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ROBOTS LEND SURGEONS A HAND

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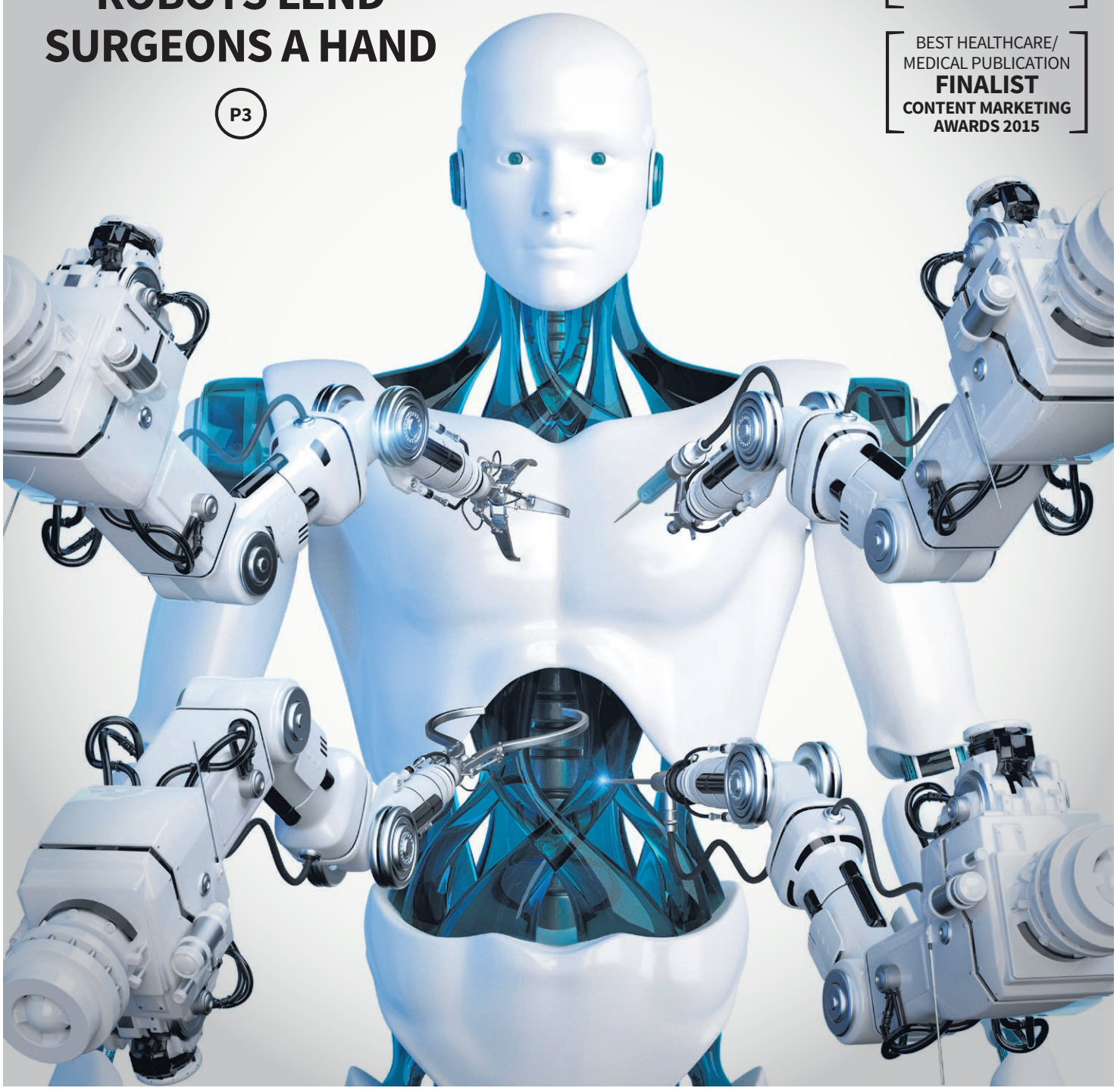

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Robots set to rule

The ability to operate on the pancreas and liver more easily with robotic-assisted systems has wider implications on treatments for this complex anatomical area.

By Esther Au Yong

PHOTOS: WONG WEI LIANG

During surgery, Associate Professors Lee Ser Yee (left) and Brian Goh (right) sit at one of the consoles (behind them), manipulating the robotic system's controls to perform the procedure via the robotic arms (top left). The arms, with their highly dexterous wristed instruments, are inserted into the patient, who lies on the operating table a little distance away (in foreground).

WHEN SURGEONS NEED to remove growths in the body or tail of the pancreas, they often have to take out the spleen as well. This is because the web of blood vessels linking the two organs makes conventional surgery difficult, complicated and risky.

Cutting out the spleen can be a problem for children and younger adults as the organ is an important part of their immune system. Removing it makes younger people more prone to infections.

So unless a tumour is large or cancerous, surgeons will try to save the spleen whenever possible despite the worry of complications developing during surgery, which is mostly done by the traditional open method, and less often by conventional laparoscopy.

A minimally invasive or keyhole technique, laparoscopy has become the most common type of surgery for many simple procedures today such as surgical removal of the gall bladder or appendix. Because of the small incisions involved, patients often suffer less bleeding and pain, make a quicker recovery and have a shorter hospital stay. But because of the complexities involved in surgery of the pancreas, open surgery is often chosen.

For patients to benefit from keyhole procedures, surgeons at Singapore General Hospital (SGH) have adopted the newer robotic-assisted laparoscopic technique to get around the constraints of the other two methods, said Associate Professor Brian Goh, Senior Consultant and Director of Robotic Surgery, Department of Hepato-pancreato-biliary and Transplant Surgery, SGH.

"Today, robotic surgery is not a replacement but serves as an extension of conventional laparoscopy, allowing surgeons to perform even highly complex procedures such as the Whipples procedure [the complex removal of the head of the pancreas, the duodenum, part of the common bile duct, gallbladder, and sometimes part of the stomach] via the minimally invasive approach," said Prof Goh.

"We have found robotic surgery to be feasible, effective and safe," he said, adding that the hospital's experience not only bodes well for pancreatic surgery but also for liver surgery and other procedures involving the abdominal area.

As with surgery on the pancreas and spleen, operating on other organs in this part of the body such as the liver and bile duct is considered one of the most complex and riskiest in the field of surgery, he said, noting that even at the medical centres renowned for such surgeries, the risk of complications developing and death is high.

For that reason, many hepatopancreatobiliary procedures are still being done by open surgery. Even in cases where keyhole surgery is thought to be appropriate, a large percentage had to have open incisions made midway to deal with complications (open conversions).

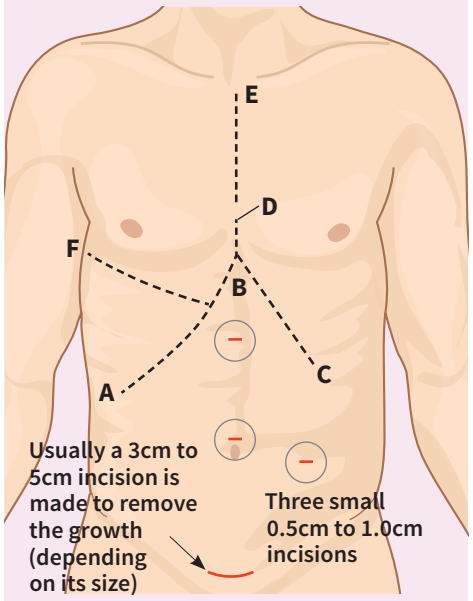
> **TODAY, ROBOTIC SURGERY IS NOT A REPLACEMENT BUT SERVES AS AN EXTENSION OF CONVENTIONAL LAPAROSCOPY, ALLOWING SURGEONS TO PERFORM EVEN HIGHLY COMPLEX PROCEDURES VIA THE MINIMALLY INVASIVE APPROACH.**
>
> ASSOCIATE PROFESSOR BRIAN GOH, SENIOR CONSULTANT AND DIRECTOR OF ROBOTIC SURGERY, DEPARTMENT OF HEPATOR-PANCREATO-BILIARY AND TRANSPLANT SURGERY, SGH.

It is due not so much to a lack of expertise but the complexities of the anatomy of the area. At the renowned Memorial Sloan Kettering Cancer Center in New York, for instance, such surgeries had a more than 30 per cent rate of complications, and a similar percentage of keyhole procedures led to open conversions, said Associate Professor Lee Ser Yee, Senior Consultant,

Open, laparoscopic and robotic-assisted surgery

The so-called Mercedes incision is one of the techniques used in open pancreas surgery. Surgeons get a clear view of the organs, but such large cuts mean more pain, a longer recovery period, possible complications and heavy scarring.

--- Mercedes incision
— Keyhole laparoscopic surgery



In conventional keyhole laparoscopic or robotic-assisted surgery, small holes are made for endoscopes – equipped with tiny surgical instruments and cameras – to be inserted. Conventional laparoscopy is commonly used for minor abdominal surgeries like gall bladder removal, but without the dexterity and flexibility of robotic joints, certain complicated procedures on other abdominal organs like the pancreas and liver may be technically too complex and difficult. Robotic surgery is favoured for selected bile duct and pancreatic surgery because the flexible joints allow surgeons to perform anastomosis (the joining of organs and blood vessels) more easily.

> Continued on page 4

> *Continued from page 3*

Robots set to rule

Department of Hepato-pancreato-biliary and Transplant Surgery, SGH. Prof Lee had trained at the Center.

Robotic-assisted surgery has several advantages over conventional laparoscopy. The surgeon gets a clear magnified view of the surgical site with the robotic system's 3D high-definition vision camera, and the robotic arms are highly dexterous, with tiny wristed instruments that can bend and rotate 360 degrees to perform surgery. The robotic arms also never get tired, unlike human ones, and so are highly stable.

During robotic surgery, the main surgeon sits at the robotic console to manipulate the system's controls to perform the procedure. The system translates the surgeon's movements into the robotic arms to which tiny operating tools and cameras are attached for performing the surgical procedure.

Conventional laparoscopes also use cameras and tiny surgical instruments to help surgeons operate, but these scopes are less sophisticated in that they are rigid and, so, less dexterous.

Robotic surgery has been in use for some 20 years but in hepatopancreatobiliary procedures, it is still in its infancy, especially in this part of the world. SGH, which performs some of the highest number of hepatopancreatobiliary surgeries in South-east Asia, has done 62 complex robotic procedures since 2013: 24 liver, 25 pancreatic and 13 complex biliary robotic surgeries. These pale in comparison with the 200 to 220 liver, 80 to 90 pancreatic and 800 to 900 gall bladder surgeries SGH does each year.

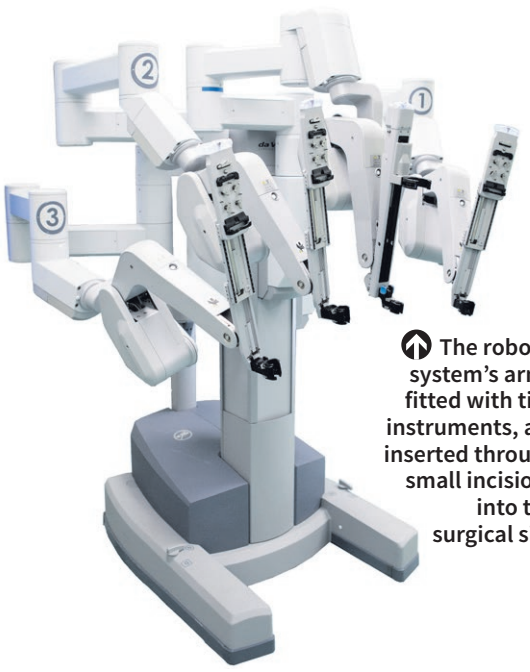
As robotic-assisted surgery offers the same advantages and fewer shortcomings than conventional laparoscopy, it is not unreasonable to think of it being the surgery of choice for most procedures in the future.

It wasn't so long ago that conventional laparoscopy was seen as a new technique, with few surgeons trained in it, said Prof Lee. But now, newer surgeons are being trained in laparoscopy, and this is the future, he said.

"In cholecystectomies [gallbladder removal], for example, most of us are now so comfortable with laparoscopy that it's probably easier and faster for us to do than open surgery. We were exposed to this technique early in our training."

The high cost of robotic surgical systems has been a big reason for the sluggish acceptance of robotic-assisted surgery. Most hospitals in Singapore have only one machine, which is shared by all departments. It is no different at SGH, said Prof Lee, adding that its robotic hepato-pancreato-biliary programme only started in 2013, even though the robotic system has already been available at SGH since 2003 – the first in Singapore.

With more robotic systems entering the market as the current dominant patents expire, the cost of such machines is expected to drop. Likewise, opportunities to learn robotic-assisted skills will increase greatly. Hopefully, in time, this will translate to better and more affordable patient care.



The robotic system's arms, fitted with tiny instruments, are inserted through small incisions into the surgical site.

