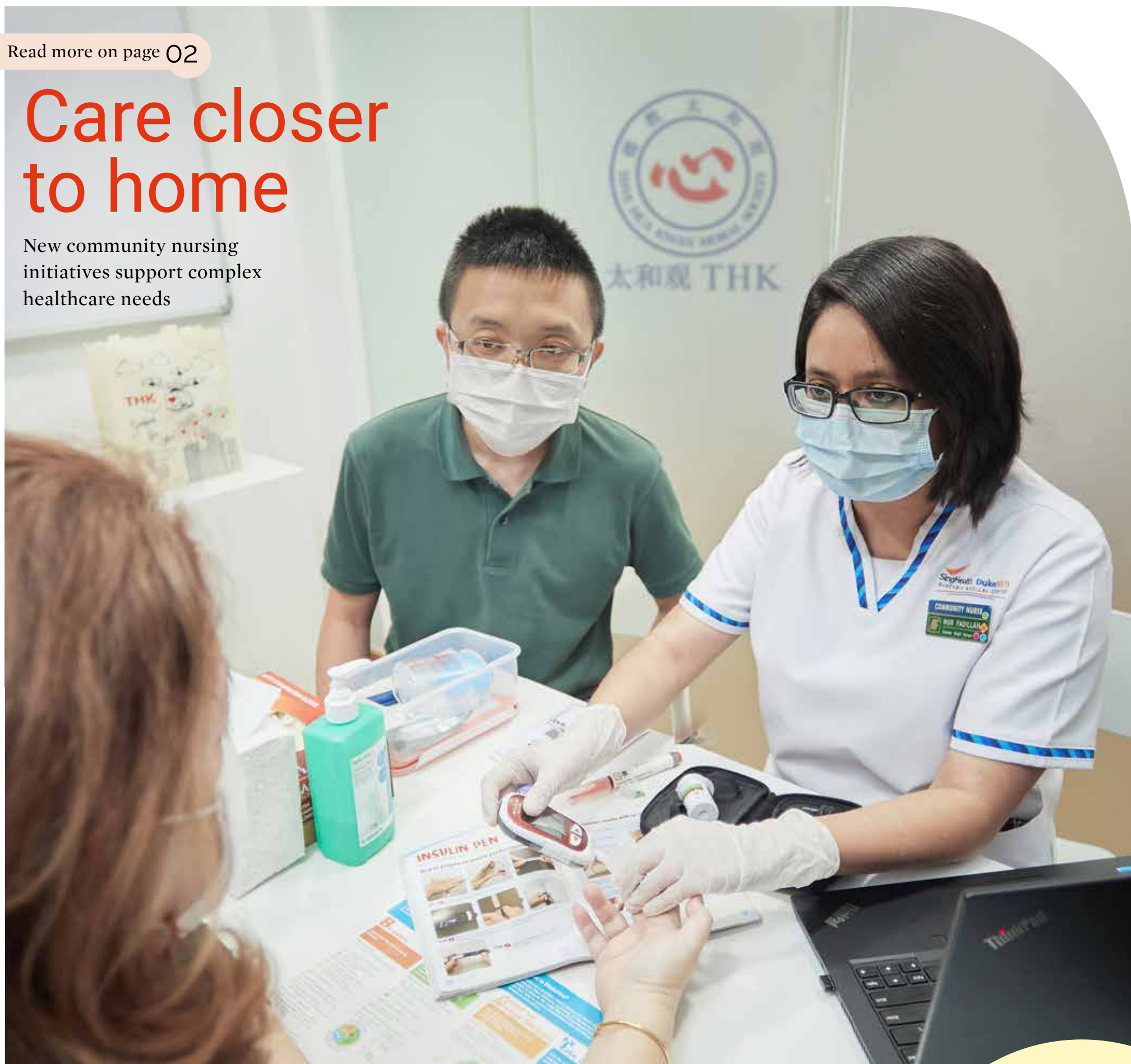


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Holistic health begins within the community

Community nursing plays an important role in supporting residents' complex healthcare needs, with new initiatives such as telehealth, dental and mental health.

by Annie Tan



PHOTOS: VERNON WONG

Community Nurse Peng Cheng Yu regularly calls on a patient and her husband to address their concerns following a worrying disease diagnosis. The couple calls Ms Peng their “angel”.



The roles of community nurses have expanded and they are supporting younger populations in their 40s and 50s, as well as residents with diseases requiring palliative and supportive care, mental health and oral health support.

Ms Nur Fadillah Ahmad

Senior Staff Nurse, Population Health and Integrated Care Office (PHICO) – Community Nursing, Singapore General Hospital

Mr Colin Tan, Social Worker at Thye Hua Kwan Cluster Support@ Bukit Merah, and Community Nurse Nur Fadillah Ahmad work together to ensure the health of their residents. They update each other on changes and needs in their residents’ conditions.

As Singapore shifts its healthcare focus from disease treatment to prevention, more new community nursing services have been rolled out to residents in the south-east region to help them age well and live independently at home.

Singapore General Hospital (SGH) Community Nurses, an increasingly important group in population health management, are stationed at 35 neighbourhood Community Nurse Posts

(CNPs). The programme started in 2018, with the nurses focusing on helping the elderly with their chronic disease management, including health assessment and monitoring, medication self-management, and care referral.

“As part of the initiatives in supporting seniors who are well or at pre-frail stage, community nurses provide health coaching in preventive health to empower seniors to look after their own health,” said Ms Cui Xue, Senior Staff Nurse, Population Health and Integrated Care Office (PHICO) – Community Nursing, SGH.

More recently, however, the roles of community nurses have expanded and they are supporting younger populations in their 40s and 50s, as well as residents with diseases requiring palliative and supportive care, mental health and oral health support, said Ms Nur Fadillah Ahmad, Senior Staff Nurse, PHICO – Community Nursing, SGH.

Some of the new services available to residents are Community Outpatient Antibiotic Therapy (COPAT) and post-chemotherapy granulocyte-colony stimulating factor (G-CSF) injections for cancer patients. These are treatments usually administered in hospitals or outpatient clinics, so having them done at home helps patients avoid hospitalisation or incur other charges. “They also feel more comfortable at home,” said Ms Cui.

Under COPAT, patients who are in stable condition can undergo a course of intravenous antibiotics treatment by a community nurse at home instead of in the hospital. These treatments last from days to weeks. For G-CSF injections, patients or caregivers are taught to perform the injections competently. “We will go to their homes to supervise and help them gain greater confidence in injecting themselves,” said Ms Cui, noting that if they are unable to do so, they will need to go to the National

During COVID-19

Although the SGH Community Nurses had to suspend some of their CNPs during the COVID-19 circuit breaker period, the safety of residents remained a concern. The nurses were unable to visit homes except when absolutely necessary, and they worried about the residents’ mental and physical health during those prolonged periods of isolation.

They called residents by phone as much as possible, and continued many of their regular activities virtually. To get residents up to speed on telemedicine applications, the nurses, community partners and volunteers taught them basic skills so that they could attend virtual consultations with their healthcare teams, virtual health talks, or one-on-one “Ask Missy” sessions to address their health-related queries with community nurses.

The community nurses are trained in cognitive and psychological assessment, and were able to refer residents with mental health conditions, especially dementia and depression, if they were observed to be at risk.

