium (Training Centre), level 1, Women's Tower
FEE: $12 per person; $15 per couple
REGISTRATION: Log on to www.kkh.com.sg/healthseries

Suitable for new parents and parents-to-be, the public forum covers topics ranging from nutrition to antenatal care. Attendees will also find out more on how to have a healthy pregnancy; the truth about cord blood banking; and dos and don'ts in pregnancy, among others.

Visiting the dentist when you have swallowing problems

If a patient with dysphagia goes for dental surgery, the dentist needs to know this before any procedure begins. By Corinne Kerk

DYSPHAGIA, THE MEDICAL TERM for swallowing difficulties, can complicate surgery. Knowing this, the dentist can take certain precautions.

Patients with dysphagia lack an effective gag reflex and cannot safely control fluids in their mouth or swallow excess water.

The danger they face is aspiration – of food, fluids or foreign objects entering the lungs during swallowing.

During dental procedures, they risk inhaling dislodged bacteria, fluids and foreign objects into their airways, said Dr Quek Heng Chuan, Consultant, Prosthodontic Unit, Department of Restorative Dentistry, the National Dental Centre Singapore (NDCS).

This is potentially life-threatening because these patients may not even be aware that they are choking, and may choke "silently".

Furthermore, they are at risk of aspiration pneumonia – an infection of the lungs caused by the inhalation of bacteria, food and liquids into the airway.

"This can be fatal if not managed well," he said.

During dental surgery, people with dysphagia face the danger of aspiration, where food, fluids or foreign objects enter the lungs during swallowing.

Precautions taken

Dr Quek said dentists already take precautions to protect the airways of all patients during treatment. "But once we are aware that someone has dysphagia, we need to take extra care and time to carry out the dental procedures."

Precautionary measures include:

- **Moisture control** by ensuring adequate suction to remove liquids accumulating in the oral cavity. This is important, as water-jet sprays from the dental handpiece are usually used during dental procedures. Dentists can also reduce the amount of water sprayed from their handpiece.
- **Chair positioning**, where the dental chair is positioned in such a way that the patient is sitting upright or tilted no more than 45 degrees.
- **Airway protection** by using gauze to trap debris, or a rubber dam to isolate the tooth being treated.
- **Care in the use of small dental tools** and securing them, if possible, so they do not fall into the airway.
- **Controlling the consistency of impression material** for making dental mould of teeth and gums.

Dentists must focus during procedures, and need to spend more time treating dysphagic patients, said Dr Quek.

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Also, dentists need the cooperation of these patients, even for a simple scaling, which can take up to 30 per cent longer.

"If the patient is very nervous, we may have to cut down on the type of treatment planned for the appointment. If there's a high risk of aspiration, we can do certain dental procedures manually, and this would consume more time."

The situation is further complicated with dysphagic patients who also have difficulty with memory, communication, speech and thinking. These people may not be able to inform their dentist about their swallowing difficulties. They may slur, find it hard to speak, and struggle to articulate as their brains undergo changes over time.

Why dysphagia happens

Dysphagia ranges in severity. It is usually a result of medical conditions such as stroke, multiple sclerosis, Parkinson's disease, dementia, and head and neck cancers, said Ms Lee Yan Shan, Senior Speech Therapist, the Singapore General Hospital (SGH).

These medical conditions can cause muscles – which need to coordinate well when swallowing – to weaken or shrivel. For those who find swallowing difficult, eating and drinking can be challenging, even dangerous.

Also, structural changes, such as having part of the tongue removed, will lead to poor tongue control, which in turn will make it difficult for such patients to hold water in their mouth before they are even ready to swallow.

Patients with cognitive impairments, such as dementia or stroke, are at risk of having dysphagia. They may not even recognise that there is water in their mouth, which affects their ability to swallow safely. The chance of developing aspiration pneumonia is higher if the patient has poor oral hygiene or functional status, so good dental habits and regular dental visits are important.

Get the card

To increase awareness among general dentists, SGH's Speech Therapy Department developed a Dysphagia Information Card (left) with NDCS for dysphagia patients to show their dentist prior to any dental procedure.

The card was launched on Speech Therapists' Day, 3 Nov 2017, with over 130 community dentists and 20 speech therapists in attendance.

The card acts as a physical reminder to dentists about the presence of dysphagia in the patient, and provides information such as why dental procedures pose an aspiration risk to the patient, the patient's medical diagnosis that led to dysphagia, as well as extra precautions dentists can take.

Speech therapists will issue the Dysphagia Information Card to all dysphagia patients.

"Patients going to see a dentist should let their speech therapist know, because we're aware of how severe their condition is and whether there's a need to supplement the information on the card," said Ms Lee.