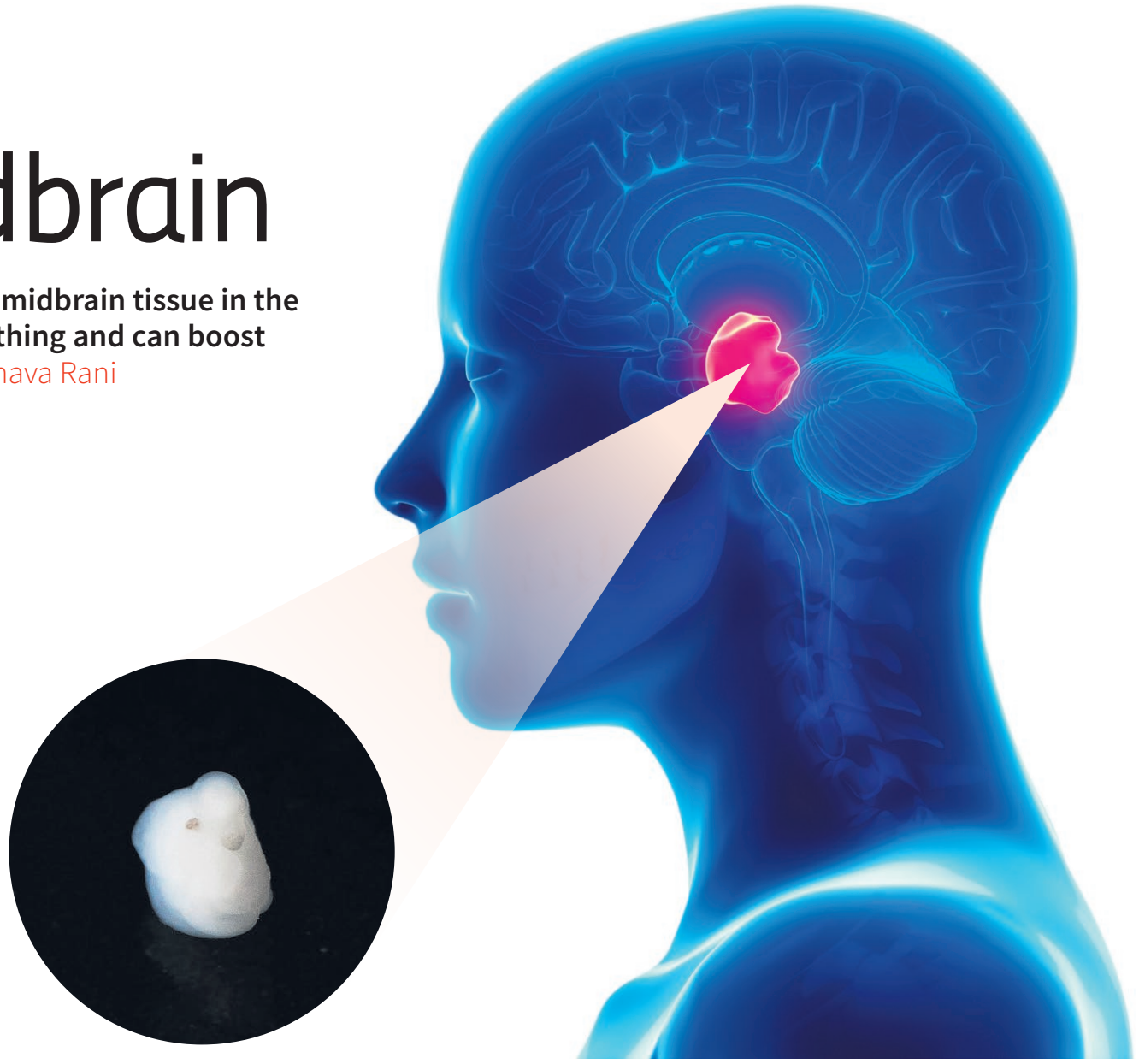
Robotic pancreatectomy not for everyone

Despite its advantages for patients, laparoscopy – whether conventional keyhole or robotic-assisted – may not be for everyone undergoing a hepatopancreatobiliary procedure. Key considerations are:

- **Size and location of the tumour** If the tumour is too big and/or its location not suitable, keyhole surgery may not be appropriate.
- **Health and fitness of the patient** Those with heart conditions may not be able to tolerate the longer anaesthesia time necessary in laparoscopy, or the gas that is pumped into the abdomen to make it easier for surgeons to look inside and operate.

The mini, mighty midbrain

Singapore researchers have developed midbrain tissue in the laboratory, which is much like the real thing and can boost research into Parkinson's disease. By Thava Rani



This laboratory-grown midbrain (shown here in the black circle) is a miniature model of the real thing in composition and behaviour. It can function like the midbrain in a simplified way because of its functionally active neurons.

AFTER SINGAPORE scientists grew the world's first functional midbrain tissue, the doors have been thrown wide open to researchers.

The study of diseases that start in the midbrain, particularly Parkinson's disease, is expected to intensify with this first-time development of midbrain tissue with neuromelanin in a laboratory.

Neuromelanin is the black pigment found in healthy human brains, but not in commonly used laboratory model animals such as mice. In humans, it starts developing in brain neurons when they are toddlers, and grows darker and darker with age. But it is diminished in the brains of people with Parkinson's disease, and nobody knows why.

The discovery is a boon to researchers probing Parkinson's. They now have access to the pigment, which was not previously available. Scientists have long wanted to better understand the functions and effects of the pigment, but laboratory studies previously have been hard.

The Singapore midbrain tissue is between 2mm and 4mm long, takes around two months to grow, and is much like the human brain. It has functionally active neurons – cells that become electrically and chemically active.

"Our midbrain tissue is a miniature model of the actual stuff, in composition as well as behaviour," said Dr Alfred Sun, Associate Research Scientist, National Neuroscience Institute (NNI), and Senior Research Fellow at A*STAR's Genome Institute of Singapore (GIS).

"No doubt it is a much simplified version, yet in several aspects it can function like the actual midbrain. We can't experiment on humans, so this is the next best thing."

Eureka!

Dr Sun, and other members of the team including Dr Junghyun Jo, also a Research Fellow at A*STAR's GIS, developed the midbrain tissue by trying various combinations of chemicals and sequences before they hit the jackpot.

"We were lucky. We got it after a few tries. But it was quite unexpected because the pigment was not very clear when it first appeared. Initially, we thought the samples were contaminated," said Dr Sun.

The team was co-led by Assistant Professor Shawn Je, Duke-NUS Medical School's Neuroscience & Behavioural Disorders Programme; and Professor Ng Huck Hui, Executive Director, GIS; with Professor Tan Eng King, Research Director and Senior Consultant, Department of Neurology, NNI, as the overall lead principal Investigator of the Parkinson's Disease research programme.

"Chronic brain diseases pose considerable challenges to doctors and patients," said Professor Tan. "This achievement by our Singapore team represents an initial but momentous scientific landmark."

The collaborative research between GIS, Duke-NUS and NNI is funded by the National Medical Research Council's Translational Clinical Research Programme In Parkinson's Disease and A*STAR.

Game changer

The discovery will bring new focus to the midbrain.

The midbrain is a small segment of the brain, but it's the body's information superhighway. A key role among its many functions is the control of movements.

This, however, gets interrupted in Parkinson's disease because certain nerve cells in the midbrain, called dopaminergic neurons, malfunction and die.

"The midbrain has multiple functions, but one of the main ones is movement. So when there's a problem in the midbrain, like in Parkinson's, patients can't control their movements," said Dr Sun.

The disease is marked by tremors in the hands, legs and face, poor coordination, impaired balance, limb stiffness and slow movements. Symptoms worsen over time, and the only treatment available now is to manage them.

Scientists don't understand why dopaminergic neurons die, but they think it has something to do with neuromelanin in the neuron.

"The interesting point is that there's an unexplained diminished amount in patients with Parkinson's. So there's a possibility that neuromelanin has a protective effect on the dopaminergic neurons, and prevents them from dying," said Dr Sun.

"Conversely, neuromelanin could be toxic and its accumulation kills the neurons, so there are fewer in the patients. We don't know which is true yet, but we think we've got a handle on it to probe now."

The next phase of research

More in-depth studies are already being done to understand the behaviour of the material affected by the disease itself.

The team is also growing more midbrain tissue in the lab. These are used in various tests to identify the ones more likely to die.

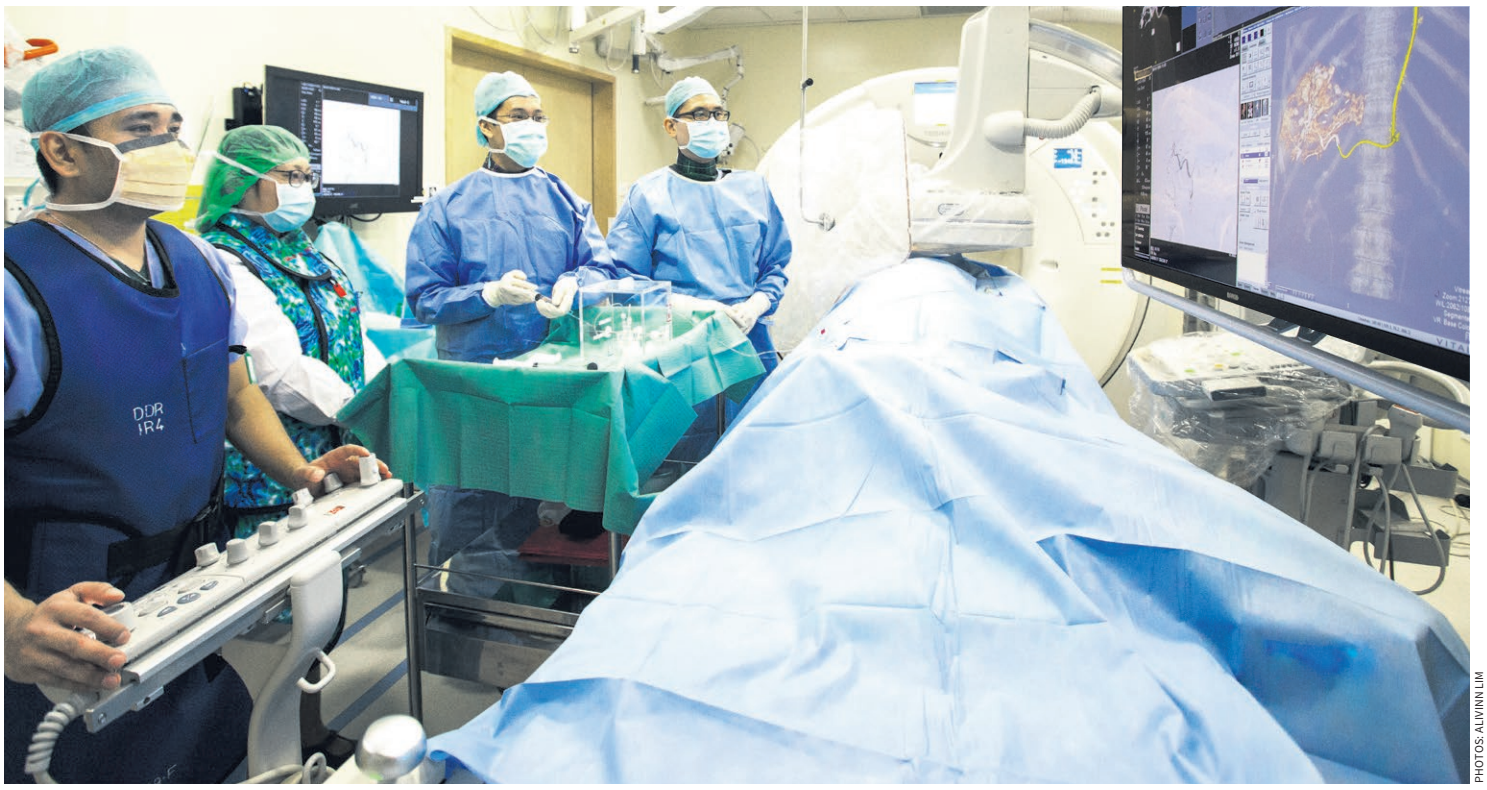
"It is a slow and tedious process. But we hope this will eventually lead to the discovery of a new or existing drug that slows down or prevents the death of neurons. That would effectively mean a cure for Parkinson's disease," said Dr Sun.

"Now that we've published our paper on how to make a functional model of a midbrain, other researchers will probably be doing similar studies too.

"The scientific competition is intense, but it doesn't matter because, ultimately, it's patients who will be winners in this race."

PHOTOS: 123RF & ROGER CHUA

Dr Alfred Sun, Associate Research Scientist, NNI, and Senior Research Fellow at A*STAR's GIS.



PHOTOS: ALVIN N LIM

In an yttrium-90 radioembolisation, microspheres containing the radioactive Y90 element are injected into the liver to kill tumour cells. The treatment is performed by an interventional radiologist, assisted by a team that includes (from left) a radiographer, nuclear medicine laboratory technologist and nuclear medicine physician. Before and during treatment, the patient undergoes a type of imaging known as hepatic angiography to ensure that the microspheres are properly delivered.

The delivery box ensures that the radioactive yttrium-90 element is safely and correctly administered during the procedure.

Stacking the odds

New twinning strategy being tested to fight intermediate liver cancer. By Thava Rani

WHEN IT COMES TO CANCER, any treatment that offers better odds than an existing one is worth a try.

So a team that includes National Cancer Centre Singapore (NCCS) and Singapore General Hospital (SGH) is studying if pairing an existing treatment with a new immunotherapy drug, nivolumab, will benefit some liver patients.

For these patients, the cancer remains confined to the liver but has advanced to the point where surgery is no longer possible. The standard treatment for them is to administer yttrium-90 (Y90) radioembolisation.

This procedure involves injecting microspheres containing the radioactive Y90 element into the liver to kill the tumour cells. It has been able to control the growth of the cancer for a time in about 70 per cent of patients.

"We plan to study whether nivolumab can help to further enhance the efficacy of radioembolisation. If proven so, [the combination] will change the way we treat liver cancers," said Dr Choo Su Pin, Senior Consultant, Division of Medical Oncology, NCCS.

"With existing treatment of Y90 alone, patients with intermediate stage liver cancer may survive 15 to 18 months. By adding nivolumab, we are hoping to further enhance these survival rates," she added.

Dr David Ng, Senior Consultant and Head, Department of Nuclear Medicine and PET, SGH, said: "Y90 radiation kills tumour cells which release antigens that stimulate or awaken the immune system. The addition of nivolumab causes these activated immune cells to recognise and attack the tumour cells as well."

Nivolumab, which has been approved for use in other cancers, such as of the lung and skin, is an immunotherapy drug that enhances the body's immune response against cancer cells.

It is showing promising results for advanced liver cancer patients in ongoing studies, with early data showing that in a few cases, the cancer disappeared with treatment. The drug also managed to extend the life of patients with advanced cancer by 14.4 months, compared to 6.5 months under sorafenib, the current standard treatment.

When combined with radiation, nivolumab and other immunotherapy drugs have also been observed to cause an abscopal effect, meaning not only the treated tumour but growths in other parts of the body that were not exposed to radiation also shrank.

The trial, which also involves the Genome Institute of Singapore and the Singapore Immunology Network, began in December 2016 and is expected to end in 2018. It aims to recruit 40 eligible participants.

Liver cancer is common in Africa and Asia, with almost 80 per cent of cases in this region due to the hepatitis B virus. While a successful immunisation programme has lowered the incidence of liver cancer from hepatitis B in Singapore, the number of fatty liver-associated liver cancer has been on the rise. Liver cancer is one of Singapore's top killer cancers.

> **Y90 RADIATION KILLS TUMOUR CELLS WHICH RELEASE ANTIGENS THAT STIMULATE THE IMMUNE SYSTEM. NIVOLUMAB CAUSES THESE ACTIVATED IMMUNE CELLS TO ATTACK THE TUMOUR CELLS AS WELL.**
>
> DR DAVID NG, SENIOR CONSULTANT AND HEAD, DEPARTMENT OF NUCLEAR MEDICINE AND PET, SGH

The study's lead investigator, Dr Choo Su Pin (second from right), with (from left) co-investigators Dr David Ng, Professor Pierce Chow and Dr Apoorva Gogna.