During the pandemic, the nurses received many queries relating to COVID-19, such as identifying symptoms and the latest Ministry of Health guidelines. Some residents were unsure about what to do when infected with the virus, while others worried if a fever or respiratory symptoms meant that they were infected. Many residents also did not know how to perform and interpret the antigen rapid test (ART).

In addition, the nurses routinely provided clarification on the infection control guidelines and information on COVID-19 vaccination options. Some elderly residents were wary about inoculation against the virus, as many did not understand the benefits of vaccines and potential side effects. The nurses often arranged for volunteers to bring residents with mobility issues to nearby vaccination centres or for mobile vaccination teams to administer the jabs in the residents’ homes.



Cancer Centre Singapore (NCCS), private home nursing services or nearby clinics for the injections 24 hours after their chemotherapy.

The community nursing team also collaborates with National Dental Centre Singapore (NDCS) on an ongoing pilot to conduct oral health screening and education for seniors. The aim is for seniors to have at least 20 natural teeth when they reach 80 years of age.

“Poor oral health can lead to conditions such as gum disease and tooth decay, both of which can result in tooth loss if left untreated. Extensive tooth loss can impair a person’s chewing ability and may lead to malnutrition in the long run, especially in the elderly,” said Dr Chan Pei Yuan, Consultant, Clinical - Restorative Dentistry, NDCS, adding that oral health awareness is still lacking in Singapore, with many people visiting the dentist only when there is pain, instead of the recommended six-monthly preventive visits.

Forming a network with hospitals, polyclinics and private clinics is also essential if residents, in particular the elderly, are to access healthcare resources

Poor oral health can lead to conditions such as gum disease and tooth decay, both of which can result in tooth loss if left untreated. Extensive tooth loss can impair a person’s chewing ability and may lead to malnutrition in the long run, especially in the elderly.



Dr Chan Pei Yuan

Consultant, Clinical - Restorative Dentistry, National Dental Centre Singapore

The homeless are not forgotten

People who sleep rough or in the streets are not left out of the SGH Community Nursing programme. Although prone to diseases and other health issues like everyone else, their accessibility to healthcare is affected by their living environment and socio-economic status.

Early this year, the community nurses started collaborating with the Ministry of Social and Family Development’s Partners Engaging and Empowering Rough Sleepers (PEERS) volunteers to care for this group. The volunteers refer or bring the homeless to nearby CNPs for assessment, after which they are referred to primary or specialist care if required.

To understand the needs and motivations of rough sleepers better, a group of community nurses went with volunteers to places where the sleepers typically stayed. The nurses also trained the PEERS volunteers and shelter operators in basic health monitoring and triaging – vital signs and pain assessment, wound care, frailty status and fall risk assessment, as well as health promotion and education, such as nutrition, oral health, medication adherence and smoking cessation.



Senior Staff Nurse Cui Xue (far left) checks the teeth of an elderly resident at Anglican Senior Centre. Community Nurses like Ms Cui also teach residents to care for their teeth and dentures, referring them to NDCS for further assessment if needed, says Dr Chan Pei Yuan (middle).

easily. Community nursing already taps on the resources of voluntary welfare agencies like Thye Hua Kwan, NTUC Health and Montfort Care, whose social workers help residents who need financial and social services.

Even as more schemes are being made available, many are unaware or unfamiliar with what they are and how community nurses can help them. The first step is for people to visit and register with their nearest CNP or Active Ageing Centre (AAC). They can then seek the help of these support services when required.

“Moving forward, we will be moving beyond care for the elderly population to other populations with different care needs,” said Ms Cui.

The good news is that this broad shift will reach out to more people in the community and improve healthcare accessibility. Importantly, residents will be healthier and less dependent on acute care resources.

With community nurses extending their reach into maternal and child care in future, these community services by both the nurses and AACs will eventually become a one-stop holistic healthcare service centre for residents.

New risk prediction tool for coronary artery disease

A new risk calculator for coronary artery disease among Southeast Asians in primary care settings shows predictive accuracy.

by Goh Bee Lian

A prediction tool developed to support the diagnosis of coronary artery disease (CAD) specifically among Southeast Asian patients has demonstrated clinical benefits when used as a decision-support tool in primary care settings, a research study showed.

The study on the risk calculator “PRECISE” (Predictive Risk scoreE for CAD In Southeast Asians with chEst pain) was conducted by SingHealth Polyclinics (SHP) in collaboration with National Heart Centre Singapore (NHCS), Duke-NUS Medical School and National Healthcare Group Polyclinics.

“PRECISE is designed for use in patients who experience chest pains. With this new tool, CAD risk can be calculated both with and without additional electrocardiography (ECG) data,” said Dr Sinead Wang, Consultant, SHP-Outram, and the main author of this study.

Greater accuracy

Globally, the three most common prediction tools are the Duke Clinical Score, CAD Consortium Score, and the Marburg Heart



Dr Tan Ngiap Chuan, Director of Research, SHP, makes use of PRECISE to assess patient’s risk of CAD.

Score. However, these have not been validated for use locally to support decision-making in routine clinical practice.

PRECISE comprises nine clinical variables, with varying weightages. These include age, gender, type of chest pain, pain radiating to the neck, smoking status, presence of diabetes, hypertension, and ECG features. Among different populations, the same variable may have different weightage due to the unique genetic and environmental influences in each population.

More than 1,600 patients who presented with symptoms of chest pain were identified and recruited at SHP’s eight polyclinics for the study. The patients were clinically stable and subsequently referred to NHCS for further cardiac evaluation. About 160 patients were ultimately diagnosed to have CAD, while the rest were assessed as CAD negative.

In follow-up visits a year later, less than one per cent of the patients who were identified as CAD negative developed major adverse cardiovascular events.

Statistical methods used to quantify and compare the various models showed PRECISE to have a higher predictive accuracy compared to the three existing tools. Patients who show a higher risk percentage on PRECISE are more likely to have true CAD than those with a lower risk percentage.

PRECISE has also been made available to general practitioners since March 2021, as they are often the first physician a patient suffering from chest pain would seek help from. “The practice of medicine has evolved over the years with the increasing use of risk prediction tools. PRECISE provides an objective estimation of risk to complement and guide a doctor’s decision-making,” Dr Wang said.

Enhancements to the electronic medical record platform are under way to enable

the use of PRECISE at SHP. Links are in place to enable healthcare workers to obtain information, such as age, gender and diagnosis of hypertension or diabetes, from a patient’s existing health records with SHP.



Dr Sinead Wang is the main author of the study of a new risk calculator for coronary artery disease among Southeast Asians.

“Dr Chest Pain” chatbot

A chatbot currently being piloted at SHP-Bukit Merah and SHP-Outram helps triage patients with chest pain. Called “Dr Chest Pain”, this chatbot uses a rule-based triaging algorithm to assess the patient’s condition and medical history, such as vital signs, pre-existing chronic diseases and chest pain characteristics. It then makes a recommendation for symptomatic treatment, diagnostic tests or follow-up by cardiac specialists.

The CAD risk prediction tool is incorporated within the chatbot so that the recommendations are aligned with the predictions. For example, patients at low risk will only require symptomatic treatment, while those who present with intermediate risk will be scheduled for a follow-up appointment with a specialist. Those with higher risk of heart disease, who may urgently require a cardiologist’s review and management, will also be identified quicker.

This would allow early clinical intervention that can potentially save lives and optimise clinical outcomes for patients.