PHOTOS: VERNON WONG; ILLUSTRATION: 123RF

Dr Quek Heng Chuan and Ms Lee Yan Shan stress the importance of having dysphagia patients inform their dentists beforehand about their condition.

Keeping tabs on blood glucose levels

It's vital for people living with diabetes to keep blood glucose levels within the optimal range. To do that, regular monitoring is necessary.

PEOPLE WITH DIABETES NEED to keep their blood sugar levels balanced, as glucose levels that are too low or too high can lead to all kinds of complications like headaches, blurred vision, mental confusion and even seizures or loss of consciousness. For that reason, regular monitoring is important.

Keeping a regular record of their blood sugar levels can help people with diabetes understand how well their diabetes programme – lifestyle and medication – is working. The information is also useful for their diabetes healthcare team to assess and determine the best management strategy.

Information in this article was extracted from *Win Over Diabetes*, a book published by the SingHealth Duke-NUS Diabetes Centre. The book can be accessed online at www.singhealth.com.sg/shl. For updates on diabetes, check out SingHealth's HealthXchange website at www.healthxchange.sg/diabetes.

Don't avoid carbs

People with diabetes should understand how different foods affect their glucose levels, especially carbohydrate. This energy-providing food source has the greatest effect on sugar levels, but not all types of carbohydrate affect blood glucose the same way.

The more refined the carbohydrate, such as sugar, the faster the glucose is released into the blood stream. This can cause a surge in blood glucose levels.

Starchy foods and starchy carbohydrates release glucose into the blood stream at a slower rate, providing more stable and sustainable energy levels, and better appetite control. Examples of starchy carbohydrates are rice, noodles, pasta, cereals and potatoes.

Just as carbohydrates need not be avoided, a special diet isn't necessary for those with diabetes. Rather, diabetics should adopt a healthy eating plan that takes into account their needs and lifestyle.

Food notes

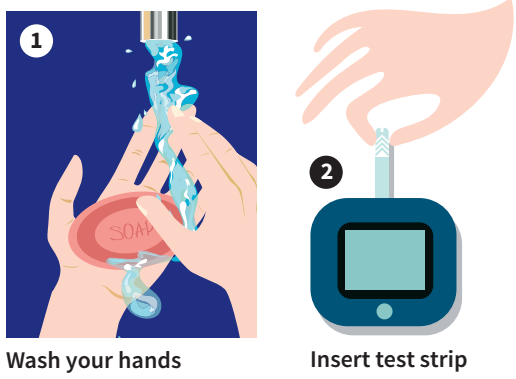
The glycaemic index or GI ranks carbohydrates according to the extent and rate at which they raise blood glucose levels after consumption.

Low GI carbs (55 or less) are more slowly digested, absorbed and metabolised, resulting in smaller fluctuations in blood glucose and insulin levels. High GI foods like soft drinks and juices, meanwhile, are rapidly digested, absorbed and metabolised, resulting in large fluctuations in blood glucose levels.

Using the GI alone as a way of achieving blood sugar control may not be meaningful, as people digest carbs at different rates – meaning the GI lists may not be reliable. Combining different types of carbohydrate also alters the overall GI of that meal.

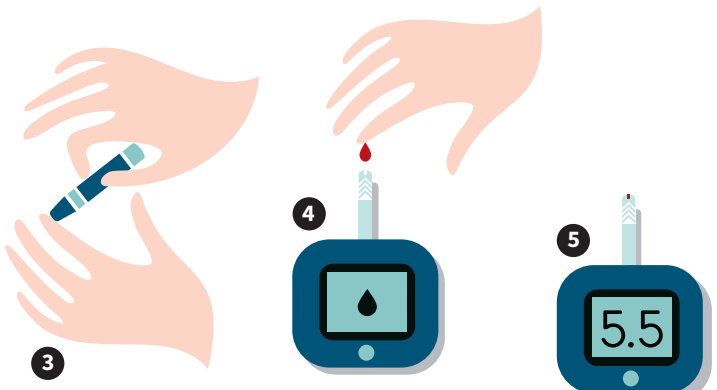
So, focusing on GI alone can lead to a diet that is high in fat and calories. Instead, monitoring the total amount of carbohydrate consumed is better for overall blood glucose control than focusing on GI alone.

Measuring blood glucose with a glucometer



1 Wash your hands

2 Insert test strip



3 Use the lancing device on the side of your fingertip to get a drop of blood

4 Touch and hold the edge of the test strip to the drop of blood, and wait for the result

5 Your blood glucose level will appear on the display

When to check blood sugar

Depending on their discussions with the diabetes healthcare team, blood glucose levels can be checked before or after meals.