About the trial

The team hopes to recruit about 40 patients for the trial, which started in December 2016.

Who qualifies?

- Patients with inoperable intermediate stage liver cancer who are suitable for Y90 radioembolisation treatment (about a third of liver cancer patients will meet this criteria), and whose cancer has not spread to other organs, or at least the bulk of the tumour is still within the liver.

What is the treatment?

- Patients will first undergo Y90 radioembolisation.
- Three weeks later, they will receive a dose of nivolumab.
- Nivolumab dose will be repeated every fortnight for up to two years, as long as side effects are tolerable.
- Throughout the period, patients will be monitored closely.

Cost

- Patients will pay for the Y90 radioembolisation and other hospital procedures.
- Nivolumab will be free.

Cycling in the MRI?

A new heart test, using a stationary bike inside a cardiac MRI scanner, is being used to detect early heart muscle disease. By Suki Lor

PHOTO: NHCS

The Bike CMR combines a Cardiac MRI or CMR scanner with a stationary exercise bike, which the patient pedals for about an hour. This gives cardiologists a better insight into how the heart responds to exercise.

WHEN A YOUNG PERSON has an enlarged heart, cardiologists want to know if it is an "athlete's heart" or heart muscle disease.

An "athlete's heart" is an enlarged heart that is a normal physiological response to exercise. This is commonly seen in competitive athletes who train more than 10 hours a week.

Recent research suggests that ordinary people who exercise a few hours a week can also have a slightly bigger than normal heart. This is a normal response to an active lifestyle, but a diagnostic dilemma for physicians trying to tell a big heart due to an active lifestyle from one with early heart muscle disease.

In the past, doctors would ask an athlete to stop exercising for a few months to see if his heart returned to a normal size.

Now, a new tool, the Bike CMR, which is a Cardiac MRI (Magnetic Resonance Imaging) scan, promises better, more accurate results. It combines the CMR with a stationary exercise bike, which gives cardiologists better insight into how the heart responds to exercise.

The National Heart Centre Singapore (NHCS) began using the Bike CMR this year after a study led by Assistant Professor Calvin Chin, Consultant, Department of Cardiology, NHCS, showed it was effective and consistent in investigating enlarged hearts.

Currently, the main indication for using the Bike CMR is to differentiate normal cardiac response to exercise from early heart muscle disease. The test assesses how the heart responds to stress, and compares it against established normal ranges.

It takes about an hour, during which the patient lies supine in the CMR scanner and pedals on a specially designed CMR-compatible bike.

"At every stage of the exercise, we will image the heart to better understand how the heart muscle responds to exercise. It's a one-stop test for those with suspected heart muscle disease. We can look at heart function and structures, and stress them in one single imaging modality," said Dr Chin.

Bike versus treadmill

He said exercise is the preferred stress test choice because it is closest to normal functioning. "But we cannot do this effectively by using the exercise treadmill test," said Dr Chin.

> **THE EXERCISE BIKE CMR TEST OPENS A WHOLE WORLD OF OPPORTUNITY IN THE DIAGNOSIS AND MANAGEMENT OF PATIENTS WITH A VARIETY OF CARDIAC DISEASES.**
>
> DR CALVIN CHIN, CONSULTANT, DEPARTMENT OF CARDIOLOGY, NHCS

The exercise treadmill cardiovascular MRI has been done at some centres, but it has some limitations. The patient undergoes increasing stages of exercise intensity. At the peak of exercise, he is quickly transferred back to the scanner for cardiac imaging. This may reduce accuracy because the heart rate drops during transfer time.

MRI-compatible exercise treadmill machines have been developed for use in scanner rooms to shorten the transfer time. Comparatively, the Bike CMR provides a more accurate exercise profile of the patient by imaging the heart at every stage of the exercise.

The best candidates for the Bike CMR test are young and very physically active people who may have enlarged hearts.

"When someone relatively young and apparently fit has an enlarged heart, we want to know if it's due to early heart muscle illness or a physically active lifestyle," said Dr Chin.

A dilated heart in someone below the age of 35 can be due to a heart muscle illness. For an older person, the cause tends to be coronary artery disease – a blockage in the heart arteries.

Most patients referred to NHCS for the Bike CMR test so far have been men, including national servicemen from the NHCS-run Singapore Armed Forces clinic.

Those who get a normal exercise response but have enlarged hearts would not need treatment. A poor response, however, would point to an underlying heart muscle disease, to be followed up at the cardiomyopathy clinic at NHCS.

Advantages of the CMR

The CMR is considered the gold standard for non-invasive assessment of heart function and volumes. Its powerful magnets and radio frequency pulses create images of the heart's interior, but the risk is low because it does not involve ionising radiation. Last year, NHCS did more than 2,200 CMR scans, 500 more than the previous year.

A major advantage of using the CMR, unparalleled in other imaging modalities, is its ability to characterise heart muscles with the use of contrast administered through the veins. Abnormal areas of the heart muscle will appear bright in contrast to surrounding normal heart tissue that appears black.

Dr Chin said test use of the Bike CMR can be expanded in the future. It can be used to identify patients, such as those with heart failure, who are at higher risk of developing complications in time to come. This may help doctors prescribe certain treatment options.

For example, patients at high risk of adverse cardiac events will be treated more aggressively with either medication or device therapies.

"The exercise Bike CMR opens a whole world of opportunity in the diagnosis and management of patients with a variety of cardiac diseases. This is an active area of our current research," said Dr Chin.

Glue and seal diseased veins

A new medical-grade superglue can seal up veins with impaired function with minimum pain and recovery time.

By Annie Tan

INJECT, GLUE AND SEAL.

That about sums up a new treatment for venous insufficiency, a condition where blood flows back towards the feet instead of returning to the heart because of faulty vein valves, and which commonly manifests as varicose veins.

"Treatment is simple, painless and fast," said Dr Chong Tze Tec, Senior Consultant and Head, Department of Vascular Surgery, Singapore General Hospital (SGH). "There is minimal or no bruising at all, and patients can resume their normal activities immediately without having to wear compression stockings afterwards."

The procedure makes use of cyanoacrylate adhesive, a medical-grade superglue which has been used in surgeries and other treatments since the 1950s. Its use in the treatment of venous insufficiency was approved by the US Food and Drug Administration in 2015, and by Singapore's Health Sciences Authority in 2016.

SGH started offering the treatment in the first quarter of 2016, and since then, more than 100 patients have opted for it.

In the procedure, done under local anaesthesia, a small tube or catheter is inserted into the diseased vein. Ultrasound is used to guide and position the catheter along segments of the vein, and then small amounts of the superglue is pumped through the catheter at 3cm intervals and pressed down – three minutes for the first seal and 30 seconds for the subsequent portions. No suturing or stitching is needed – just an adhesive plaster that is placed over the puncture wound.

While not everyone who suffers from venous insufficiency or reflux has varicose veins, those who do can have the large, twisted veins removed after the superglue procedure.

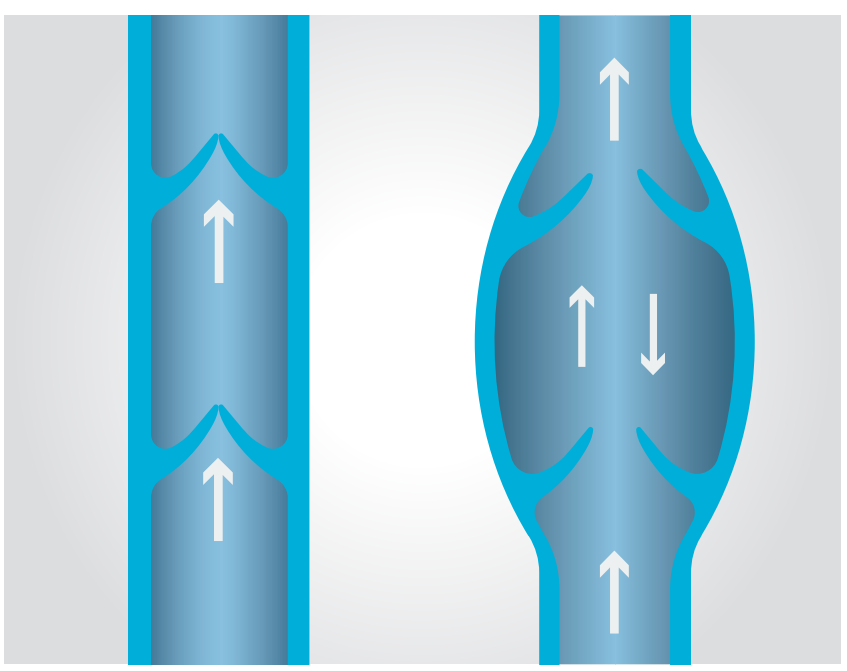
Surgeons make small incisions – 3mm into the skin – to "pull out the veins", said Dr Chong. Stab avulsion is usually done under local anaesthesia, but if many or large veins have to be taken out, it is done under general anaesthesia, he added.

As with other methods to close or take out diseased veins, blood is rerouted to other, healthy veins. Conventional methods of treating the condition include stripping, an invasive and painful option that involves removing the diseased veins surgically, and requires a recovery period of weeks.

Radiofrequency and laser ablation are other methods, but the use of intense heat to seal diseased veins can injure or darken the skin, especially slim patients whose veins are close to the skin. Some treatments also require multiple injections.

PHOTOS: ALVINN LIM & 123RF

In the new procedure, the surgeon pumps small amounts of a medical-grade superglue using a device that is much like a glue gun (in Dr Chong Tze Tec's hands) through a catheter into the diseased vein to close it.



Instead of returning to the heart, blood can flow the wrong way when valves in the vein are damaged. It flows backwards, pooling in the vein and making it swell. Once the damaged vein is closed, the blood can be directed through other healthy veins.

Patients who undergo conventional treatments usually take a longer time to recover. They also have to wear compression stockings for one to three weeks after treatment, which can be uncomfortable in Singapore's hot and humid weather. With the superglue treatment, patients are able to go home within an hour of the procedure.

According to some studies, the superglue method is as effective as conventional techniques. The condition did not recur for 99 per cent of patients three months after the procedure, and for 94 per cent after two years.

> **MOST PEOPLE DO NOT KNOW ABOUT VENOUS INSUFFICIENCY. IT IS LARGELY UNDIAGNOSED AND UNTREATED. IT CAN BECOME A SERIOUS MEDICAL CONDITION.**
>
> DR CHONG TZE TEC, SENIOR CONSULTANT AND HEAD, DEPARTMENT OF VASCULAR SURGERY, SINGAPORE GENERAL HOSPITAL

Venous insufficiency is a common condition: one in five people suffer from it worldwide. However, according to Dr Chong, this condition is largely undiagnosed and untreated.

"Most people just don't know about it. Their legs may feel heavy and they may see unsightly varicose veins and pigmentation, which they think is a normal part of ageing. They also tend to think it is just a cosmetic problem even though it is not. It can become a serious medical condition," he said.

In its early stages, putting the feet up is often enough to relieve the feelings of heaviness or fatigue. As the condition advances, however, unsightly varicose veins, swelling of the leg, discolouration of the skin, eczema and ulcers can develop. One study suggests that 30 per cent of untreated patients will have more serious problems within six years, including the chance of the vein rupturing and bleeding heavily.

The condition tends to affect the elderly, the obese, pregnant women and those who have to stand for long periods of time. It also is more common among people with a family history of the problem.

Patients who notice symptoms such as swelling of the legs and ankles, feelings of heaviness, fatigue, aching, cramping, burning or itching in the legs, as well as a discoloration of the skin, ulcers and open wounds should seek medical advice.

Beyond aesthetic improvements, symptoms such as swelling, heaviness, aching, cramping and itching should be alleviated once venous insufficiency is treated, Dr Chong said. "After a long day, legs will feel lighter and patients will experience an improvement to their quality of life."

Bubbly mineral for urinary stones

Drinking a type of sparkling mineral water that contains a certain mix of calcium, magnesium and bicarbonate might deter urinary stones. By Suki Lor

PHOTOS & ILLUSTRATIONS: 123RF & ALVINN LIM

TRYING TO PASS OUT a urinary stone can be very painful, and some people undergo the agony not once but multiple times.

Patients with a recurring condition are advised to drink more water and watch what they eat. Urine that has become too concentrated allows waste chemicals to crystallise and urinary stones to form.

As many people find it hard to make dietary changes, Dr Palaniappan Sundaram, Associate Consultant, Department of Urology, Singapore General Hospital, has been researching if simply drinking water with a certain mix of minerals will make a difference.

"Everybody metabolises the water that they take in different ways. [People prone to developing urinary stones] metabolise the water they drink differently from other people, and that is why they make stones," said Dr Palaniappan.

The study looked at a type of sparkling mineral water with a specific mineral content that includes calcium, magnesium and bicarbonate. Calcium and magnesium are stone inhibitors while bicarbonate increases the pH of, or alkalinises, the urine. Alkalinising can help those patients with calcium-associated stones (either calcium oxalate or calcium phosphate). They make up about 80 per cent of patients, said Dr Palaniappan.

Ten participants who had not suffered from urinary stones before were recruited for the *Mineral Water In The Prevention Of Urinary Stones* study. They weren't restricted from their normal diets, but for a week, they had to drink at least 1.25 litres of the mineral water every day, preferably with their meals.

"The idea is for the calcium in the mineral water to bind with the oxalate and not be absorbed," said Dr Palaniappan. Oxalate – mainly from food like spinach, nuts and chocolate – has to bind with calcium to be excreted. Otherwise, it gets absorbed and forms kidney stones.

Three 24-hour urine samples were collected – before, after, and a week after the study period – and analysed for changes. The results were generally positive: Participants on average produced a significant increase in urine volume, from 1,500ml to 1,800ml (meaning the participants had drunk substantial volumes of water); a decrease in urinary oxalate secretion to 0.23 millimoles (mmol) a day from 0.32 mmol/day; and a significant increase in urinary magnesium to 4.8 mmol/day from 3.3 mmol/day.

Urinary calcium didn't increase, despite the high calcium content of the mineral water.

Urinary citrate, however, showed a slight decrease to 2.2 mmol/day from 2.5 mmol/day. A higher level inhibits stone formation.