Incorporating the new risk prediction tool and a chatbot that assesses patients’ condition and medical history would allow early clinical intervention that can save lives, says Dr Derek Tse, Deputy Chief Executive Officer, SHP.

DID YOU KNOW?

Cardiovascular disease (namely heart attack and stroke) is the leading cause of death globally. In Singapore, CAD accounted for 20 per cent of deaths in 2020. CAD may present as recurrent chest pain or breathlessness on physical exertion, but may also have no warning symptoms and manifest suddenly as a heart attack.

Seek prompt medical attention if you experience these symptoms:

- Chest pain that is located behind the sternum, or on the left side of the chest
- Chest pain that is worse on physical exertion
- Chest pain that is relieved by resting

Diarrhoea after antibiotics?

Tummy bacteria may explain why a common antibiotic brings on diarrhoea in some people.

by Goh Bee Lian

A *moxicillin-clavulanate* is a common and affordable antibiotic used to treat bacterial infections, from severe conditions such as pneumonia to relatively minor issues like urinary tract and skin infections.

However, the antibiotic (also known by its trade name *Augmentin*) can cause diarrhoea in some patients. This is a problem as these patients may then be prescribed a more expensive drug, or a stronger antibiotic that may otherwise be used for more resistant bacteria or more severe infections. This in turn drives the problem of antimicrobial resistance.

“Knowing why it causes diarrhoea may help us identify those at risk of antibiotic-associated diarrhoea, and devise treatment strategies to minimise or avoid such adverse effects,” said

Dr Shirin Kalimuddin, Senior Consultant, Department of Infectious Diseases, Singapore General Hospital (SGH).

Dr Shirin and a team from SGH and the Singapore-MIT Alliance for Research and Technology (SMART), Massachusetts Institute of Technology’s (MIT) research enterprise in Singapore, embarked on a study to look into antibiotic-associated diarrhoea. The study was published in January 2022 in scientific journal *iScience*.

In 2019, the study recruited 30 healthy, young volunteers who were given the antibiotic twice a day for three days. This is the standard treatment for bacterial infections, said Dr Shirin, the study’s Principal Investigator. The participants’ stool samples were collected and analysed before and up to four weeks after the antibiotic was given.

The study found that 13, or 43 per cent, of the participants had diarrhoea after taking the antibiotics. This group also had significantly lower levels of the *Faecalibacterium Prausnitzii* (*F Prausnitzii*) bacteria in their stool samples throughout the study (on average, they had a mean 7.5 per cent of the bacteria), compared to those who did not experience diarrhoea (15 per cent of the bacteria). *F Prausnitzii* is the most abundant species within the *Ruminococcaceae*

bacterial family, which is the most important in maintaining gut health.

“Our findings provide evidence that a person’s gut microbial composition can influence the risk of developing antibiotic-associated diarrhoea,” said Professor Eric Alm, co-author of the study, and Principal Investigator in SMART’s Antimicrobial Resistance (AMR) interdisciplinary research group.

The team further devised a simple polymerase chain reaction (PCR) test to determine the levels of *F Prausnitzii* in the stool samples, and the tendency of patients to develop diarrhoea with *amoxicillin-clavulanate* treatment.

Although currently a preliminary research study, its ability to detect certain types of gut bacteria with the PCR test provides a springboard for the development of a point-of-care test. A larger scale study would need to be done before the findings can be incorporated into clinical practice.

“This study gives us a platform to go on to do more therapeutic focus studies — for example, whether *Ruminococcaceae*

What is the gut microbiome?



The gut microbiome is a complex ecological system comprising mainly bacteria, as well as fungi and viruses, in the human gastrointestinal tract. Antibiotics have significant impact on the gut microbiome, as they change the composition or diversity of the gut flora.

as a probiotic would actually help prevent antibiotic-associated diarrhoea. I think this gives us a window into what the possibilities are,” said Dr Shirin.

Beyond detecting the presence of healthy bacteria that are less susceptible to being killed by certain antibiotics, point-of-care tests could be developed to help doctors prescribe an antibiotic that not only kills pathogens, but also saves healthy bacteria.

“Imagine being able to see what types of bacteria a patient has, and then figure out which antibiotics are compatible with those healthy bacteria,” said Prof Alm.

One in three patients experiences diarrhoea after taking *amoxicillin-clavulanate*. As an indication of how commonly used the antibiotic is, Dr Shirin said that half a ton of the medication is used yearly at the hospitals on SGH Campus.



Dr Shirin Kalimuddin is the Principal Investigator of a study that looked into antibiotic-associated diarrhoea.



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...
(Left and below)
Clinical Associate
Professor Peter Lu,
Dr Lim Ang Tee and
Dr Mandy Zhang
are part of the team
helping the newly
launched Performing
Arts Medicine Clinic
(PAMC).

The show must go on

Changi General Hospital's new Performing Arts Medicine Clinic aims to meet the specialised healthcare needs of performing artistes.

by Elena Owyong

For many performing artistes who injure themselves during the course of their work, seeking medical treatment is often their last resort.

"When performing artistes visit a healthcare professional, they worry that they may be advised to cut back or to stop performing altogether. For some artistes, performing is their livelihood and is central to their identities," said Dr Mandy Zhang, Consultant, Department of Sport and Exercise Medicine, Changi General Hospital (CGH), and Dance Lead for the Performing Arts Medicine Clinic (PAMC) at the Singapore Sport and Exercise Medicine Centre at Novena Medical Centre.

The PAMC, which opened in December 2021, provides a one-stop multidisciplinary care that aims to support the physical and mental healthcare needs of the performing arts community in Singapore. Similar services are offered at the Singapore Sport and Exercise Medicine at CGH.

Some performing artistes also believe that doctors may not understand the unique demands of their art form. "Dancers train by executing specific movements in their choreographies such as turns and jumps," Dr Zhang explained.

This is where the PAMC can bridge the gap — the healthcare team includes professionals with special interests and background in the performing arts. Dr Zhang, for example, has been exposed to various dance genres and still dances recreationally.

Dr Lim Ang Tee, Consultant, Department of Sport and Exercise Medicine, CGH, and Instrumental Lead for PAMC, is a budding harpist who also plays a plucked seven-string Chinese musical instrument called the guqin; while Clinical Associate Professor Peter Lu, Senior Consultant, Otorhinolaryngology-Head & Neck Surgery, CGH, and Voice Lead for PAMC, was involved in setting up CGH's Voice Clinic, which treats and manages voice conditions. Clin Assoc Prof Lu has a special interest in the voice problems of professional singers, actors and media personalities.

Catering to unique needs

The doctors see a mix of professional and recreational artistes at the PAMC.

Like athletes, professional artistes push themselves to perform at the highest standards and continuously hone their craft. Sometimes, this comes at the expense of their physical and mental well-being when they sustain performance-related injuries.

Dr Lim said that injuries are common among instrumentalists, who often spend hours, or even days, practising musical phrases over and over again.

"For performing artistes, their identities are often tied to their careers. When they are unable to perform, many often feel a sense of helplessness," he added.

Similarly, Clin Assoc Prof Lu noted that vocalists commonly suffer from trauma to the vocal cords. Prolonged use of vocal cords and/or singing at high pitches and volumes can result in various voice disorders.

"Recreational performers are very proud of their ability to perform, too. When they lose this ability, it can be a devastating blow," he said.