The team will also help set the blood glucose target to prevent hypoglycaemia or other problems associated with a tight blood glucose control from occurring.

Generally, however, the pre-meal glucose should read between 4.0 and 7.0 millimoles per litre (mmol/L), while a post-meal reading (two hours after eating) should be less than 10.0 mmol/L.

WHEN	WHY
Before eating or drinking in the morning	Follows an 8-12-hour overnight fast, so the reading helps determine what goes on at night, especially when read together with a bedtime measurement the night before
0-30 minutes before meals	Gives a baseline reading before a meal
The previous meal or snack must be more than 4 hours earlier	Indicates if rapid-acting pill or insulin for the previous meal is adequate
2 hours after meals	Gives an estimate of how much the blood glucose rises in response to certain foods
Bedtime	To detect any bedtime hypoglycaemia (low blood glucose) and prevent nocturnal (night-time) hypoglycaemia
More than 3 hours after dinner, with no snacks or supper in between	The bedtime reading and the next day's fasting reading will help explain what happens to the glucose overnight
2am-4am	To detect night-time hypoglycaemia, especially if symptoms occur when sleeping or if night-time hypoglycaemia is suspected

PHOTO & ILLUSTRATIONS: 123RF

Dying of a broken heart

Grief is a normal response to a loss, but for some people, the emotional stress may be too much to bear. By Eveline Gan

IN 2016, ACTRESS DEBBIE Reynolds died a day after her daughter, Carrie Fisher, succumbed to a heart attack, while fashion designer Kate Spade's elderly father passed away a day before her funeral in June this year.

It's true that both were elderly, but could grief have killed them?

According to Dr Cecilia Kwok, Associate Consultant, Department of Psychiatry, Singapore General Hospital (SGH), grief can place a huge stress on one's emotional and physical systems. Physiological changes brought on by major emotional stress may significantly increase the risk of a heart attack.

"This type of stress can increase blood pressure and heart rate, raise stress hormone levels, constrict blood vessels, disrupt cholesterol-filled plaques in coronary arteries, and make blood more likely to clot, which would increase the risk of a heart attack up to 21 times within the day," Dr Kwok said.

Sleeping poorly, eating badly or missing medications for chronic illnesses, for example, during the grieving process can further raise the risk, she added.

Intense emotional stress from grief can also trigger a rare heart condition known as stress cardiomyopathy, where the heart muscle suddenly weakens.

> **THIS TYPE OF STRESS CAN INCREASE BLOOD PRESSURE AND HEART RATE, RAISE STRESS HORMONE LEVELS, CONSTRICT BLOOD VESSELS, AND MAKE BLOOD MORE LIKELY TO CLOT.**
>
> DR CECILIA KWOK, ASSOCIATE CONSULTANT, DEPARTMENT OF PSYCHIATRY, SGH

"The exact cause is not known, but experts think that a surge in stress hormones such as adrenalin can trigger changes in the heart muscle that prevent it from contracting effectively," she said, noting that the condition is more commonly seen in post-menopausal women, possibly due to their lower levels of heart-protective oestrogen.

People who are already at risk for heart disease and heart attacks, because they suffer from conditions like high blood pressure or high cholesterol levels, may be especially prone to a heart attack following the loss of a loved one, said Dr Kwok.

PHOTO: CLICKPHOTOS

Debbie Reynolds (right) died a day after her daughter, Carrie Fisher, succumbed to a heart attack.

But not everyone experiences such a dramatic response to grief. Suffering mental distress is a natural response to a loss, such as the death of a loved one or even the loss of a job or relationship, said Dr Kwok. In the elderly, grief can be due to the loss of independence and health.

As a person comes to terms with loss, a series of emotions sets in. According to the model for the grieving process proposed by Swiss-American psychiatrist Elisabeth Kubler-Ross, there are five stages, but not everyone goes through all of them or in a fixed order, said Dr Kwok.

"The most common initial reaction is shock. The person may feel that the loss is not real or he is in a dream, and this state of shock or detachment can last from a few days to weeks, after which the grieving process starts," she said.

After this stage, reality – and the pain of loss – sets in, which can trigger feelings of anger and frustration, said Dr Kwok.

The next two stages are known as the bargaining and depression stages. During the bargaining stage, the person may dwell on what he could have done to prevent the loss, while sadness sets in during the depression stage, she said.

Finally, there is acceptance.

"In this final stage of grief, you accept the reality of the loss. Although you still feel sad, you can start to move on with your life," said Dr Kwok.

How long someone grieves depends on the type of loss, age, relationship with the person who has passed away, belief and support systems, personality, as well as physical and mental health, she said.