The study, which was co-authored by Dr Chong Tsung Wen, Senior Consultant, Department of Urology, was submitted to the 2016 SingHealth Duke-NUS Scientific Congress. A second study was done between April and December 2016, which recruited 10 people who had kidney stones. Preliminary results were similar to the first, although urinary citrate, which showed a decrease among the first study group, rose among the second group, said Dr Palaniappan.

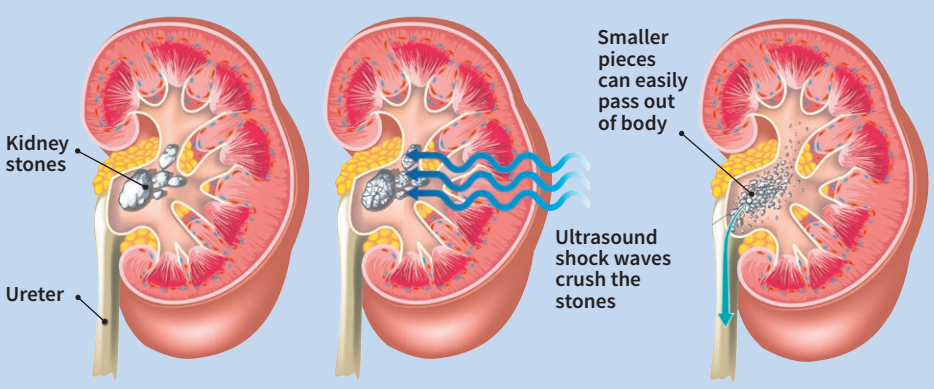
A larger randomised control study is being planned, with 30 participants each in the intervention and control arms, and will likely last longer, probably around three months.

About urinary stones

Dr Palaniappan Sundaram, Associate Consultant, Department of Urology, Singapore General Hospital, gives the details.

How are urinary stones formed?
They form when urine contains a high concentration of chemicals such as calcium, oxalate, phosphate and uric acid, and too little of the substances such as citrate and magnesium that stop stone formation.

What causes them?
Urinary stones are a common condition, affecting 10 to 12 per cent of the adult population. The most common cause of urinary stones is not drinking enough water. The golden rule is that two to three litres should be drunk every day – or enough to result in two litres of urine. So drink whatever amount is necessary to make that volume. If not enough water is taken in, urine becomes concentrated, allowing chemicals to crystallise and urinary stones to form.



Does one's diet make a difference?
Apart from not drinking enough water, people with certain conditions that increase calcium levels in the body, such as hypothyroidism, also tend to get urinary stones.

That is not to say that people prone to kidney stones should avoid calcium consumption, as large studies have shown that restricting calcium intake leads to stone formation. Moderate calcium intake, and lower salt and animal protein intake, is fine. Oxalate, which is present in most foods, however, is harder to restrict.

How are urinary stones treated?
Most small stones are passed out in the urine, but larger ones can be treated in several ways:

- **Extracorporeal shock wave lithotripsy,** done as an outpatient procedure, uses shock waves to break urinary stones into fragments, which are then passed out in the urine over the next few days. This non-invasive and safe procedure, however, may require more than one session.
- **Percutaneous nephrolithotripsy** is a minimally invasive keyhole operation. A small hole is made in the body to allow a scope to pass into the kidney. The urinary stone is broken up and removed through this passage.
- **Uretero-renoscopy** involves passing a small scope through the urethra and bladder into the ureters and kidneys. The urinary stone is then broken up and removed.

Drink enough water to produce two to three litres of urine a day, says Dr Palaniappan Sundaram.

Sleepless in Singapore

A study reveals why locals are not clocking in enough sleeping hours. By Thava Rani

PHOTOS: 123RF

"If more people are able to sleep adequately, it may reduce the number of accidents, and everybody will be safer," said Dr Tan, noting that insufficient sleep could affect reaction time on the roads in the long run.

LAST YEAR, A WORLDWIDE study placed Singaporeans in the top spot for sleeping the least. But what's the reason for this?

Researchers from SingHealth Polyclinics (SHP) went on a search for answers, delving a little deeper. They discovered some interesting data on the sleep patterns and timings of adults here.

Dr Tan Ngiap Chuan, Director, Research, SHP, who led the study, said: "There are many studies out there, but none were done to compare sleep patterns of residents in two local housing estates with different population profiles. Our study helps us identify common factors that lead to the loss of sleep among Singaporeans."

A standard questionnaire was used by researchers on 350 people, aged 21 to 80, who visited the Sengkang and Bukit Merah polyclinics, and the findings were published in the international journal *Medicine* last year.

They found that 44 per cent of participants – young people and those over 40 – slept less than seven hours a night on weekdays. A large proportion of this group were students and full-time workers.

This group, however, appeared to catch up on their sleep on weekends. "They seemed to make up for it on Saturdays and Sundays. We found that just over a quarter were sleep-deprived on weekends," said Dr Tan.

By contrast, those without fixed work commitments, such as homemakers, retirees and the unemployed, more often had consistently adequate sleep on weekdays and weekends.

Those who got enough sleep tended to have regular sleep times, fall asleep relatively easily, exercise regularly and not smoke.

Lifestyle makes a difference

The study found that there are modifiable factors, mostly lifestyle practices, which affected people's ability to get enough sleep. Among these were sleeping in the same room as children, studying, reading for leisure, and using computers or mobile devices in the bedroom or in bed. Drinking caffeinated beverages and smoking also affected sleep.

> **THE SLEEP-DEPRIVED SHOULD PUT THEIR DEVICES AWAY AT LEAST ONE HOUR BEFORE BEDTIME. IT'S LIKE A COOLING-OFF PERIOD, SO TO SPEAK.**
>
> DR TAN NGIAP CHUAN, DIRECTOR, RESEARCH, SINGHEALTH POLYCLINICS

It was found that those who used computers or mobile devices prevalently – surfing the Internet or playing computer games in the bedroom – tended to sleep less than seven hours on weekdays. Interestingly, using one's handphone in bed did not shorten sleep times, but this, the study says, needs further research.

Dr Tan said using computers and electronic gadgets in the bedroom is a modifiable behaviour. Changing it can help improve sleep patterns.

"We plan to come up with a checklist for patients. So if a patient consults us for sleep-related problems, we can quickly go through the common modifiable factors, ask the relevant questions, and offer a quick solution."

But this does not mean the sleep-deprived have to bid goodbye to their devices at the bedroom door. "They can still use their devices, but they should put them away and let their minds rest at least one hour before bedtime. It's like a cooling-off period, so to speak."

Caffeine and smoking

Other lifestyle factors found to affect sleep were drinking caffeine and smoking. People who had caffeinated drinks two hours before bedtime were less likely to get enough sleep.

Smoking has consistently been shown to affect sleep because nicotine is a well-known stimulant. The study also found that smokers, or previous smokers, tended to have less sleep compared with non-smokers.

"Smoking alone significantly increases the risk of vascular diseases. The risk is further heightened by a lack of sleep because insufficient sleep is also associated with cardio metabolic syndrome, a phenomenon where certain risk factors come together and cause a higher likelihood of diseases such as atherosclerosis and diabetes," he said.

"Consulting a physician for sleep-related complaints gives the doctor a chance to persuade the patient to quit smoking as a means to ameliorate sleep insufficiency."

Dr Tan also noted the long-term effects of insufficient sleep, particularly reaction time on the roads. "If more people are able to sleep adequately, it may reduce the number of accidents, and everybody will be safer," he said.

How lack of sleep affects health

The body heals and repairs itself during sleep. Prolonged lack of sleep can therefore impact the body in many ways.

Physical impact

- Daytime fatigue
- Poor stamina
- Higher risk for obesity and chronic diseases such as hypertension, diabetes and metabolic syndrome
- Shortened life expectancy

Mental impact

- Less effective cognitive perception, affecting performance
- Impaired judgement and reaction time, affecting safety
- Memory and concentration difficulties

Emotional impact

- May cause mood disorders, depression and anxiety

Source: SingHealth Polyclinics

Don't wait for taxis at SGH Blk 3

Taxi stand and other logistic changes as construction of community hospital advances.

Singapore General Hospital (SGH) Campus continues to be a hive of activity as construction of Outram Community Hospital advances.

Among other construction work starting, a bridge to link the hospital with SGH will be built, and to facilitate this, the taxi stand at SGH Block 3 has been closed since Aug 1. Patients and visitors can wait for a taxi at SGH Blocks 4 or 7 instead. An alternative route between Blocks 3 and 4 – a sheltered path outside the two blocks – will be added in October.

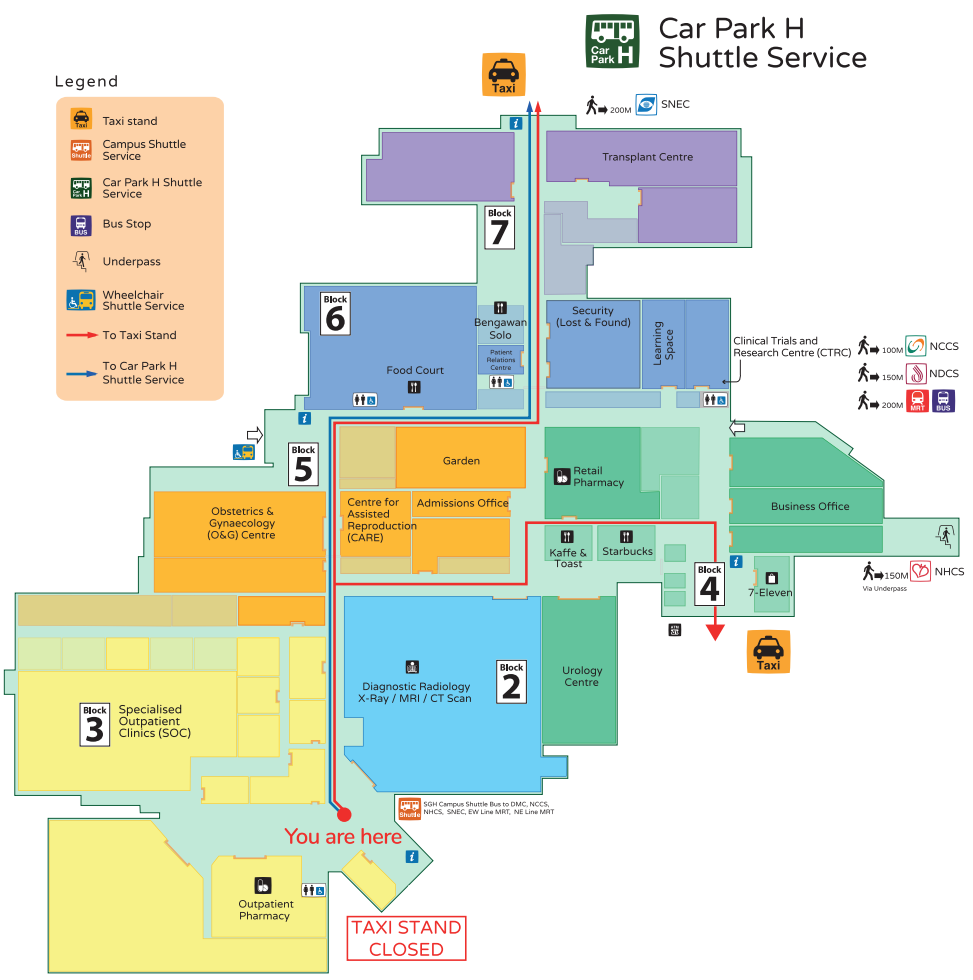
The bridge, which has two levels, will help in the transfer of patients between the main hospital blocks and the community care building when it is ready in 2020.

A change has also been made to the Car Park H Shuttle Service, which ferries motorists between the multi-storey and open-air car parks in MacAlister Road and at SGH. The buses no longer stop at Block 4, but at the shuttle service bus stop across the road from SGH Block 7. Operating hours of the service, however, are unchanged: 6am to 10.20pm on weekdays, and 6am to 1.20pm on Saturdays. It runs at approximately 10-minute intervals.

Wards in the SGH blocks, built in the early 1980s, are undergoing renovation in phases. After Wards 63A and 63C were refurbished earlier this year, work on Wards 77 and 78 started, and is expected to finish at the end of this year.

PHOTOS: ALVINN LIM

Patients and visitors can take the Car Park H Shuttle Service at the shuttle bus service stop across the road from SGH Block 7, which is also for SingHealth staff shuttle bus services.



The Campus landscape has been slowly changing as buildings were torn down and new ones erected. Work on the new 24-storey National Cancer Centre Singapore will start soon at the site of SGH's former Pathology Building.

Outram Community Hospital is yet another component of the new model of care that the Campus will offer to an ageing and expanding population. When ready, it will play an important role in patient care, stepping in to look after patients who have recovered following acute hospital treatment at SGH, but are still not sufficiently well to return home and the community. Receiving rehabilitation at the Community Hospital will help patients recover and return home more quickly, and avoid a relapse and return to SGH, and/or the disease centres.

BEST LETTER

Unused medicines

Can I donate unused medication to your hospital? I'm sure there are many people who develop allergies or for whatever reason cannot or no longer need their prescribed medications, and would like to give them away to people who might need them.
Ms SK Leong

We do not accept the return of dispensed medication in the interest of patient safety. We are not able to establish if the medication was handled or stored according to the manufacturer's recommendations. Medication should generally be stored in a cool and dry place, but some may have specific storage instructions. Insulin, for instance, has to be stored in the refrigerator at between 2 deg C and 8 deg C to remain effective.

Patients should not overstock their medication to avoid waste. Our pharmacists routinely advise them to collect their medicines at shorter intervals rather than, say, a year's supply at once.

Patients who are prescribed new medication are advised to take a two-week supply for the first time in case they develop allergies or adverse drug reactions to the new medication. The same principle applies to the collection of medication taken on a "use when necessary" basis.

Patients who develop allergies or adverse drug reactions can return their medication and get a refund with a doctor's memo. The returned medication will be discarded.

Ms Lee Soo Boon
Deputy Director
Pharmacy Department
Singapore General Hospital

Getting an extra bed

I am already paying for an A class room. Why do I still need to pay for a bed for my wife to accompany me after my surgery? She's helping to look after me.

SGH SAYS After surgery, patients may want a family member to keep them company and to look after them. But not all patients need a family member to stay with them in hospital. For that reason, extra beds are an option, as are amenities like slippers and toiletries. Making these items optional keeps costs down for patients.

Additional beds are not an option for other class wards, as only single-bed rooms have the space for extra furniture. Beds are also subject to availability on a daily basis. Patients' carers and/or their family members can order meals from the hospital.