For performing artistes who have injuries, Clin Assoc Prof Lu urges them to seek help early. Injuries may become chronic conditions and can be more difficult to treat, if left untreated for an extended period.

Since the launch of the clinic, the team has seen an increase in the number of patients. According to Singapore Cultural Statistics 2020, the number of people involved in performing arts interest groups has grown from 37,851 in 2015 to 50,180 in 2019.

The team hopes to raise awareness of the PAMC's services by conducting regular webinars and conferences. There are also plans to work with the Ministry of Education to bring injury prevention and treatment talks to schools.

"Besides the public, we also want the healthcare community to know that we have this service they can refer patients to," said Clin Assoc Prof Lu. "With increased awareness and education, we can offer a holistic healthcare experience for performing artistes and support them on their journey to recovery."



...
The PAMC is a one-stop multidisciplinary care that supports the physical and mental healthcare needs of the performing arts community in Singapore.



Hep B can spread through unprotected sex

More than half of Singaporeans are unaware of the link between hepatitis B and liver failure.

The hepatitis B (hep B) virus can be spread through unprotected sex. Yet, many Singaporeans, particularly younger people, mistakenly believe that hep B is transmitted by eating contaminated raw seafood. Among the various hepatitis viruses, hep B causes the majority of liver cancers. Hepatitis A (hep A) is spread through contaminated food, and is usually passed out of the body after some months without long-lasting health problems.

“This is an alarming observation, especially as viral hepatitis symptoms tend to be silent and remain undiagnosed until the disease progresses to liver cirrhosis, failure or cancer,” said Professor Tan Chee Kiat, Senior Consultant, Department of Gastroenterology and Hepatology, Singapore General Hospital.

“While the prevalence of viral hepatitis is low in Singapore, we cannot be complacent. Hep B-related liver cancer is still a substantial problem, and complications arising from chronic hepatitis C (hep C) infection are common indications for liver transplants in Singapore.”

Like hep B, the hep C virus is transmitted through blood and other bodily fluids.

Prof Tan is the author and Principal Investigator of the *February 2020 Singapore Liver Index Study*, which aimed to understand Singaporeans’ awareness, knowledge and attitude towards liver health. It was published in the *Journal of Gastroenterology and Hepatology* in March 2021.

The study involved 500 respondents aged 18 years and above who responded to an email invitation to participate in the survey. Participants were tested on their knowledge of liver health and care, liver diseases, risks, screening and diagnosis. More than half (64



... Misperception and inaction towards liver disease can lead to devastating consequences, says Professor Tan Chee Kiat.



per cent) were aged 35 years and older, and 54 per cent were male. Among its findings, the study learnt that just seven in 10 respondents (70 per cent) underwent health screening in the two years before the study, even though a majority (91 per cent) agreed on the importance of regular screening for maintaining liver health. For respondents who attended health screenings, only 36 per cent were aware that tests for liver diseases were included.

Of the 61 respondents reported to have been diagnosed with liver disease, 70 per cent were not on treatment. They cited cost and a preference for traditional Chinese medicine over Western medicine as reasons.

“Misperception and inaction can have devastating consequences, not only on mortality rates in Singapore, but also on eventual healthcare and economic burden. There needs to be multi-sectoral collaboration to enhance education and public awareness through the most effective communication channels to treat and eliminate viral hepatitis in Singapore,” Prof Tan said.

Liver cancer is the third-deadliest cancer among men and fourth-deadliest among women in Singapore. Hep B, the most common serious liver infection that causes about two-thirds of the total number of liver cancer cases in Singapore, is passed to others through direct contact with blood, unprotected sex, the use of unsterilised or contaminated needles and from an infected woman to her newborn. However, over half of those surveyed (52 per cent) are unaware that sex is a major risk factor.

When the liver fails

The organ does not work well enough to perform functions such as manufacturing bile and ridding the body of harmful substances. Symptoms of liver failure include nausea, loss of appetite, and blood in the stool. Patients are advised to avoid alcohol and certain foods, and cut down on salt intake. If it is an acute or sudden liver failure, treatment includes intravenous fluids to maintain blood pressure, medications to flush out toxins, and blood transfusion (should there be an excessive loss of blood).



TAKE THIS QUIZ

Test your knowledge of liver health by answering these questions.

True or false?

- | | |
|---|---|
| 1. Hepatitis is a bacterial infection. | T <input type="checkbox"/> F <input type="checkbox"/> |
| 2. Hepatitis is an inflammation of the liver. | T <input type="checkbox"/> F <input type="checkbox"/> |
| 3. Hepatitis B can be prevented by vaccination. | T <input type="checkbox"/> F <input type="checkbox"/> |
| 4. Hepatitis C can be prevented by vaccination. | T <input type="checkbox"/> F <input type="checkbox"/> |
| 5. Hepatitis can be transmitted from pregnant mother to her baby at birth. | T <input type="checkbox"/> F <input type="checkbox"/> |
| 6. Liver diseases are only caused by alcohol consumption. | T <input type="checkbox"/> F <input type="checkbox"/> |
| 7. Cirrhosis can lead to complications, including organ failure, liver cancer or death. | T <input type="checkbox"/> F <input type="checkbox"/> |
| 8. Cirrhosis is the final stage of scarring and it can have a serious effect on health | T <input type="checkbox"/> F <input type="checkbox"/> |

Turn the page upside down for answers.

Answers: 1. False 2. True 3. True 4. False 5. True 6. False 7. True 8. True

Caring for the eye

As an orthoptist, Ms Catherine Ng helps patients across all ages.

by Elena Owyong



I try to turn all the tests into games. Instead of telling patients I will test their eyesight, I will say, 'Let's play a game to see which eye sees better'.

...
Ms Catherine Ng
 Orthoptist, Paediatric Ophthalmology
 & Adult Strabismus Department,
 Singapore National
 Eye Centre

Being able to help someone in need was one of the motivating factors that propelled Ms Catherine Ng to pursue her passion in healthcare as an orthoptist.

The 31-year-old works at the Singapore National Eye Centre (SNEC)'s Paediatric Ophthalmology & Adult Strabismus Department, where she diagnoses and treats eye conditions like amblyopia (or more colloquially known as 'lazy eye') using non-surgical methods such as eye exercises. She describes her profession as the "physiotherapist of the eye".

"We care for patients of various ages, some as young as six months old to those in their 90s. The young patients usually present with a squint — their eyes turn inwards or they have congenital eye issues," she said.

While Ms Ng is mainly stationed at SNEC in Outram, she also has stints at KK Women's and Children's Hospital (KKH) every two to three months — Ms Ng and her colleagues at SNEC take turns to do one-month visitations at KKH. There, she works closely with patients between the ages of six months and 18 years old.

To Ms Ng, working with young children can be challenging, but she believes patience and empathy are key.

"Some young children are unable to communicate, or may be frightened in an unfamiliar setting. Remaining calm is crucial in this situation," she explained.

She also finds creative ways to allay children's fears when they enter the treatment room.

"I try to turn all the tests into games. Instead of telling patients I will test their eyesight, I will say, 'Let's play a game to check which eye sees better'. Sometimes, I offer them stickers too," she said. She also speaks to them calmly, without rushing the check-up process so that they remain at ease.

A passion to help people

Growing up, Ms Ng was no stranger to the healthcare profession, as both her parents are doctors.