What is known is that time heals most wounds. "In general, after a year to 18 months, the grief will be less likely to be at the forefront of your mind. You may continue to feel sad, but you can still get on with life and it won't overwhelm you," said Dr Kwok.

Grief can get complicated

Some people can't seem to snap out of their pain

Some people may find it difficult to cope with their loss, and when grief persists or worsens, it can turn into a debilitating condition known as complicated grief.

"Even when you're grieving, there will be something that lifts your spirits, such as when you see your children. In the case of complicated grief, nothing will make the grieving person feel better," said Dr Cecilia Kwok, Associate Consultant, Department of Psychiatry, SGH.

Daily life is disrupted because the person can only focus on his loss. Some people miss their loved one so much, they find little meaning in life or living.

"For a grieving person, simple everyday tasks may feel insurmountable, and he may find it difficult to keep up. It may be helpful for friends and family to offer practical help such as assisting with the funeral arrangements, and daily chores like cooking and taking care of the children or laundry," said Dr Kwok.

Emotional support is also important, but Dr Kwok cautioned against offering comments that minimises the griever's strong emotions, such as "he's in a better place now", "she's had a good life" and "I got over my loss quickly".

"Everybody grieves differently. It's hard for us to imagine what it is like for another person. Acknowledge their feelings, don't make judgements, and provide emotional support to the person by just being there for him," she said.

PHOTO: SGH

Dr Cecilia Kwok advises practical help and emotional support for loved ones who are grieving.

The gestational diabetes diet

Mums-to-be with gestational diabetes should eat right to avoid complications before and after delivery. By Suki Lor

A PREGNANT WOMAN WITH gestational diabetes may find herself at a loss as to what to eat. But help is at hand.

The condition, which happens when blood sugar levels are higher than normal during pregnancy, cannot be entirely prevented. But it can be managed with lifestyle and diet changes, which can reduce the risk of complications for both mother and child.

These complications include the mother developing high blood pressure and giving birth prematurely, or the baby being too large, causing difficulties during delivery. If a normal birth is not possible, a Caesarean section will need to be done. During delivery, the large baby may also suffer injuries or have low blood sugar at birth. At worst, both mother and child could die.

"Adopting a healthy and balanced diet helps to manage blood glucose levels, ensuring adequate nutrition for mother and baby. It also helps the mother achieve an appropriate weight gain during pregnancy," said Ms Kellie Kong, Dietitian, Nutrition and Dietetics Department, KK Women's and Children's Hospital (KKH).

She said women with gestational diabetes need to watch their carbohydrate intake because during digestion, it turns into glucose, which is absorbed into the bloodstream.

"But it isn't wise to avoid carbohydrates altogether, and there is no one-size-fits-all formula for how much to take. The diet has to be customised for each patient based on considerations such as pre-pregnancy weight status, pregnancy weight gain, control of blood glucose levels, and lifestyle and medical management."

Here is some diet advice she has for mums-to-be with gestational diabetes:

Choose carefully

- Choose wholegrains, pulses, fresh fruit and non-starchy vegetables, Being higher in fibre, they delay the absorption of glucose into the bloodstream.
- To get adequate calcium, choose skimmed or low-fat plain milk, yogurt and hi-calcium unsweetened or reduced-sugar soya milk.
- Avoid sugar, sweet foods and beverages because they are usually low in nutrients and high in calories, and can cause quick weight gain.
- Avoid fried and oily foods because they are digested slowly, thus keeping blood glucose levels high for a prolonged period. High-fat foods can also contribute to excessive weight gain.

How much to have

- Instead of three large meals a day, spread out into three meals and three snacks. Such regular distribution of carbohydrate throughout the day helps optimise blood glucose levels.
- Eat meals regularly daily. Eating the same amount of carbohydrate-containing foods in meals or snacks daily helps regulate blood glucose levels.
- Include protein in meals to ensure the optimal growth and development of the fetus, but in moderate amounts to avoid quick weight gain. Sources include lean meat, poultry without skin, fish, seafood, eggs, and reduced-fat cheese and soya products.

What to eat when eating out

- Choose fibre-rich food such as wholegrains (for example, brown rice and wholemeal pasta), and ask for more vegetables, or get an extra side salad.
- Opt for lean meat. Remove the skin from chicken to reduce the fat content.
- Avoid food with coconut milk, which is high in saturated fats.
- Order food prepared using healthier cooking methods, such as steaming, boiling, stir-frying with less oil, grilling and baking instead of fried foods, which are high in fat and calories.
- Restrict your intake of sauces and gravies, which can be high in added sugars, salt and fat. Choose soupy noodles instead of dry ones, as the latter tends to have extra oil and sauces added.