WRITE IN

about your health experience and win a prize for best letter

Letters must include your full name, address and phone number. *Singapore Health* reserves the right to edit letters, and not all letters will be published. Write to **editor@sgh.com.sg** or **The Editor**, ***Singapore Health***, **Singapore General Hospital, Communications Department, Outram Road, Singapore 169608**, or talk to us on **Facebook**.

The winner will receive 3 tubes of Joint Health Optimal Micellar Glucosamine cream (with Chondroitin) worth $118.50, sponsored by Urah Transdermal Pte Ltd. www.urah.com.sg

LOSING YOUR MIND

5.2% of Singaporeans past the age of 60 have dementia.

Among the major ethnic communities here, Malays at least **60** years show the highest incidence of dementia at 9.4%.

By 2020, **53,000** people in Singapore are likely to have dementia.

This figure is projected to increase to **187,000** people in Singapore with dementia by 2050.

Dementia is a neurodegenerative disease caused by damage to protein structures in the brain, abnormal protein growth around brain cells, or lost connections between brain cells. Patients suffer memory loss, and lose the ability to coordinate, recognise objects and interpret the environment. Dementia is a progressive disease, but changes to the home can help patients live safely and independently.

MAKE YOUR HOME DEMENTIA-FRIENDLY

Lighting should match the cycle of day and night to regulate the body's circadian rhythm.

Declutter the home to avoid falls.

Avoid wavy lines, but have contrasting colours on walls and floors to give a sense of depth and perspective.

Label all commonly used cupboards and drawers.

Keep **medication** and other important items in designated places.

Leave a **phone list** (with photographs, if necessary) by the telephone.

Use a **bulletin board** for reminders to the person.

Install **bed sensors** to alert carers when patient is up and moving.

SIGNS & SYMPTOMS

Early symptoms of dementia are usually not immediately obvious and may vary from person to person. Some noticeable and common symptoms include:

Forgetting recent events and misplacing things

Having **impaired** judgement and difficulty planning or solving problems

Having **difficulty** in finding the right words

Having **difficulty** performing familiar tasks

Becoming **confused** and disoriented in unfamiliar places

Having **personality changes** and mood swings

ILLUSTRATIONS: 123RF & CLICKPHOTOS

COMMUNITY SUPPORT

To help dementia patients lead dignified lives, the Ministry of Health and Agency for Integrated Care have been strengthening the skills and capabilities of care staff and carers:

Eldercare centres in Singapore are able to care for **1,000 SENIORS** with dementia at any given time.

The centres will have the capacity to look after 3,000 seniors with dementia by **2020**.

The **dementia-friendly communities** initiative has trained over **7,000** people from communities like Macpherson and Yishun to recognise common dementia signs and help support people with dementia.

$200 a year each is available for carers, including domestic foreign workers, to attend courses under the Caregivers Training Grant.

TEXT: SOL E SOLOMON

Sources: Ministry of Health, Health Promotion Board, Institute of Mental Health, Alzheimer's Disease Association

End-of-life care and the GP: From cradle to…

GPs are best placed to look after their patients in their last days, but that role is often handed over to palliative care professionals who may not know their patients as well. By Dr Rina Nga

PHOTO: 123RF

The GP is the first point of contact for many patients and their families in their journey with any disease, and in the eyes of these patients and family members, the GP is the authority on all things medical.

"DR TAN SAID that I cannot stop taking this medicine!"

The terminally ill patient was fiercely resistant to my suggestion to "de-prescribe" his statins, vitamins and iron tablets. I respectfully conceded.

But when it happened again – I tried to take off his anti-hypertensives as a response to his falling blood pressure – I decided to call Dr Tan, the patient's beloved general practitioner (GP).

Deferring to the family GP as the final authority on all things medical isn't uncommon. When I was guiding a family on the procedure for getting a doctor to sign a Certificate of Cause of Death (CCOD) in the event of death, they told me confidently: "Don't worry, our Dr Wong will come and sign. He is a very good doctor. He has promised to sign the CCOD."

But where are these Dr Tans and Wongs at the end of their patients' journeys?

As a GP with special interest seeking to provide "good" end-of-life care for these same patients and their families, I try to build a rapport by asking them for their interests/favourite food/favourite music/favourite people. Yet these are the "quirks" that their regular GPs already know, and with whom they have built an unshakeable rapport.

Let me outline the typical trajectory of a terminal cancer patient. When a GP suspects his patient of 20 years of having cancer, he will refer him to an oncologist. If he is confirmed to have cancer, the patient stops seeing his GP. Instead, he will be going back and forth from home to hospital on endless rounds of chemotherapy, radiotherapy and admissions for complications.

If treatment appears to have limited benefits after some time, the oncologist might call in a palliative care team. Should the family decide to have the patient spend his last days in the comfort of his home, they will be referred to a hospice home-care team. The next time the family calls on their GP, it might be to give him the sad news that his patient has passed away.

I see this as a waste of a precious doctor-patient relationship – a truncation of a complete "cradle to grave" follow-up. Can't the Drs Tan and Wong step back in and be involved in their patients' care at the end-of-life stage?

With the advantage of knowing their patients well, GPs are ahead of palliative care physicians in many areas. For one, they are better placed to communicate bad news, discuss choices and advance care plans to their patients and their families – skills that modern-day palliative care doctors might struggle with.

But there are some real barriers to surmount, even if GPs in general agree they should provide community-based palliative care for the benefit of their patients. For instance, patients with life-limiting disease often require some form of opioid to control their pain or breathlessness at some point. But many GPs worry about having to keep pristine records of controlled drugs.

Palliative patients also need round-the-clock care. But GPs usually operate alone, and it would be humanly impossible, not just unsustainable, to be providing care whenever the need arises.

Also, how would a private GP be reimbursed for his services? Hospice home-care providers don't charge for their services, so it is unlikely that patients would switch out of a service that is free to them.

Can some changes be made to, say, accommodate a partnership between GPs and existing palliative home-care providers, so that such issues like carrying opioids and remuneration can be addressed?

Challenges aside, I still advocate having GPs handle community-based palliative care as a way of continuing care for patients and their families. It is only then that the GPs in Singapore can truly be involved in the care of their patients from the proverbial "cradle to grave".

> "WITH THE ADVANTAGE OF KNOWING THEIR PATIENTS WELL, GPS ARE BETTER PLACED TO COMMUNICATE BAD NEWS, DISCUSS CHOICES AND ADVANCE CARE PLANS TO THEIR PATIENTS AND THEIR FAMILIES – SKILLS WHICH MODERN-DAY PALLIATIVE CARE DOCTORS MIGHT STRUGGLE WITH.

Dr Rina Nga Su Yin initially worked as a locum GP, but later developed an interest in palliative care. She then pursued the Graduate Certificate in Palliative Care, Flinders University, 2013; and the Graduate Diploma in Palliative Medicine, National University of Singapore, 2015. From 2012 to 2016, she headed the Singapore Cancer Society Hospice Care department, developing palliative home care services for terminal cancer patients, and moved over to Assisi Hospice as resident physician in 2017.

This article was adapted from End-of-life care and the GP: From cradle to …, *published in the April 2017 issue of the SMA News*

The troubleshooter

Most people find complaints a pain, but he sees them as an inspiration and a chance to fix what is imperfect. By Suki Lor

FOR A GOOD PART OF HIS career in healthcare, Mr Lee Jiunn Kee, Deputy Director, Operations, National Dental Centre Singapore (NDCS), has dealt with complaints from patients.

That would be 15 years in all – 14 at the Singapore General Hospital, which he joined fresh from university with a business degree, and one at NDCS, where he switched to last year. To the latter, he has brought a wealth of knowledge gleaned from his previous years dealing with patients' feedback.

He sees investigating and resolving complaints as a way to improve patients' experience and healing journey while in hospital.

Over the years, he has also learnt to tell the sporadic from the regular. "Over time, when you encounter more and more complaints, you see a pattern and the need to do something about it."

A major issue he handled previously was how some patients were disgruntled at putting down a deposit before hospital admission.

Those with Medisave, MediShield, Letter of Guarantee and Integrated Shield Plan coverages found it counter-productive to pay upfront deposits only to be refunded after discharge. Some found it difficult coming up with the deposit, but did not have a problem paying once these coverages kicked in.

The radical solution his team took, with senior management's approval, was to absolve the need for deposits for most subsidised patients. "Our analysis showed that it was safe to do this in subsidised cases because after their stay, Medisave and MediShield could cover most bills," he said.

Complaints dropped after this. "Of course there's a risk in every decision, but the overriding concern in this case was not bad debt, but giving our patients peace of mind when they were admitted to hospital."

A vocation, not a job

He sees health care as a vocation and has no regrets about not using his business degree. "I enjoy health care. I find it very meaningful to make a difference in patients' interaction with the health care system."

At NDCS, he runs frontline operations, oversees patient experience, and is involved in the planning of the new NDCS building, scheduled for completion in 2023.

"It will have a bigger capacity and better services," he said.

He also co-led the task force that developed SingHealth's Admissions Buddy mobile app, allowing technology-savvy patients to get online financial counselling.

"Such counselling is important for a patient's peace of mind. We should remove as much of the unknown as possible before treatment, so that they don't have to worry about money but focus on treatment and recovery."

He is now working on the One Queue, One Bill system at NDCS to smoothen patients' hospital journey by assigning them a single queue number for all their different stops during their visit.

As a director, he likens his management style to that of a conductor in an orchestra, who cannot play every instrument but sets the pace and integrates all components to produce good music.

> **I ENJOY HEALTH CARE. I FIND IT VERY MEANINGFUL TO MAKE A DIFFERENCE IN PATIENTS' INTERACTION WITH THE HEALTH CARE SYSTEM.**
>
> MR LEE JIUNN KEE, DEPUTY DIRECTOR, OPERATIONS, NATIONAL DENTAL CENTRE SINGAPORE

He is all for creating a culture where staff can take the initiative, dare to be adventurous, and even propose viewpoints different from his. "I want them to feel that they are the ones who make things happen."

Outside of work, his three-year-old son keeps him busy, so he does not have much time for hobbies. But his avid interest in travelling has not abated. He has a special interest in archeological sites and off-the-beaten track places.

Earlier this year, he took a week-long solo trip to Myanmar. "I researched it online but there wasn't much information. So I navigated my way and adjusted my itinerary along the way."

He would like to return there with the family one day, as well as travel to places such as Tuscany because "it's vast and serene".

"But that will have to wait till my boy grows up a little more," he said.

PHOTO: VERNON WONG

Mr Lee Jiunn Kee sees investigating and resolving complaints as a way of improving patients' experience and healing journey while in hospital.

One of a few

Dr Wickly Lee is among a small number of interventional neuroradiologists in Singapore, who not only interpret brain scans, but also treat vascular conditions related to the brain.

By Suki Lor

NEURORADIOLOGISTS INTERPRET brain scans. But interventional neuroradiologists go one step further – they also treat vascular diseases using minimally invasive methods.

This involves carefully pushing a catheter (thin tube) with the help of x-rays, from an artery in the groin or leg all the way to the brain.

"From there, we can push and deploy materials to block or unblock diseased arteries, and treat aneurysms and vascular malformations. We can also put in devices to catch a clot and remove it from the artery," said Dr Wickly Lee, Senior Consultant, Department of Neuroradiology and Director, Joint Neurovascular Service, National Neuroscience Institute (NNI).

The work is intricate because the catheter has to be manipulated and pushed using micro movements. Some procedures take up to four hours, so it calls for incredible patience and steady hand-eye coordination.

Dr Lee decided to specialise in it after being inspired by promising results in a landmark international trial back in 2005. It showed endovascular procedures to treat brain aneurysms were effective, and had lower complication rates compared to open surgery.

"It was also less invasive. Before the trial, the treatment for brain aneurysms was mainly open surgery. But at that time, we believed endovascular options were promising and would have a greater role to play."

Dr Lee saw the potential because the technology for endovascular therapy was evolving rapidly. Also, the development of more sophisticated devices had enormous growth potential for this field.

"The advantage we neuroradiologists have is our experience and knowledge of brain imaging and vascular anatomy, which we see on scans from Magnetic Resonance Imaging (MRI) and Computed Tomography (CT). Interpreting them gives me a good assessment before I formulate a treatment plan for the patient," he said.

He trained in Budapest for a year in it. After returning, he initially worked on aneurysms and arteriovenous malformations, which are tangles of abnormal and poorly formed arteries and veins that bleed more easily than normal vessels. However, acute stroke intervention was starting to gain traction.

"NNI was the first institute in Southeast Asia to treat acute stroke using endovascular procedures. Cases of aneurysm interventions have stabilised over the years, and we're now seeing more cases for acute stroke treatment."

He said intervention for strokes demands more skill. "You need to be fast and manoeuvre bigger catheters into small vessels. You want to extract the clot fast because the earlier you get the clot out, the better it is for the patient."

He now spends time training the next generation of interventional neuroradiologists. "It takes time to train them. Large numbers cannot be trained at one go. They need individual, step-by-step guidance," he said.

But he is happy doing it. "I feel happy interacting with the younger generation and sharing my experiences with them. I find it fulfilling nurturing them, seeing them succeed and providing a platform, for them to embark on their journey."

He is also paving the way for this next generation by building relationships with established centres overseas. He believes in the mutual exchange of ideas so healthcare professionals can be kept updated on the latest technology.

Outside of work, he likes his leisurely strolls. "Turning 48 now, I think it's a good way to stay healthy and active. And because we wear heavy lead gowns during procedures, I'm also feeling it in my back."

His pastimes are also gentler: appreciating artworks, paintings, porcelain and Peranakan antiques. "I got interested in them when I was a medical student and started going to museums. I like to appreciate artworks for their beauty."

He finds brain images beautiful too, but after a day's work, he also likes to unwind by reading books on antiques.

"It's definitely more relaxing," he said.

> **I FEEL HAPPY SHARING MY EXPERIENCES WITH THE YOUNGER GENERATION. I FIND IT FULFILLING NURTURING THEM AND PROVIDING A PLATFORM FOR THEM TO EMBARK ON THEIR JOURNEY.**
>
> DR WICKLY LEE, SENIOR CONSULTANT, DEPARTMENT OF NEURORADIOLOGY AND DIRECTOR, JOINT NEUROVASCULAR SERVICE, NNI

Dr Wickly Lee was inspired to specialise in this field after a landmark trial in 2005 showed that endovascular procedures to treat brain aneurysms were effective and had lower complication rates than open surgery.