While waiting for her GCE 'A' Level results, she decided to write in to Tan Tock Seng Hospital's Human Resources department to request to shadow an orthoptist at work. The opportunity to learn about orthoptics and observe an orthoptist for two weeks affirmed her decision to enter this field.

She received the SingHealth Health Science Scholarship and furthered her studies at La Trobe University in Melbourne, Australia. After graduating with a Master of Orthoptics, she returned to Singapore and has been working at SNEC for the past eight years.

Ms Ng finds satisfaction in being an orthoptist, as it allows her to help others. She remembers an elderly patient who sought help at SNEC because of an issue with double vision — a condition where both eyes are misaligned, causing patients to see two images of a single object.

The patient was distraught, as he had thought that nothing could be done to help him. After assessing his condition, Ms Ng got him a piece of prism, a plastic lens that is fitted on the inside of the spectacle lens, to relieve his double vision.

"He was so happy that he exclaimed that it felt better than winning the lottery!"

This is one of the many memorable moments that motivate her at work. "I want to help people in need. I find it rewarding that I can make a difference in my patients' and their families' lives."

Outside of work, Ms Ng, a mother to a baby girl, enjoys hiking with her family to de-stress.

Game enough

Dr Moy Wai Lun created a series of serious games, an innovative method of healthcare teaching and learning.

by Dang Hui Ling

PHOTOS: VERNON WONG



...

Dr Moy Wai Lun demonstrating how serious games allow players to learn from their mistakes without causing actual harm to patients.



Like many people, Dr Moy Wai Lun played computer games during his secondary school days.

Today, the Consultant in the Internal Medicine Department at Sengkang General Hospital (SKH) and Clinical Assistant Professor with Duke-NUS Medical School has taken a step further to develop serious games that are designed to impart specific knowledge or skills in an interactive and engaging manner.

Serious games are used in many industries, including in defence, urban planning and engineering. In medical education, they are often used as a complementary pedagogical tool. "The concept of serious games is appealing because it offers something that traditional teaching methods do not," said Dr Moy.

While conventional lectures impart a large amount of information to the learners, serious games promote higher levels of learning, such as knowledge application and data analysis.

"When I first conceived the idea of designing serious games, I spoke with junior doctors and many were interested in this new way of learning. Some of them have played serious games during their medical school years and they see the value of having serious games in postgraduate medical education," Dr Moy said.

"We learn best from our own mistakes, but in healthcare this is not acceptable, as any mistake will cause harm to patients. Serious games bridge this gap," he said.

Furthermore, serious games can be used to educate various cohorts of new doctors, without incurring high cost or extra resources. This method of learning also piques the interest of younger doctors, who are usually game-savvy and receptive to digital technologies.

From novice to creator

Dr Moy first learned about serious games when he attended SingHealth's S3 conference in 2019, where experts from around the world shared their experiences in serious games development.

"It opened my eyes to the latest technologies in healthcare simulation and their potential uses in medical education to improve the delivery of patient care. I thought, 'Wow, the future is already here, and I want to be part of it!'" he said.

That year, Dr Moy was awarded the Learning Technology Adoption Grant and has since collaborated with Dr Azman Johan, Senior Consultant, Respiratory Medicine, SKH; Dr Liou Wei Lun, Associate Consultant, Gastroenterology & Hepatology Department, Singapore General Hospital (SGH); Dr Mohammed Rizwan Amanullah, Consultant, Department of Cardiology, National Heart Centre Singapore; and Singapore-based technology company Playware Studios Pte Ltd to design and develop the games.

The team created three games, namely *Can't Catch a Breather*, *Thicker than Water* and *Rambunctious Rhythms*, all of which are based on common acute medical scenarios. For example, in "Can't Catch a Breather", the game presents a patient who complains of acute breathlessness. The player is expected to examine the patient thoroughly to arrive at the correct diagnosis, offer immediate treatment at the level of his or her experience, and recognise the need to escalate to seniors for help to save the patient's life.

Despite delays in the production timeline as a result of the COVID-19 pandemic, as well as challenges in communicating with the game developers who are not familiar with the medical industry, Dr Moy was determined to succeed as he hopes for more people to reap the benefits of these games — he spent much of his free time trying the games repeatedly to perfect them.

"The numerous virtual meetings that we had were worthwhile in the end," he said.

With a Masters in Medical Education, Dr Moy applied principles of adult learning when designing the games. These include building a safe environment for learners, allowing learners to identify their own learning needs through their mistakes, and removing performance pressure to prevent them from feeling discouraged and demotivated.

Learners can play the games as many times as they wish, as the scores are not used as assessment. After each session, guided feedback is given to consolidate the information gained and for the learners to better understand each medical scenario.

During the beta testing stage, 10 doctors each from SKH, SGH and Changi General Hospital were recruited to play the games. "The feedback was largely positive. Some of them were very appreciative of our initiative

to enhance the learning of junior doctors, and many found the games fun and educational. We also received feedback on the technical aspects, which we have since improved," said Dr Moy.

Plans are in the pipeline to roll out the games to all junior doctors in SKH. They will also progressively be made available to other SingHealth institutions. "This method of learning and teaching will be increasingly used in the future as an additional tool to reinforce certain medical knowledge and skills," he added.

At home, Dr Moy enjoys building toys for his two children using recycled materials like cardboard boxes. The 38-year-old recently made a crocodile out of a plastic bottle, complete with a mouth that opens when the tail is pulled. He also got his eight-year-old daughter involved by asking her to paint the parts where colour papers could not cover, while his three-year-old son contributed by pasting stickers as decoration. "I believe that a child learns best through play. I often push myself to be more creative and think out of the box," he said.



Scan to find out more about the SingHealth Duke-NUS Institute of Medical Simulation i3 Hub, where serious games are leveraged to enhance learning.



The concept of serious games is appealing because it offers something that traditional teaching methods do not.

...

Dr Moy Wai Lun

Consultant, Internal Medicine Department, Sengkang General Hospital; Clinical Assistant Professor, Duke-NUS Medical School

Uniquely for baby

The first week of August marks the annual World Breastfeeding Week.

By Siam Lim, with information provided by Dr Priya Ebenezer, Staff Physician, Department of Neonatal and Developmental Medicine, Singapore General Hospital



Why breastfeed?

Every mother's breast milk is unique. Her body produces milk that is suited to her baby's specific nutritional needs for growth and development. Colostrum, the very first milk produced just after delivery, is full of antibodies, providing immunity and nutrition for the baby right from the start.

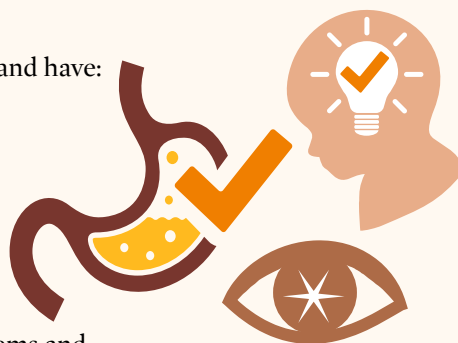


Benefits for the baby

Studies have shown that babies who are breastfed survive better, and have:

- Fewer infections
- Fewer respiratory tract disorders
- Fewer instances of diarrhoea and vomiting
- Fewer allergies
- Higher intelligence
- Better vision

They are less likely to suffer from obesity, diabetes, cardiac problems and metabolic disorders, such as high cholesterol and hypertension, later in life.