Ms Kellie Kong said there is no one-size-fits-all formula for how much carbohydrate women with gestational diabetes should take.

Examples of healthy meals

Breakfast

- Wholemeal bread with a slice of low-fat cheese and a cup of low-fat milk
- Plain bran flakes with reduced sugar, hi-calcium soya milk and a hard-boiled egg

Lunch or Dinner

- Brown rice with steamed fish, stir-fried leafy vegetables and a fruit
- Yong tau foo soup with brown rice bee hoon (limiting fried items) and a fruit
- Wholemeal chicken sandwich and a fruit
- Grilled chicken (skin removed) with tomato-based pasta, salad and a fruit

Where to get help

If you are seeking antenatal care at KKH and Singapore General Hospital, you will be offered gestational diabetes screening at 24 to 28 weeks of gestation. Since October 2016, pregnant women diagnosed with diabetes at KKH have been supported by a three-year pilot – the Temasek Foundation Cares-GDM Care programme. It aims to improve the detection, care and support for these women during and after delivery. Subsidies are provided by the programme for those who are eligible.

Patients will have gestational diabetes screening (at 24-28 weeks of pregnancy); proper and close follow-up care, including education about gestational diabetes; advice on optimising control of sugar levels through diet and exercise; and follow-up care after giving birth. The postnatal diabetes screening test for patients with gestational diabetes is done six weeks after delivery.

If they have made a full recovery, they will receive routine check-ups annually for three years, during which they will also be advised about healthy lifestyle adjustments, such as diet and exercise, to reduce the risk of developing type 2 diabetes at some point in their lifetime following delivery.

The programme is led and managed by KKH. For more information about the programme, call the KKH Obstetric Day Assessment Centre at 6394-2097.

PHOTOS: JUSTIN LOH & 123RF

Keep fit – and preserve the insulin factory

Being fat can overwork the pancreas, setting off a vicious cycle that brings on a range of problems, significantly diabetes and heart disease. By Corinne Kerk

A WAIST-TO-HIP RATIO OF MORE than 0.80 for women and 0.85 for men doesn't just suggest the person is overweight. More importantly, it indicates the presence of excessive fat around the waist or belly fat – which is associated with various health conditions, including high blood pressure, abnormal cholesterol and triglyceride levels, and insulin resistance.

Known as metabolic syndrome, it is associated with the development of cardiovascular disease and type 2 diabetes, said Dr Ng Lee Beng, Consultant, Department of Family Medicine and Continuing Care, Singapore General Hospital (SGH).

She points to one big culprit: the modern diet.

"The modern diet is basically food that is eaten fast and digested fast because they have little or no fibre. Food like white rice, white bread and noodles cause sugar surges, overworking the pancreas to produce insulin to remove the sugar from the blood. Do this often enough and your pancreas will start failing," Dr Ng said.

> **WHEN YOU'RE IN THE UNHEALTHY WEIGHT RANGE, ESPECIALLY WHEN YOU ARE APPLE-SHAPED, YOU ARE LIKELY TO BE TIRING YOUR PANCREAS.**
>
> DR NG LEE BENG, CONSULTANT, DEPARTMENT OF FAMILY MEDICINE AND CONTINUING CARE, SGH

ILLUSTRATION: 123RF

Coupled with eating right, regular exercise is still the most effective way to maintain a healthy BMI.

Insulin, a hormone made by the pancreas, brings sugar into body cells to be used as energy, and helps store excess sugar in the tissues and liver for use later.

In people who are overweight, she added, the pancreas has to work harder to produce more insulin than what is normally needed because their bodies cannot "sense the insulin" properly. This stress on the pancreas causes pancreatic cell fatigue and damage, increasing the chance of developing type 2 diabetes.

"The initially high insulin level in someone with insulin resistance signals to the brain that he is still hungry, though he might have just consumed a big amount of refined carbohydrate," said Dr Ng. When that happens, the person feels perpetually hungry and continues to eat.

Excessive eating – resulting in an increased sugar load entering the blood stream – prompts more insulin to be produced to normalise the body's sugar balance.

This perpetuates the vicious cycle of more eating, more insulin being produced, excess sugar being stored as fat, continued fatigue and hunger, and even more eating. The pancreas experiences stress, then fatigue, and finally damage.

"You are killing your insulin factory," said Dr Ng, pointing out that when 80 per cent of the pancreas is destroyed, the body's sugar levels go out of control. "That's the day diabetes will be diagnosed."

In addition, the excess sugar turns into fat, which is deposited in and around organs like the liver.

"Fat in these areas doesn't just sit there and do nothing. It causes inflammation, and this literally leads to cells popping and dying," she said.