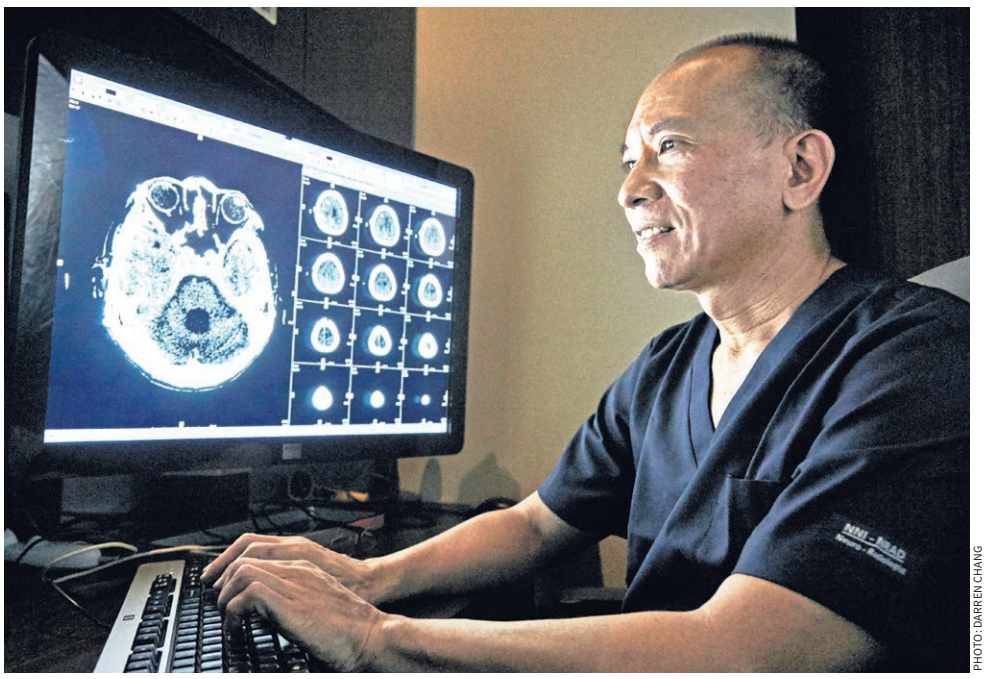


PHOTO: DARREN CHANG

Princess tours facilities at hospital

Her Royal Highness, Princess Maha Chakri Sirindhorn of Thailand, and a team of Thai health care experts, were recently in Singapore to look at rehabilitation facilities for patients and sign an agreement on collaboration. By Annie Tan

Princess Maha Chakri Sirindhorn's visit was to Changi General Hospital (CGH) where she toured facilities and, together with Mr Gerard Ee, Chairman, Eastern Health Alliance, presided over the signing of a Memorandum of Understanding (MOU).

The MOU was between Thailand's leading medical rehabilitation organisation, the Sirindhorn National Medical Rehabilitation Institute (SNMRI) and CGH. It seeks to enhance co-operation and collaboration between the two organisations in areas such as medical rehabilitation, training and skills development.

Princess Sirindhorn was keen to know more about local health care collaborations and rehabilitation facilities here.

Dr Lee Chien Earn, CEO, CGH, and Deputy Group CEO (Regional Health System) SingHealth, acknowledging the similar goals of both organisations to help the elderly stay mobile, independent and have a higher quality of life, described facilities at The Integrated Building.

Affectionately known as "the IB", it is the first purpose-built facility in Singapore jointly run by an acute hospital (CGH) and a community hospital (St Andrew's Community Hospital).

Launched in 2015 with a comprehensive range of diagnostic and rehabilitation facilities in a pleasant home-like environment, it provides optimised rehabilitation facilities that help patients transit smoothly from hospital to home and to the community. It is especially helpful for the elderly and those recovering from stroke or traumatic injuries.

Princess Sirindhorn toured the building, visiting a ward with a home-like environment, and the various rehabilitation, recovery and therapy areas. She was shown how design of the space can enhance the way staff care for patients and work with caregivers.

PHOTOS: DARREN CHANG

HRH Princess Maha Chakri Sirindhorn (above right) toured the facilities and inspected one of the HOSPI robots in the hospital.

In the Transitional Living Unit, which is a mock-up of a HDB flat, she saw how patients who stay there temporarily after discharge, can get used to managing on their own, and be monitored, before going home.

Princess Sirindhorn also found time to meet some of the hospital's Thai staff members and inspect one of the hospital's HOSPI robots. The robots deliver medicine, specimens and files within the premises and can even use lifts on their own. CGH is the first hospital outside Japan to deploy them, freeing up nurses' time so that they can attend to other tasks.

EVENT CALENDAR

Myeloproliferative Neoplasm Patients Meeting 2017

DATE/TIME: September 30, Saturday; 9.30am-12pm
VENUE: NUH, Health Resource Centre, Medical Centre Level 10
FEE: Free
REGISTRATION: Email tan.chor.kien@sgh.com.sg (for SGH patients) or elaine_seah@nuhs.edu.sg (for NUH/TTSH patients) by September 23 to reserve a place.

Find out about myeloproliferative neoplasm, a rare blood disorder, how it is treated, new drugs available and those under clinical trial, from experts at this event organised by the Singapore General Hospital, Tan Tock Seng Hospital and the National University Cancer Institute Singapore. This event is mostly for patients and their carers.

From panic to peace

DATE/TIME: September 30, Saturday; 10am-11.30am
VENUE: Singapore General Hospital, LIFE Centre, Bowyer Block A Level 1
FEE: $8
REGISTRATION: Email dep.anx.support@sgh.com.sg. Seats are limited.

If you often experience panic or feel overwhelmed, attend this talk by Singapore General Hospital Senior Psychologist Henry Lew to learn about panic, when to seek help and how you can help yourself.

Towards better lung health

DATE/TIME: October 21, Saturday; 8am-3.30pm
VENUE: Academia, 20 College Road, Singapore 169856 (opposite SNEC). Level 1, Seminar Rooms L1-S3 and L1-S4
FEE: Free
REGISTRATION: Register before October 10 to reserve a place. Call 6576-7658 (Monday-Friday, 9am-12pm or 2pm-5pm)

Learn from Lung Centre specialists, physiotherapists and dietitians about lung infections such as community-acquired pneumonia and tuberculosis and how to prevent them, what to eat to recover well, as well as lung exercises at this Singapore General Hospital bilingual public forum.

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

Time for happiness

"No time!" is a universal complaint today. Spending money to free up personal time can make people happier, according to psychologists. They discovered this after a two-week experiment involving 60 working adults in Vancouver, Canada, to see if free time or material goods brought them more happiness. One weekend, the participants were asked to spend about $50 each on things that would buy them time such as cleaning services or food deliveries. The next weekend, they were to spend the same amount on material goods such as wine, clothes and books. The researchers found that people were happier buying themselves time rather than material goods.

Source: the BBC

Does insomnia run in your family?

Can insomnia be a genetic condition? Recent research has uncovered seven genes which put people at risk of insomnia. The research was done by the Netherlands Institute for Neuroscience with Vrije Universiteit Amsterdam (VU) and VU Medical Center. They also found that it has a strong genetic overlap with other conditions such as anxiety disorders, depression and neuroticism. The genes behave differently in men and women, with women being more prone to insomnia. They got further insight by tracking and matching DNA from the UK Biobank with data from the Dutch Sleep Registry.

Source: Science Daily

Your neighbours matter

It looks as if the environment in a chemotherapy ward can play a role in cancer survival, according to an eight-year study of more than 4,600 cancer patients. The study by the US National Human Genome Research Institute's Social and Behavioral Research Branch found that being in close contact with patients who had survived the disease for more than five years had a positive effect on others undergoing chemotherapy. They were slightly more positive than those treated in isolation. The researchers suggested that it could be due to stress levels – patients felt less stressed seeing other patients faring well – and are studying this further.

Source: Reuters

In orthostatic hypotension, the body cannot compensate fast enough for the drop in blood pressure caused by a change in posture. As the brain does not get an adequate supply of blood, it gets deprived of oxygen, resulting in giddiness.

ILLUSTRATIONS: 123RF

Seeing stars

Some people – especially the old and frail – are in danger of falling or fainting when they suddenly stand up. It's not a disease but a condition which deserves more attention.

By Wong Ker

EVEN THOUGH IT'S NOT A DISEASE, it's a cause for concern because sufferers, particularly the elderly, may seriously hurt themselves by falling or fainting.

Called orthostatic hypotension or postural hypotension, it is the sudden drop in blood pressure when a person stands up from a sitting or lying position.

Drops in blood pressure when changing positions may cause momentary dizziness. A healthy person recovers in less than a minute and the dizziness does not pose a problem. But in a more susceptible person, a change in blood pressure may cause prolonged dizziness, blurred vision or even a blackout.

"Standing up from rest, the time taken for compensatory mechanisms in the body to maintain constant blood circulation throughout the body, particularly to the brain, is what causes some people to feel giddy for a fleeting moment," said Dr Gilbert Tan, Assistant Director, Clinical Services, SingHealth Polyclinics.

Why it happens

Dr Tan explained that the pressure required to move blood to the organs depends on three main factors: the heart, which needs to be strong enough to pump blood around the body; the blood vessels, which must be able to constrict or dilate properly; and an adequate supply of blood within the vessels.

If any of these are affected, the body cannot adequately adjust to the changes in blood pressure, and the person may become disorientated or faint.

In orthostatic hypotension, the body cannot compensate fast enough for the drop in blood pressure caused by a change in posture. Not enough blood reaches the brain and it becomes deprived of oxygen.

More serious symptoms apart from light-headedness and dizziness include confusion and blurred vision, within seconds to a few minutes of standing. Symptoms may worsen after exercise or a heavy meal.

The symptoms can resolve quickly if the patient immediately lies down. Otherwise the patient may fall or faint.

It's not a disease

To diagnose orthostatic hypotension, the patient's blood pressure is taken after five minutes of lying down, then measured again when upright for a minute, and then again three minutes later.

> "AROUND ONE IN 10 PEOPLE ABOVE 65, WHO TEST POSITIVE FOR ORTHOSTATIC HYPOTENSION, HAVE UNDERLYING MEDICAL CONDITIONS SUCH AS HEART FAILURE, STROKE OR CHRONIC KIDNEY DISEASE."
>
> DR GILBERT TAN, ASSISTANT DIRECTOR, CLINICAL SERVICES, SINGHEALTH POLYCLINICS

"The patient has the condition if the systolic blood pressure drops by more than 20mm Hg and the diastolic blood pressure by more than 10mm Hg after standing," said Dr Tan.

Orthostatic hypotension is a cause for concern especially in an older person, because it may be due to underlying medical conditions.

"Around one in 10 people above 65, who test positive for orthostatic hypotension, have underlying medical conditions such as heart failure, stroke or chronic kidney disease."

Common causes of orthostatic hypotension include heart conditions affecting circulation (such as heart failure), prolonged bed rest, kidney conditions affecting the regulation of the circulatory system, and the use of medication to treat hypertension (such as calcium channel blockers).

Another type of medication called loop diuretics, used to treat conditions relating to excessive fluid retention in the body, may also trigger orthostatic hypotension. They can cause an imbalance of salts and electrolytes in the body, affecting the regulation of fluid balance and blood pressure.

Finding the root cause

"The approach to orthostatic hypotension is to try to find out the cause and correct it, so as to address the root of the problem. Equally important is the need to educate patients on how to manage this condition," said Dr Tan.

For mild symptoms, the simple remedy is to sit or lie down immediately if one feels light-headed when standing up.

If drugs are the culprit, the dose may be adjusted or stopped entirely. In severe cases, a controlled increased salt (sodium) intake or special types of medication that retain sodium may help lessen symptoms.

Some simple lifestyle changes can also help. Dr Tan's advice to patients is to avoid prolonged bed rest, and to rise slowly from a lying or sitting position.

"In addition, avoid drinking alcohol and eating large meals, especially high-carbohydrate meals. Rest after meals. Stay well-hydrated. Avoid hot showers and minimise physical activity, especially in hot weather. I always remind my older patients to wait a while after standing up, before walking off," said Dr Tan.

Why me? Why do I have diabetes?

Controlling this disease is a life-long and often difficult journey. Everyone, from family to friends and even bosses, can play a part in supporting someone with it. By Natalie Young

I DON'T HAVE diabetes, I have high blood sugar. How can I stop eating white rice? I don't want to take medicine. I'd rather try bitter gourd or some other natural remedy to treat my diabetes. Why me?

These are some reactions of patients after learning they have diabetes. Having to adopt a healthier diet and lifestyle to regular monitoring of their blood glucose levels and following a strict medication regime can overwhelm them, making them feel different or isolated from the non-diabetics around them.

"Being diagnosed with diabetes and having to adjust to an entirely new lifestyle can be daunting and scary," said Ms Florence Fong, Senior Medical Social Worker, Singapore General Hospital.

"It's important to attend to the emotional struggles that patients living with diabetes face, even if they don't say anything to the people around them. If not, it may lead to them giving up on treatment." Uncontrolled diabetes can lead to complications like renal failure, heart failure, stroke and amputation of the limbs.

Managing diabetes successfully requires self-discipline and a readiness to accept treatments such as regular injections and dietary plans. These demands can make staying positive and on treatment tough, especially when progress is slow or having to overcome a fear or dislike. To avoid burdening their families, some diabetics keep these feelings to themselves. But bottling them up can lead to burnout.

As a medical social worker, Ms Fong helps patients and their family members cope with diabetes. She is a member of a multidisciplinary team of diabetes doctors, nurses, dietitians and therapists who work with patients to overcome the challenges of living with diabetes and other diseases.

"We listen to patients to find out what difficulties and challenges they face in managing their diabetes. It's easier to break down the problems and work on areas that they would like to make changes in, whether it is through reducing some obstacles or changing behaviour like putting in a bit of exercise each day," she said.

Patients face real difficulties, not just emotional or a lack of motivation in staying the course on treatment. "I have patients with financial difficulties. They take their medications as prescribed, for instance, but they may not be able to follow advice to eat more nutritious food [because of affordability]," said Ms Fong.

"Then there are others who sometimes skip their appointments because missing a day's work means missing a day's income." To help patients with money issues, Ms Fong applies to charities or community services for funds or diabetes consumables that patients need regularly.

If patients don't talk about the problems they face dealing with their disease – be it a fear of needles to feeling *paiseh* about telling their doctors about the side effects they are having with their medicines – it will be difficult for the health care team to provide them with correct advice, she said.