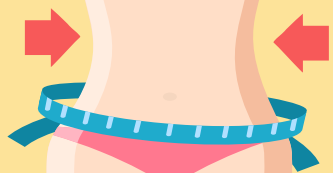
Low-income countries fare best

- Breastfeeding in high-income countries like Singapore has declined
- Only 42 per cent of mothers in high-income countries breastfeed for six months, compared to 100 per cent of mothers in lower-income countries.
- Many women believe that formula milk is equivalent to breastmilk, thanks to aggressive marketing by formula milk manufacturers
- WHO recommends breastfeeding for up to one year

From a 2016 World Health Organization (WHO) survey

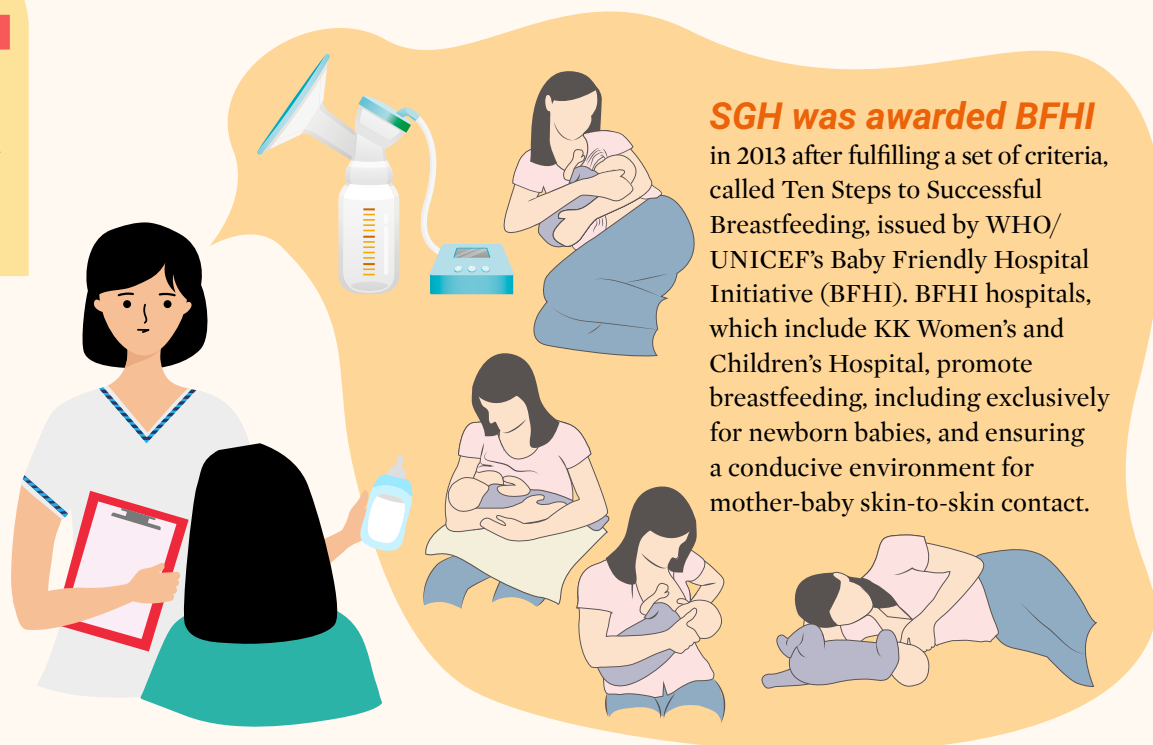
Benefits for the mother

Breastfeeding reduces the risks of postnatal depression and cancer, especially breast and ovarian cancers, and also helps with weight loss.



Can COVID-19 mothers breastfeed?

- Breast milk does not contain the COVID-19 virus, but the antibodies produced during the mother's infection give the baby protection from the virus for 10 to 12 months
- Antibodies from COVID-19 vaccinations in a non-infected mother protect the baby for only a month
- It is safe for both mother and baby to be isolated in the same room at home — the risk of transmission from skin-to-skin contact is very low when hygiene measures are taken
- Likewise, mothers suffering from diseases such as SARS (severe acute respiratory syndrome), hepatitis, dengue fever, malaria and flu can breastfeed their babies



SGH was awarded BFHI

in 2013 after fulfilling a set of criteria, called Ten Steps to Successful Breastfeeding, issued by WHO/ UNICEF's Baby Friendly Hospital Initiative (BFHI). BFHI hospitals, which include KK Women's and Children's Hospital, promote breastfeeding, including exclusively for newborn babies, and ensuring a conducive environment for mother-baby skin-to-skin contact.

An aspirin a day keeps the heart doctor away?

While daily aspirin has been proven to reduce the chance of having a second heart attack or stroke, it is less beneficial for patients hoping to prevent the first.

by Sol E Solomon



In Singapore, it is standard practice for patients who have had a heart attack or stroke to be prescribed a daily low-dose of aspirin (100mg). However, in some countries, such as the United States, people who have never had an attack previously also habitually took aspirin daily because they believe this would prevent a first heart attack.

A heart attack occurs when one of the arteries that supplies blood to the heart becomes blocked due to a blood clot, stopping blood flow to the heart muscle. Aspirin thins the blood, and thus lowers the risk of a second heart attack or stroke by reducing the chance of blood clot formation. This is why low-dose aspirin is prescribed to patients who have experienced a heart attack or stroke.

However, aspirin can also increase the chances of bleeding. "Blood clots are the body's way of stopping bleeding. Aspirin interferes with this, and so makes a person who is taking aspirin more prone to bleeding," said Associate Professor Chin Chee Tang, Senior Consultant, Department

of Cardiology, and Director of Coronary Intervention Service, National Heart Centre Singapore.

Patients who are prescribed aspirin are advised to be vigilant for signs of bleeding and symptoms of internal bleeding, which may also happen in the intestinal tract or stomach. This may be presented in black sticky stools, or some people may feel tired and lethargic with no apparent reason.

While patients on aspirin may be more susceptible to cuts and bruises, the effects are usually mild. For instance, applying pressure on a wound a little longer stops the bleeding if the patient has a cut; bruises may appear slightly larger, but they, too, should resolve with time. Some people are allergic to aspirin and may have reactions such as swollen eyes and rashes, but these are uncommon.

If patients experience severe gastric irritation with use of aspirin, they should discuss with their doctor for possible solutions, such as taking gastric protection pills or switching to another blood thinner.

"What is important is that the use of aspirin must be administered to the correct

population. For patients with a previous heart attack or stroke, aspirin has helped reduce the incidence of heart attacks and even death," said Assoc Prof Chin.

"One should not start taking aspirin without consulting a doctor. An individual's medical history and patient profile have to be taken into account before the doctor recommends aspirin," he added.

Beyond medications, there are other methods to reduce the risk of a heart attack. By controlling one's risk factors, there may not be a need to take additional medications. Therefore, it is important to keep blood pressure and cholesterol levels under control, avoid smoking, maintain a diet that has a healthy proportion of fruits and vegetables, and reduce the consumption of trans fats.

A mix of aerobic and strength exercises, performed regularly for 30 to 45 minutes most days of the week, will help build overall fitness, improve mental well-being, and has been shown to reduce the risk of heart attacks.



One should not start taking aspirin without consulting a doctor as the medication interferes with the body's way to stop bleeding, says Associate Professor Chin Chee Tang.