Inflammation of the liver from fat, for example, leads to scarring, which increases the risk of developing liver cancer. Persistent and prolonged scarring of the liver can lead eventually to liver cirrhosis and cancer.

For that reason, anyone past the age of 18 years needs to check his weight, waist circumference, and waist-to-hip ratio. "When you're in the unhealthy weight range, especially when you are apple-shaped, you are likely to be tiring your pancreas," she said.

In addition to the recommended waist-to-hip ratio, the body mass index or BMI should be maintained between 18.5 and 22.9kg/m2 (considered a healthy range for Asians and low-risk for cardiovascular disease).

While trite, the oft-repeated mantra to exercise regularly and follow a healthy diet is still the most effective step towards losing weight. White rice, refined carbohydrate, sugar-rich food and beverages are no-no's. Instead, load up on food that digests and turns to sugar slowly, such as whole fruit and vegetables – not the juice – wholegrains like brown rice and oats, and wholemeal products.

"Juicing is not recommended. Fruit juice, with or without sugar added, is mainly fruit sugar water without fibre. Even blended fruit juice has its fibre partially broken down, and will be digested more rapidly and cause higher sugar surges than real fruit," said Dr Ng about the common misconception that fruit juice is healthy.

Food packaged with fibre requires biting and chewing, which slows down the eating process, and requires digestion and so stays in the stomach longer.

"It makes you feel full longer, so you eat less. The sugar doesn't enter the blood stream as a sugar surge, which stresses the pancreas to produce high levels of insulin. For the average busy Singaporean, a good start is to halve your rice, bread or noodles, double your vegetables, and walk briskly at least three times a week," said Dr Ng.

Plan ahead before it's too late

Spelling out medical preferences in advance takes the guesswork out of situations where patients are too ill to speak for themselves. By Eveline Gan

IF A LOVED ONE HAS A SLIM CHANCE of recovery after a heart attack or stroke, how does the family feel about life support? And who will decide what to do if the patient is too ill to express his wishes?

These difficult but necessary questions are often raised with patients at the National Heart Centre Singapore (NHCS). Seeing how family members struggle to make decisions in the absence of a clear directive from the patient, NHCS started a project in 2012 to increase awareness about advance care planning.

The process involves conversations between patients, family members and an advance care planning facilitator. During discussions, patients can nominate a trusted person to represent their views if and when they cannot do it themselves. NHCS has about 30 trained facilitators, including doctors, social workers and clinical coordinators.

"Patients tell us about the values and beliefs that are important to them, and their preferred choices if a medical situation arises whereby they cannot communicate their wishes," said Ms Clarice Ng, Senior Medical Social Worker, NHCS, and one of the facilitators.

PHOTO: 123RF

Advance care planning discussions involve conversations between patients, family members and an advance care planning facilitator.

> **SOME PATIENTS ASSUME THEIR CHILDREN KNOW WHAT THEY WANT. BUT WHEN WE ASK THEM WHO CAN SPEAK ON THEIR BEHALF AND EXPRESS THEIR WISHES [WHEN THEY NO LONGER CAN], THE QUESTION IS USUALLY MET WITH SILENCE.**
>
> MS CINDY LAU, SENIOR CLINICAL COORDINATOR, NHCS

Another facilitator, Ms Cindy Lau, Senior Clinical Coordinator, NHCS, gave an example of this. "For some patients, being able to eat independently is important. So if they have to be on permanent tube-feeding, they would rather not go through it."

Discussions also centre on the use of cardiopulmonary resuscitation in the event of a cardiac arrest, the extent of life-prolonging medical intervention, and end-of-life care.

The patient's wishes and decisions are documented in standardised forms from the Agency for Integrated Care, and uploaded onto the National Electronic Health Record, the national database of the medical history of patients.

Why planning ahead matters

Ms Ng said the unpredictability of cardiovascular conditions makes planning ahead important, because life-sustaining machines can prolong lives for months or years.

"We've seen heart patients put on life support machines after collapsing from a serious cardiac problem or stroke. They remained hooked up to these machines for months. In such cases, it's important for us to know their wishes: Do they want doctors to continue treatment to the very end, at the expense of a prolonged stay in intensive care, intubation and not being able to recover?" she asked.

Ms Ng encourages patients to nominate one or two people to be their voice if it is needed in the future, and to share their decision with the rest of the family.

It's not just for the ill

Planning for the future is not just for the sick or elderly. Healthy people are encouraged to have these discussions too.

Ms Ng said those ready to discuss their future plans usually have personal experiences with life-and-death issues. They might have seen family members or friends undergo life-sustaining medical treatments, or struggle to make difficult healthcare decisions for loved ones.