"The healthcare team is more than happy to work with the patient to adjust his diet, medication and lifestyle to suit his preferences," she said. Patients who fear the pain of a needle prick, for instance, might be offered the option of a diabetes pump, which spares them from daily multiple insulin injections.

Support from family, friends or even another person with diabetes is important, as experience suggests that patients with greater family support tend to cope much better than those who have poorer support in the community, said Ms Fong.

Making diet and lifestyle changes – cutting out snacks and soft drinks, and exercising regularly – as a family helps patients adjust better to their diabetes diagnosis. The added benefit is that such changes are good for everyone, not just the person with the illness. Encouragement and support can come in other ways, such as reminding the diabetes patient to take his medicine or to check his glucose level.

"Where friends are concerned, try to find out more about diabetes to understand why sometimes your friend has to take out a syringe to inject insulin before a meal," said Ms Fong, adding that they shouldn't be naggy about food or overly protective. Like everyone else, diabetics have their strengths, which can help them pull through life's difficulties. They stay motivated and committed to treatment, for example, to keep healthy for the sake of the family, or to fulfil a life-long dream, she added.

From film stars like Tom Hanks to political leaders, there are plenty of people with diabetes in all walks of life who have shown that a condition that is well-managed has little or no impact on their ability to perform well at work.

People with diabetes need time and space to check their blood sugar levels and administer insulin. Allowing staff to keep their medical appointments is also important, so that they can continue to manage their diabetes successfully.

"Regular follow-up can actually help patients prevent further complications with their diabetes," said Ms Fong.

Having to make lifestyle and dietary changes, and to remember their medication regimen, can be a tall order for people newly diagnosed with diabetes, says Ms Florence Fong.

Dos and don'ts of supporting someone with diabetes

DO

- Understand diabetes and how to support someone with the condition.
- Make the healthy lifestyle change together.
- Work out together.
- Be understanding when they need privacy.
- Support them even when they slip up.

DON'T

- Be too vigilant or nag about what they eat or when they forget their medication.
- Indulge in carbohydrate or sugar-rich foods in front of them.
- Treat them differently.

Warm up before a swing

Resist the temptation to tee off a golf game before a proper warm-up, to avoid injury to common areas like the shoulders and back. By Desmond Ng

PHOTOS: 123RF/ALVINN LIM

A warm-up, even a short one, will gently stretch and prep muscles for the force and twisting that come with a golf swing, said Mr Aloysius Chan.

ANYONE WHO HAS had golf lessons knows that warming up is one of the most important aspects of the game. Once he's certified to go on the course, however, the last thing a new golfer wants to do is to warm up. All fired up, he just wants to hit the ball – and play.

He may not realise that the swings his body needs to make can lead to injuries, and that a warm-up – even a short one – will gently stretch and prep his muscles for the force and twisting that come with a golf swing.

"Warming up increases the heart rate and body temperature, improving the extensibility of the muscles and tendons and altering chemical changes in the muscle, thus reducing the incidence of muscle strains during the sport," said Mr Aloysius Chan, Physiotherapist, Singapore General Hospital.

"Hitting the ball requires a huge rotational force. Moreover, the typical golfer isn't that interested in the score but in playing as long [sending the ball as far] as possible. So he has to exert a lot of power. If his lower back is not strong enough, it will get overstressed, and this will lead to injury over time," added Mr Chan, who is also a certified golf physiotherapist.

Indeed, lower back injuries are the most common among the patients he sees for golf-related problems. Other common injury areas among amateur golfers are the shoulder, wrist and elbow. Golf injuries are usually caused by overuse, poor swing mechanics, muscular imbalances and a lack of warm-up.

Golf, considered a high-impact and high-velocity sport, already exerts significant pressure on the body. For the enthusiastic golfer – especially if he's a weekend warrior who spends most of the week at a desk and ventures out for exercise only on weekends – hitting a few hundred balls in an hour, the potential for injury is even greater.

Taking a break between hits allows the body to recuperate from having to repeatedly absorb the force that occurs as the club hits the ball. Moreover, synthetic turf mats at the driving range are harder than grass and don't absorb the impact of a swing as well.

Carrying a heavy golf bag on the course instead of using a trolley or buggy can put a lot of stress on the spine, and increase the risk of injury to the shoulder and ankles.

Surgery is usually not required for golfing injuries such as a dislocation or torn ligament. Most problems are referred to a physiotherapist. "A golfer should be able to return to golf after rehabilitation, but it might take him some time to return to his previous skill level. For instance, Tiger Woods took many months off professional golf for his low back injury," Mr Chan said. Rehabilitation includes strengthening exercises with the use of weights, dumbbells or resistance bands.

Fractures, ligament damage or muscular tears are the more serious types of shoulder injuries. Mr Chan advises any golfer who experiences pain during a game, or pain that persists after a game, to seek medical advice.

Although the patients that Mr Chan sees are mostly men in their 50s and older, golf injuries are by no means restricted to older people. "When young, the bones and ligaments are not 100 per cent mature and it's easy to break a bone in a fall. After a certain age, people lose bone density, and muscles are not as strong. Your breaking point is also lower. Middle age is still the best," he said.

Golfing injuries are also not restricted to the sport. People who play baseball, tennis and badminton experience similar problems, like low back pain, as these sports also involve rotation of the trunk.

Warm-up exercises

Amateur golfers should perform at least 10 minutes of warm-up before any practice session or the start of a round of golf. "A lot of golfers don't warm up. But as golfers, we should be there about 10 minutes before tee-off to warm up," said Mr Aloysius Chan, Physiotherapist, Singapore General Hospital.

A low, single-digit handicapper who plays competitively, Mr Chan said that he often warms up for an hour before a game.

"A warm-up should include static stretches of the major muscle groups, as well as specific golf swings [from air swings to hitting balls at the driving range], progressing from chipping/pitching all the way to full driver shots," he said.

Stand with knees slightly bent. Holding golf club as shown, fold both arms across the chest. Rotate upper torso (including shoulders) from side to side.

Raise one arm and point it in the opposite direction without turning the body. Using the other arm, draw it in as close to the body as possible till you feel a good stretch.

Stand with feet shoulder-width apart. Hold golf club over and slightly behind head. Stretch far back and flex until shoulder blades almost touch.

PHOTO & ILLUSTRATION: 123RF

The heart's most important vessel

What happens when the aorta – which ensures smooth blood flow throughout the body – malfunctions? By Wong Ker

THE AORTA – extending from the heart to the abdominal area – is the largest artery in the body. It ensures that the blood brings oxygen from the heart to all parts of the body.

But like the rest of the body, it is susceptible to disease.

A common and serious condition is an aortic aneurysm, which happens when the aorta walls swell to more than 1.5 times their normal size, weakening the aorta. If it ruptures, blood spills into the body with serious – even fatal – consequences.

There are many causes. A common one is the accumulation of plague in the arteries (atherosclerosis) caused by untreated high blood pressure that weakens the artery walls.

Other causes include genetic disorders such as Marfan syndrome and Loeys-Dietz syndrome, which cause connective tissue in the blood vessel wall to develop abnormally.

Diagnosing the problem

There are two main types of aortic aneurysms – thoracic and abdominal – depending on where they occur in the aorta. The thoracic type affects the upper body, and the abdominal type happens closer to the belly area.

The thoracic type often goes undetected because there may be no symptoms, especially in the early stages, when the swelling is mild. As it progresses, the patient may begin to feel a deep pain in the chest, or have back pain, difficulty in swallowing, shortness of breath, cough or hoarseness in the voice. There could also be varying degrees of discomfort, depending on where and how severe the aneurysm is.

Aneurysms may first be picked up through a physical examination, blood pressure check, by heart murmurs or any pulsating lumps in the abdomen, groin or legs.

Subsequent tests such as coronary angiograms, echocardiograms, computed tomography or magnetic resonance imaging scans are done to confirm the diagnosis and monitor progression.

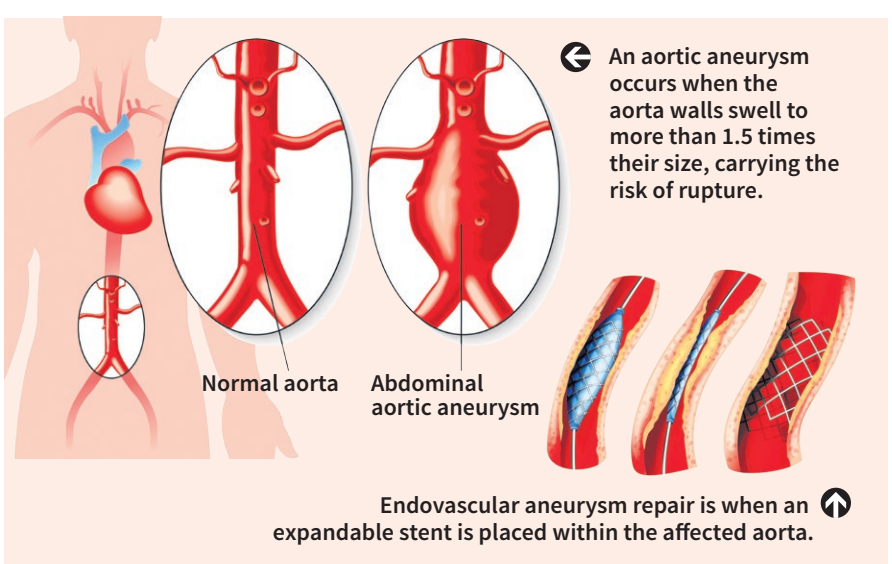
A ticking time bomb

If not diagnosed or treated, the aneurysm may weaken the inner wall of the aorta so much that it ruptures under the pressure of blood pushing against it, causing an aortic dissection. The patient may then feel a sudden ripping sensation in the chest, or severe pain between the shoulder blades.

If the aorta ruptures in the part closest to the heart, it is a Type A aortic dissection – a medical emergency that can be fatal if the patient does not get emergency surgery.

A Type B aortic dissection, while still serious, is usually not immediately life-threatening. It happens when the affected site is beyond the blood supply to the left arm, a relatively "safe" distance from the heart. This is usually treated with medication, such as beta blockers, to lower the patient's blood pressure and prevent a potentially deadly rupture in the aorta.

Aortic dissection, although associated with a high mortality rate, is also rare, affecting two to five out of every 100,000 individuals worldwide.



An aortic aneurysm occurs when the aorta walls swell to more than 1.5 times their size, carrying the risk of rupture.

Endovascular aneurysm repair is when an expandable stent is placed within the affected aorta.

Surgical intervention

When the swelling in an aortic aneurysm is at risk of rupture, conventional open surgery can cure it. This involves reconstructing the affected area – "pipe change" using synthetic tubular grafts. Surgery of the aortic valve at the root of the aorta (nearest the heart) may be necessary if it is affected too.

The origins of coronary arteries that supply blood to the heart lie in close proximity to this valve at the aortic root. In some patients with extensive disease, coronary artery bypass grafting surgery restores blood circulation to the patient's heart. This involves grafting a healthy artery or vein from the body to divert blood flow to the affected portions of the heart that lacks the blood flow.

During open "pipe change" surgery, all blood flow in the patient's body will have to be halted for a limited duration. The patient's core body temperature is reduced to induce a deep hypothermic state, which minimises the body's energy requirements. This reduces the damage incurred by it being artificially put in a state of "suspended animation".

In a less invasive form of surgery known as endovascular aneurysm repair, an expandable stent is placed within the affected portions of the aorta through punctures in blood vesels in the groin. This treatment is most common for the abdominal type of aortic aneurysm, or when the condition is amenable to this approach.

Prevention better than cure

To avoid a catastrophic crisis, it is important to heed tell-tale signs. This is especially so for men over the age of 60, smokers, or those with untreated high blood pressure and a family history of aortic disease.

Seek medical attention immediately if the chest or back pain increases in frequency, and there is difficulty in swallowing, shortness of breath, coughing or hoarseness of voice.

To reduce the risk or slow down the development of an aortic aneurysm, maintain a healthy lifestyle by eating well, exercising regularly, drinking in moderation, not smoking, and managing stress, blood pressure and cholesterol levels.

Extracted from Murmurs, a publication of the National Heart Centre Singapore (NHCS), with expertise from Associate Professor Soon Jia Lin, Senior Consultant, Department of Cardiothoracic Surgery, NHCS.

Know this and act early

Knowing more about brain disorders can lead patients to an earlier diagnosis, medication and an improved quality of life. By Suki Lor

MR TAN (NOT HIS REAL NAME), 80, was home alone when he felt a sudden weakness in his left arm and leg. He dragged himself to bed and tried to sleep, hoping the weakness would subside.

When his children returned from work, they saw his state and called an ambulance.

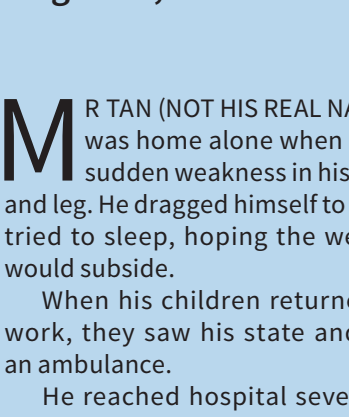
He reached hospital seven hours after the first symptoms hit – too late for doctors to give him a drug to dissolve the blood clot in an artery in his brain. To be effective, the drug needs to be injected within 4½ hours from the onset of the stroke.

Because cases like this happen too often, National Neuroscience Institute (NNI) is keen to advise patients to act more quickly. "If people come in beyond that time window, the blockage would've already caused permanent damage to the brain," said Dr Carol Tham, Consultant, Department of Neurology, NNI.