PHOTO: VERNON WONG

It's an emergency!

From national disasters to road accidents, severe infections and illnesses, the department resuscitates, stabilises and treats emergency cases round the clock.

by Annie Tan

Arrival

Patient arrives by ambulance, or public or private transport.

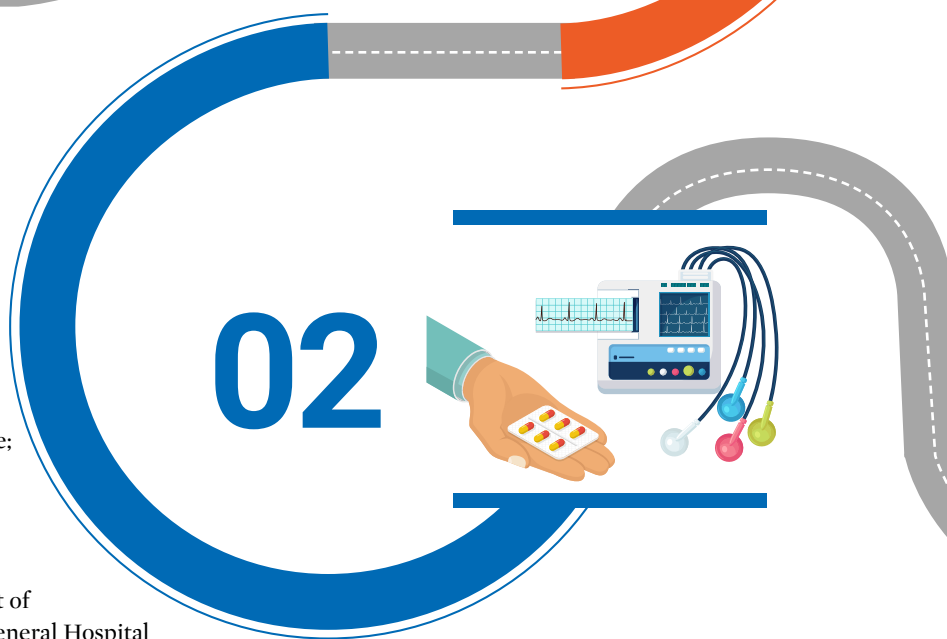
COVID-19 screening when needed

Temperature is taken and patient declares any acute respiratory infection symptoms or risk of COVID-19. High-risk patients take Antigen Rapid Test (ART) and Polymerase Chain Reaction (PCR) tests.



Information provided by

Associate Professor Kenneth Tan, Head and Senior Consultant, Department of Emergency Medicine; Ms Phuah Gaik Kheng, Senior Patient Experience Manager, Office of Patient Experience; and Mr Shashi Chandra Segaram, Senior Nurse Manager, Department of Emergency Medicine, Singapore General Hospital



Triage

Patients are grouped by urgency of condition, and electrocardiogram (ECG), testing of vital signs and painkillers are given if needed.

How are patients categorised?

P1: emergency cases

Common causes: heart attacks, major road traffic accidents, serious burns, respiratory collapse

- Usually transported by Singapore Civil Defence Force (SCDF) ambulances, whose paramedics message the emergency department details ahead of arrival
- Patients who are unable to provide travel and medical history will undergo ART and PCR tests
- Life-saving treatment is given, using emergency equipment such as the mechanical cardiopulmonary resuscitation (CPR) device, ventilator, defibrillator, and cardiac monitor

P2: critical care cases

Common causes: asthma or other respiratory problems, mild chest pain or discomfort, falls with multiple injuries

- Patients are given immediate care at the critical care area by senior doctors
- Those with acute respiratory symptoms are sent to the isolation area, where they receive immediate treatment before undergoing ART and PCR tests

P3 and P4: walk-in cases and patients who do not require A&E care

Common causes: sprained ankles, diarrhoea, vomiting, gastroenteritis

- After self-registration, patients wait between 30 minutes to three hours for consultation. Those with severe abdominal or chest pain are seen urgently
- If obstetrics and gynaecology (O&G), ear, nose and throat (ENT), eye or dental specialists need to be called in, patients can expect an additional one- to four-hour wait

04

Medication

Patients collect medicine, if any, from the pharmacy.



05

Payment

Patients make payment online.



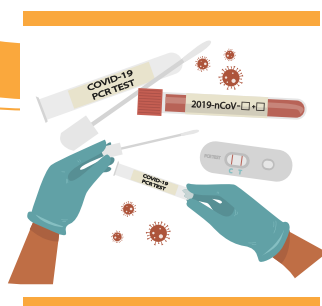
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Treatment

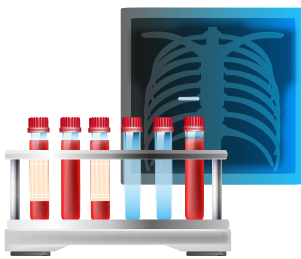
Patients are seen by a team of senior emergency medicine specialists, supported by medical officers and residents, who call in specialists from other departments, or are sent to other wards or centres for specialist treatment, where necessary.

**Discharge**

After consultation, patients are discharged with instructions on home care, and a follow-up appointment is scheduled if required.

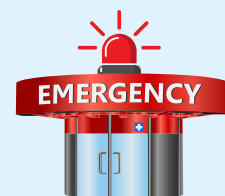


If blood tests, x-ray or other imaging scans are done, patients wait for results and see their specialists again for review. Patients who require admission undergo ART and PCR tests, and their next of kin is informed.

**Facts and Figures**350*
PATIENTS

pass through Singapore General Hospital's (SGH) DEM on an average day.

**During the COVID-19 pandemic, as many as 80 patients with severe symptoms required admission every day.*



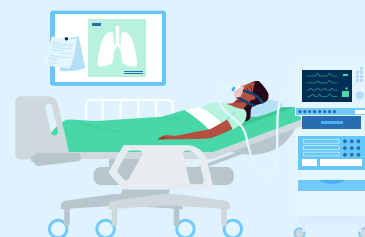
32

EMERGENCY MEDICINE SPECIALISTS AND NURSES, SUPPORTED BY MEDICAL OFFICERS AND RESIDENTS

are the minimum number of medical professionals running the department, including the resuscitation panels, critical care, consultation rooms and observation wards at any one point.

**RESUSCITATION BEDS**

are available for critical emergency cases, such as road traffic accidents or heart attacks. These are equipped with life-saving equipment and manned by senior doctors.

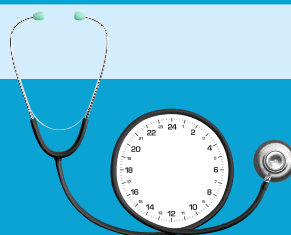
6
HOURS

is the average time each patient spends at the DEM.

Round-the-clock emergencies

SGH's emergency department offers round-the-clock emergency care, including heart attacks and other acute heart conditions, pneumonia, acute asthma, stroke, toxic ingestions and major injuries. Patients are managed in a six-bedded critical care area.

SGH is one of four hospitals in Singapore that is able to provide intravenous thrombolysis for ischaemic stroke, and one of three providing endovascular clot retrieval. An average of five stroke patients are transferred from other hospitals within the SingHealth cluster to SGH each week for major resuscitation.



\$128

is the basic attendance fee, including some basic tests and medications and after government subsidy, for patients who are not admitted for further investigations.