"One man we spoke to had a friend whose elderly mother was unconscious after a serious hip fracture, and he had to decide whether to let her have high-risk surgery or go peacefully. He saw how difficult it was for his friend to decide without being able to consult his mother. This made him keen to make his own future plans in order not to burden his family."

Ms Lau said such people are in the minority. Most fight shy of advance care planning due to superstitions and misconceptions.

"Some patients think that once you broach the topic, it means their medical condition is worsening. Others assume their children know what they want. But when we ask them who can speak on their behalf and express their wishes [when they no longer can], the question is usually met with silence," said Ms Lau.

Another common misconception is that an advance care plan is set in stone, when in reality it is not a legal document, and takes effect only when the patient can no longer communicate his wishes. It can be reviewed regularly, even after signing, and as the patient's medical condition and social circumstances change.

So far, 450 NHCS patients and their family members have drafted advance care plans. The team has also extended its free service to the public, including those with other medical conditions.

NHCS has received five awards for its efforts in engaging patients in advance care planning, including the Gold Award at the Team Excellence Symposium 2014 and Best Team Award at the Singapore Health Quality Service Award 2015.

Taking it step by step

- Think about what living well means to you, how your health may change in the future, and what is important to you at the end of life.
- Discuss your wishes and goals for care in the future with your loved ones, and choose one or two trusted individuals to be your voice, for when you are unable to communicate those wishes.
- You may review, update or change your advance care plan at any time according to changes to your health and social status.
- Make an appointment to discuss and record your wishes with a trained advance care plan facilitator. Call NHCS at 6704-8966, 6704-8967 or 8299-3548 (from Monday to Friday, 8am to 5pm).

HEALTH XCHANGE

Will my son inherit cancer?

My family has a history of cancer. Both paternal grandparents passed away from stomach and lung cancer. I'm worried my nine-year-old son may be at risk of either of these cancers or just cancer in general. How can I be sure? Are there tests that could highlight a predisposition to it, so that we can take preventive measures?

About 75 to 85 per cent of cancers we see occur without a family history. They are sporadic cancers.

There is a lower risk of lung cancer being inherited, but stomach cancer is known to be associated with some hereditary syndromes. However, these are usually associated with a strong family history of specific cancers such as colon, breast and stomach cancers, which usually occur at a much younger age.

In hereditary cancers, the pattern is that almost every generation of the family is affected with a related cancer. In each affected generation, it is not uncommon for more than one person to be affected.

Hence, if the affected grandparents are diagnosed only after 70 years old and with no other family members affected, it is unlikely that the risk of inherited cancers in your family is higher than usual.

In lung cancer, if there are risk factors and enough suspicion, a chest x-ray or CT (computed tomography) scan of the lungs can be done. Risk factors include being a heavy smoker or exposure to a lot of second-hand smoke, certain types of air pollution and radiation.

Worrying symptoms would include persistent hoarseness of voice; persistent cough; coughing out blood; loss of appetite and weight; and unexplained breathlessness.

There are radiation risks with x-rays and CT scans, something I would be very concerned about, especially for a nine-year-old. I would not recommend this.

In stomach cancer, risk factors include consumption of a lot of processed food; a history of stomach ulcers; and a history of gastritis with an infection of helicobacter pylori.

To investigate, an OGD (oesophagogastroduodenoscopy) would be needed. It is an invasive test where a scope is introduced into the mouth, down the foodpipe, and into the stomach to check for abnormalities.

Worrying symptoms include a feeling of fullness despite eating very little; vomiting blood; passing stools that are hair-black in colour or with blood separately; repeated episodes of low red blood cells (with symptoms such as breathlessness, giddiness); and loss of weight and appetite.

Without these worrying symptoms, I would not advise sending your son for investigations. Without the appropriate family history, genetic testing would not be advised.

However, if you have these worrying symptoms or family history, visit your general practitioner who can do the basic investigations and direct you to a specialist, if necessary.

Dr Eileen Poon Yi Ling, Associate Consultant, Division of Medical Oncology, National Cancer Centre Singapore

Any side effects from a vasectomy?

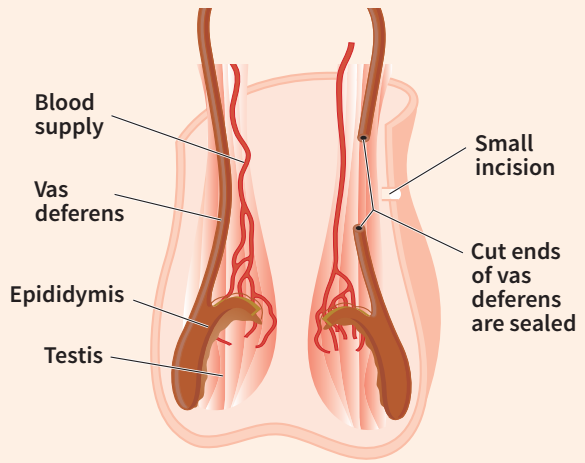
Will undergoing a vasectomy affect a man's sexual prowess? And how does it compare with other methods of contraception?