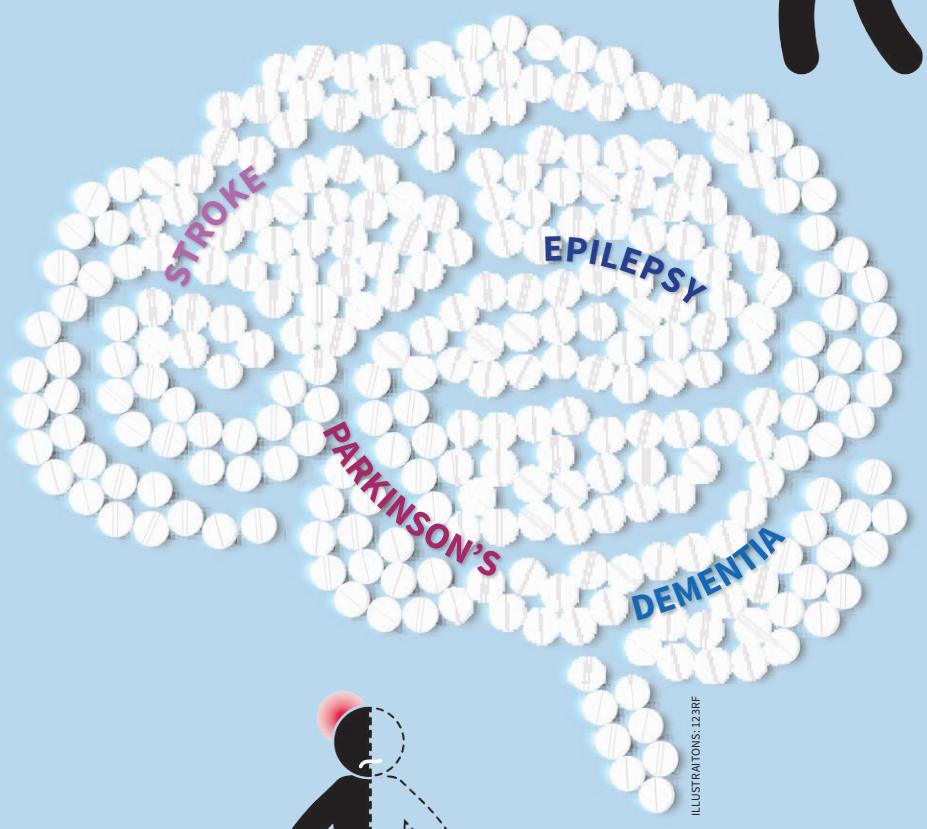
This case contrasts with that of another patient, 65, who collapsed at the office, but got to the hospital in time because his colleagues called an ambulance immediately.

He had a blood clot blocking his basilar artery, which supplies the most critical part of the brain – the brainstem.

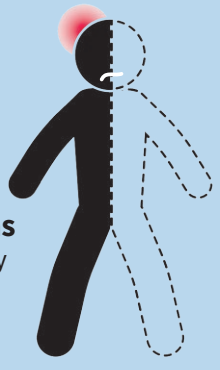
Doctors gave him the clot-busting drug, and did a procedure using a catheter inserted through a small incision near the hip to access a blood vessel. This was to remove the clot from the artery in his brain. The next day, he was sitting up in bed having his lunch.



The key is to recognise stroke symptoms and act quickly, said Dr Carol Tham, Consultant, Department of Neurology, NNI.



ILLUSTRATIONS: 123RF



STROKE
Heed warning signs

"There have been many advances in stroke treatment over the past few years. Such miraculous recoveries wouldn't have been possible 10 or 15 years ago," said Dr Tham.

She advises patients not to dismiss mini strokes or transient ischemic attacks (TIAs) – where symptoms are mild and subsequently subside – because they are a harbinger of a full-blown stroke.

"We've seen patients who have had TIAs for a day or two, but didn't come to the hospital until they had a big stroke, which is sometimes too late. If they'd come earlier, we could've started them on blood thinners to reduce the risk, and monitored them."

She said patients with stroke symptoms should not go to bed hoping the symptoms will subside. They should call an ambulance, even while waiting for family members to return home. Also, neither they nor their family members should drive to the hospital.

To recognise symptoms, use the global acronym "FAST". F is for facial weakness or droop; A for arm weakness; S for speech difficulty or slurring; and T for time to call 995 for an ambulance.

PARKINSON'S DISEASE
Early diagnosis helps

There is currently no cure for Parkinson's disease, but an early diagnosis can improve the patient's quality of life.

Hand tremors is the first sign of the illness in some patients. In others, it could be difficulty walking, where the person takes small steps and trips or falls easily, even when the ground is flat. He ends up not going out because he is always trailing after others.

Caused by a lack of dopamine in the brain, some patients mistake its symptoms for old age, but a neurologist can confirm the diagnosis and ensure early treatment.

Medication can improve gait, help prevent them from falling, and enable them to carry on with their daily activities, said Dr Tham.

DEMENTIA
What it is and isn't

Symptoms of this disease include memory loss, impaired judgement, disorientation and behavioural changes serious enough to cause loss of function.

The most common cause is Alzheimer's disease, where the brain's hippocampus (which controls memory) shrinks. It is not known why this happens, but in a few cases it could be due to genetics.

Dr Tham said there is also a common misconception that losing memory is part of normal ageing, but in many cases it is not.

There are currently no drugs to reverse dementia, but there are some to slow progression and help behaviour. Some kinds of memory loss such as those caused by a vitamin B12 or thyroid hormone deficiency are reversible and easily corrected.

"People with memory issues should get an objective basic memory test at a polyclinic. Not all patients who complain of forgetfulness turn out to have dementia. Some are found to have depression," she said.

EPILEPSY
Know how to handle it

One common mistake is to stick a spoon in the mouth of a patient having an epileptic fit to prevent him from biting his tongue.

This is not advised as it may break his teeth, which could go into his lungs and cause an infection, said Dr Tham.

"The right thing to do is to clear any obstacle that poses a danger to him, lay him on the ground turned on one side, and call an ambulance."

Some people completely lose consciousness during a fit, while others remain conscious but have jerky movements of their arms or legs. Most seizures can be controlled by medication.

"In extreme cases where seizures are poorly controlled despite taking many anti-epileptic medicines, the patient might need surgery to help regulate the electrical activity," said Dr Tham.

ILLUSTRATION: 123RF

Feeding baby in the first year

First six months: The milk phase is when your baby is breast-fed, or given infant formula.

After six months: Once your baby shows signs it is ready for food, a variety of solid foods is introduced gradually. Milk, however, should still remain the major source of nutrition until your baby is around a year old.

The right food at the right time

Tips to help you breeze through baby's challenging first year.

By Wong Sher Maine

BABY'S FIRST YEAR is a time of extraordinary change, and one of parents' biggest worries concerns feeding. From milk schedules to the introduction of solid foods, Dr Selina Ho, Senior Consultant, Department of Neonatal and Developmental Medicine, Singapore General Hospital, has some feeding tips for new parents.

No milk schedule needed

Babies have their own feeding schedules, and feed when they are hungry. Knowing when your baby is hungry or full is more important than watching the clock. It may be difficult to recognise your baby's feeding needs initially, as babies fuss for many reasons and suck not only because they are hungry but also for comfort.

Breast-fed babies often need to be fed more frequently than formula-fed babies. Newborn infants need to be breast-fed every two to three hours, and formula-fed infants three to four hourly.

No water before solids

Breast milk provides all the fluids a fully breast-fed baby needs. Even formula-fed babies do not need water if the milk is made according to the product instructions.

If formula milk is too diluted, your baby will not get enough nutrients. Feeding it water in between milk feeds fills its stomach, but leaves it feeling hungry, and can result in a fussy and crying baby.

Water can be introduced when your baby is weaned, and solid food is introduced at around six months.

Weaning signals

Your baby is ready for solid food when it can sit upright with support, has good head and neck control, shows an interest in food by watching adults eat, reaches out for food, and opens its mouth when offered a spoon. For most babies, this occurs when they are around six months old.

Single-ingredient foods first

No particular food is recommended as babies' first solid food, but single-ingredient foods should be introduced first, one at a time. Iron-fortified infant rice cereal is commonly used to introduce solids to babies, as it is widely available. Using a spoon to feed your baby small amounts helps teach mouth and swallowing movements and coordination.

Babies don't need salt or sugar in their food.

Take time to try new flavours

Babies need time to get used to new tastes and textures. Spitting out broccoli on the first try does not mean baby will not eventually like it. Sometimes, a new food has to be offered 10 to 15 times before babies will eat it.

Waiting two to three days before introducing another flavour allows you to watch for allergic reactions such as a rash, diarrhoea or vomiting.

Try allergenic foods early

People used to think that they should delay introducing highly allergenic foods like eggs and peanuts to babies. However, recent evidence shows that even babies with a family history of allergies can try these foods from between four and six months of age.

Don't force feed

The dinner table should not be a battleground. If you repeatedly coax or force your baby to eat a certain food, it may eat less of it or refuse it entirely.

It is common for babies to reject new foods. Eating a little of something that it doesn't seem to like is not important. What is more vital is for your baby to be gradually introduced to and to savour a variety of healthy foods.

Supplements often not needed

Nutritional supplements are unnecessary if your baby is feeding and growing well. But if it has health issues, it may need supplements recommended by your doctor.

Start healthy eating early

It is never too early to instil good eating habits. Such habits started in the first year help promote healthy eating for life. Children learn by observing and imitating those around them, which includes good eating habits.

HEALTH XCHANGE

Menopause problems

PHOTOS: 123RF

If I'm going through menopause, must I still be concerned with birth control? Also, can hormone replacement therapy slow down or reduce menopause problems?
During the period around menopause, you could still become pregnant. The menstrual disturbance sometimes makes it hard to predict the ovulation period. As such, it is advisable to use contraception within 12 months of the last menstrual period. Menopause is determined when you do not have menses for 12 consecutive months.

Symptoms such as hot flushes and joint aches can occur just before menopause due to the fluctuation in hormones. It has been shown that lifestyle changes can improve the symptoms and quality of life of women during this period. These lifestyle changes include adopting a healthy diet, maintaining a healthy weight, performing regular and relaxation exercises such as yoga and tai chi, doing meditation, avoiding alcohol and smoking, as well as shunning triggers such as spices, caffeine and so forth.

If after making lifestyle changes, moderate-to-severe symptoms persist, hormone therapy at the lowest dose for the shortest duration can be considered. Hormone therapy isn't for women with a history of cancer, stroke or heart disease, or are estrogen-sensitive.

Dr Ang Seng Bin, Head and Consultant Family Physician, Menopause Unit and Family Medicine Service, KK Women's and Children's Hospital

Droopy lids and eye bags

One of my eyelids has started drooping. Is this due to a wrong eye cream or ageing? What is involved in surgery to lift droopy eyelids? Are the results permanent and will there be scarring? I also heard that cuts to the forehead may leave you with headaches for months.
Droopy eyelids may be due to several conditions. Age-related droopy lids are common in some middle aged or elderly people. It is best that you consult an oculoplastic specialist to assess the severity and discuss treatments.

The surgical procedure for treatment of droopy eyebrow and eyelids that involves an operation on the forehead is called endoscopic eyebrow lift. Some patients have persistent pain on their forehead for some time.

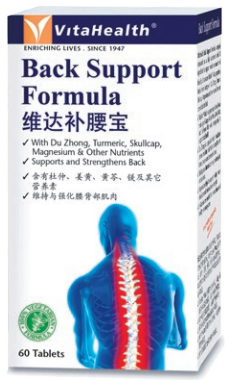
Surgical procedures suitable for treating eyelid problems depend on the individual's condition. An assessment has to be made before a recommendation can be made.

Results for aesthetic procedures are never permanent. Eye specialists who have special training in eyelid surgery – oculoplastic surgeons – are qualified to perform eyelid procedures.

Dr Seah Lay Leng, Senior Consultant, Singapore National Eye Centre

CONTEST

TEST YOUR MEMORY



Answer these simple questions to stand a chance to win VitaHealth Back Support Formula worth $56.80 (five in total to be won).

QUESTIONS
• What is the latest tool used by cardiologists in the Cardiac MRI?
• What is the minimum warm-up time recommended for amateur golfers?

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 Sep 15, 2017

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

*Sponsored by VitaHealth Asia Pacific (S) Pte Ltd. www.vitahealth.com.sg

WINNERS OF CONTEST 46
1. Ang Qi Qing, Irene 2. Chee Kia Wah
3. Hazizah Bee Abdul Jalal
4. Koh Cheng Kiang 5. Ng Pow Seng

Are allergies fatal?

Is it true that you can get an allergic reaction from vaccines made from eggs? Also, are food allergies life-threatening? How do we know if we have an allergy to a food?
Some vaccines are prepared from egg-based technology and contain a small amount of egg protein. People with allergic reactions to eggs should see an allergy specialist to find out if they are suitable to receive such vaccines.

When someone has an allergy to a food, he may experience a tingling sensation in the mouth, hives, rash and eczema within minutes to around two hours after eating it.

Allergic reactions can sometimes be severe and life-threatening, such as swelling of the face, throat and/or mouth; difficulty in breathing; bad abdominal cramps and vomiting; a widespread skin reaction covering a large area of the body; and a significant fall in blood pressure, resulting in fainting and a loss of consciousness.

Typical symptoms that occur every time a certain food is consumed can indicate an allergy to that food. Tests – skin prick testing and blood investigations are two common ones – can be taken to confirm the allergy.

An allergy occurs when the immune system wrongly recognises the food eaten as harmful to the body. Antibodies known as immunoglobulin E are then produced, and they stimulate the body's immune cells to release various chemicals, which affect various organs to produce the signs of a food allergy.

Dr Adrian Chan, Consultant, Department of Respiratory and Critical Care Medicine, Singapore General Hospital

ADVERTORIAL

Consumers to exercise caution when buying glucosamine

In Singapore, glucosamine is widely available as health / nutrition supplement and is not subject to even simple checks on purity.

Not all glucosamine brands are effective! In fact, many are not up to standard.

Glucosamine can be sold without registration or approval

In Singapore, glucosamine can be imported and sold without a licence. They are not subject to pre-market approval by the Health Sciences Authority (HSA). This means that glucosamine products need not be approved before sale. They are also not assessed for their effectiveness by HSA. The responsibility in ensuring the safety and quality rests with the importer, manufacturer, distributor and seller. (information extracted from HSA website)

There were cases announced by HSA, in which dishonest manufacturers produce health supplements with undeclared or unlabelled potent medicinal ingredients. Taking such products can be extremely harmful and can lead to serious health problems.

In the US and Canada, the content of various glucosamine and/or chondroitin products were analysed by the University of Maryland and the Alberta University respectively. It was found that the actual amount of active ingredients in most tested products vary from their label claims, ranging from 0% - 115% in the US and 41% - 108% in Canada.

Recommendation by international researchers

Claims can easily be made without proper validation through clinical studies.

This is why many researchers have recommended that “Prior to obtaining any supplement containing chondroitin sulfate or glucosamine, the consumer should become informed about the manufacturer and the product.”

The American Arthritis Foundation advised that “When a supplement has been studied with good results, find out which brand was used in the study, and buy that.”

Viartril®-S is the only glucosamine proven safe and efficacious in more than 300 clinical studies

The good clinical results of Viartril®-S cannot be generalised to other glucosamine brands. Viartril®-S is supported by excellent clinical safety and efficacy data.

Viartril®-S is of the highest quality and is in fact, registered as a prescription drug in many European countries.