The idea that a vasectomy affects a man's virility is a common misconception. The nerves and blood vessels that are responsible for erection are not affected. Neither is the male sex hormone – testosterone – which determines sexual libido, as it is produced by the testes and secreted into the blood.

Although the spermatic ducts, also known as vasa deferentia, are disrupted in a vasectomy, the amount of sperm ejaculated is hardly reduced, as most of the fluids are still being secreted from the seminal vesicles and the prostate gland, which are separate from the spermatic duct.

Sterilisation – both for men and women – is a highly successful form of contraception, with vasectomy having a slight superiority (99.9 per cent success rate) over tubal ligation in women (99.7 per cent). In comparison, oral contraception, intra-uterine contraceptive device and condoms are less effective at 99 per cent, 98 per cent and 75 per cent respectively.

By Dr Kenneth Chen, Associate Consultant, Department of Urology, Singapore General Hospital



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CONTEST

TEST YOUR MEMORY

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QUESTIONS

- **What kind of cancer was the drug gefitinib originally intended to treat?**
- **What does CARES stand for?**

Send your answers with details of your name, age, gender, address and telephone number to:
Email editor@sgh.com.sg (or)
Post The Editor, *Singapore Health*, Singapore General Hospital, Communications Department, #13-01 Surbana One, Blk 168, Jalan Bukit Merah, Singapore 15016.

Deadline September 30, 2018

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.

WINNERS OF CONTEST 52

1. Ang Bee Eng 2. Roland A Ferreira 3. Koh Shew Eng 4. Kwok Khin Fui 5. Loo Heok Keng

Age spots on skin

There are pigmentation marks on my hands. The beautician says these are old-age spots and cannot be cured. It seems to be getting worse with the years. Now, I even see white spots appearing. Please advise.

It sounds like you may have solar lentigines, also known as "liver spots". These are very common among people with long-term sun exposure, and they usually start to appear from age 40. It worsens with age and with continued sun exposure. For some people, white spots – known as "idiopathic guttate hypomelanosis" – may also appear, due to chronic sun exposure.

Treatment of the dark spots can be difficult. Avoiding excessive sun exposure and using sunscreen daily may help to prevent the condition from worsening.

You can try treating the existing spots with lightening creams (like hydroquinone 4 per cent), chemical peels or lasers. A combination of the above treatments may be used for faster and better results.

Dr Mark Koh, Head and Senior Consultant, Dermatology Service, KK Women's and Children's Hospital

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On 11 August 2017, Channel NewsAsia (CNA) reported, "Glucosamine supplements don't help knee or hip arthritis pain"

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This report analysed generic glucosamine and confirmed what we have been saying: **Generic Glucosamine is Ineffective.**

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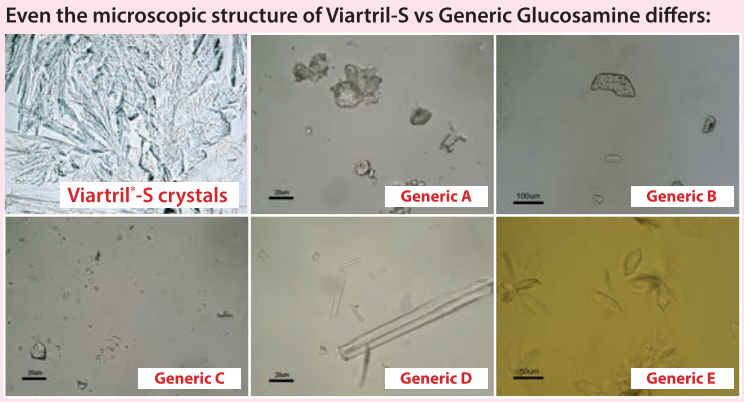

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Quoted from a European guideline:
"The European Society for Clinical and Economic Aspects of Osteoporosis and Osteoarthritis (ESCEO) advocates *the differentiation of prescription patented crystalline glucosamine sulphate from other glucosamine preparations*"

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

Clinical Studies of Viartril-S vs Generic Glucosamine

More than 100 studies done on Viartril-S, the original & patented crystalline glucosamine sulphate, found it to be SAFE & EFFECTIVE including:

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.**
- Brand Used: Viartril-S

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.**
- Brand Used: Viartril-S

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.**
- Brand Used: Viartril-S

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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