Saving legs

The Diabetic Limb Salvage service at Sengkang General Hospital is provided by a multidisciplinary team that enhances patient outcomes and prevents lower limb amputations caused by diabetes.

by Goh Bee Lian



When Dr Francis Wong, Consultant, Department of Orthopaedic Surgery, Sengkang General Hospital (SKH) joined the hospital in 2018, he was struck by how many patients, some as young as those in their 30s, were afflicted with diabetes and diabetic foot problems.

“Often, patients with diabetic infections do not realise they have diabetes or how the infections occurred. Poorly controlled diabetes is a major contributor of diabetic foot problems,” said Dr Wong.

For patients with diabetes, a foot ulcer or infection can be severe. High blood sugar levels impair the body’s ability to fight infections. Poorly controlled diabetes damages nerves in the legs and feet, which prevents the patient from feeling pain and realising that an injury has occurred. Oral antibiotics treatment also becomes ineffective, as glucose in the blood hinders its flow to the small capillary blood vessels in the foot.

In serious cases, patients may need to go through an amputation. “In SKH, we see many younger patients who are sole breadwinners for their families. Should they undergo an amputation, their family’s livelihood will be affected,” Dr Wong said.

“Of the patients who lose their leg, only half of them regain the ability to walk; the remainder are confined to wheelchairs or require long-term care at a nursing home,” he added.

Diabetic Limb Salvage clinic

To tackle this issue, Dr Wong brought together healthcare professionals to form a multidisciplinary team, which comprises podiatrists, nurses and orthopaedic surgeons, in 2019.

The new approach allows the same care team to journey with the patient – from inpatient admission to outpatient clinic

follow-ups and final discharge. This is made possible by combined ward rounds, outpatient clinics and day surgeries, giving patients confidence as the same team is seeing them through their treatment journey from start to end. This approach has shown promising results. Patients’ recovery time was halved, from six to three months.

Meanwhile, more colleagues from other disciplines learnt about this initiative. By 2020, the plastic surgeons at SKH had volunteered to join the team, followed by the interventional radiologists. In 2021, the newly expanded team cared for more than 50 patients with complex diabetic foot problems, most of whom were on the verge of losing their limbs, and recovery time was reduced even further.

Most importantly, none of these patients had to lose a limb. The unique multidisciplinary approach of the Diabetic Limb Salvage (DLS) team was effective in preventing major amputations, and many patients were able to return to work in two months.

“By having the different specialists see the same patient in one setting, it shows that we mean it when we say, ‘We are here for you’. Not just one doctor, but everyone in the team is here for you. For the patient, it is also a morale booster and they need not shuttle between different appointments to see their doctors. We are seeing good results and believe this is the way forward to care for our patients,” Dr Wong said.

With the added expertise of infectious disease specialists and dietitians, as well as increasing referrals from other disciplines at SKH, the initiative has been formalised into the DLS service and is open for referrals by all polyclinics.

The myriad expertise of the DLS team, which now includes orthopaedic surgeons, plastic surgeons, infectious disease specialists, podiatrists, wound care nurses, dietitians and interventional radiologists, adds up to a formidable array of specialised skills to enhance patient outcomes. Patients are tended to by the same team in both the outpatient clinics and inpatient wards.

Preventing diabetes



Regular age-appropriate exercise, a balanced diet and managing blood sugar levels are key to preventing diabetes. Patients with diabetes should adhere to yearly screening. For high-risk patients who have had foot ulcers or leg wounds, the screening should be done every three to six months.

Foot care

Here are some tips to care for your feet:

- Avoid going barefoot to reduce the risk of injury or cuts.
- If your job requires you to wear specific footwear such as safety shoes, make sure you change into comfortable shoes when the work is done.
- Moisturise your feet often, do regular self-checks, and look out for cracks and calluses.
- Practise proper ways of cutting toenails to prevent bleeding, which can lead to infections.



Poorly controlled diabetes damages nerves in the legs and feet, which may even lead to amputations, says Dr Francis Wong.



For more information, scan the QR code to watch an exclusive interview with Dr Francis Wong.

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Why do foot corns keep coming back?

Q There are patches of skin on my soles that are hardened and yellowish. Although they go away after a while, I noticed they keep recurring at the same spot. What are these patches and can I get rid of them without seeing a doctor?

A The hardened, yellowish patches of skin on the soles are known as corns. They tend to develop on the soles of the feet, which bear the pressure of the body's weight.

Pressure or irritation caused by deformities or structural abnormalities of the foot and bones, poorly fitted shoes, or abnormal gait or way of walking, can also lead to corns developing.

Corns can be difficult to prevent and manage because they occur at small focal points of excessive pressure. The key to treatment is to reduce pressure on the corn.

Corn plasters may be used but only under the guidance of a podiatrist or medical professional. This is because these plasters typically contain salicylic acid, which can cause skin irritation or redness if not used properly. The podiatrist can remove the corn via surgical enucleation (removal of the hard centre), or prescribe orthotics (custom-made medical devices worn inside the shoes) to correct foot posture and take pressure away from the corn. Well-fitted footwear can reduce the chances of recurrence and build-up of the hard skin.

If the corn becomes painful or bleeds, consult a doctor or podiatrist.

...
Mr Benjamin Loh,
Podiatrist, Podiatry Department, Singapore General Hospital

Question & Answer

HealthXchange.sg

Keeping your smile straight

Q I removed my braces eight years ago and have been wearing retainers ever since. However, my teeth shift significantly after only two days of not wearing my retainers. The next time I put my retainers on, it would feel quite tight. Is this normal?

A It is normal to feel some degree of tightness when wearing retainers at night. In general, retainers should be worn every night for at least eight hours. Some patients experience a relapse (teeth shifting) more than others and require extended wear.

Growth and age-related changes can affect tooth movement and mobility, and may also cause a relapse. If you experience significant shifting during the day, make an appointment with your orthodontist to check your teeth and your retainer.

...
Dr Johanna Choo,
Senior Consultant, Department of Orthodontics,
National Dental Centre Singapore





... that gorgeous and colourful flowers are blooming along the Singapore General Hospital (SGH) ArtsExpression Wall?

A tribute to the hospital's staff during its Staff Appreciation Month, the flowers were crocheted by Knots with Love FHG, a volunteer group that crochets and knits for charities and needy beneficiaries.

"We wanted to bring a bit of colour and words of love to them in a vibrant and visual manner using crochet art," said Knots with Love FHG founder Amy Choong.

The flowers, which include carnations, lotuses and sunflowers, represent universal symbols such as love, friendship, respect, support and joy.

"Crochet was chosen because the different-coloured yarns, when weaved together, show the close relationship between the doctors, nurses, allied health professionals, pathology staff, technicians, administrators, cleaners and other healthcare workers, as they work hand-in-hand to keep the hospital running smoothly amid the COVID-19 pandemic," said Ms Mumtaj Ibrahim, Senior Manager, Community Relations, Communications Department, SGH.

The "A Bouquet to our People" exhibition at the ArtsExpression Wall, SGH Block 2 Level 1, is on till September 2022, after which it will be moved to the ArtsExpression Wall at Level 1 of Outram Community Hospital till the end of the year.

Post your photos with the hashtags #sghseen #mybloodisgreen #healthcareheroes #onekindact #sam2022!

... that the SingHealth Community Hospital (SCH) Antimicrobial Stewardship Programme (ASP) was first implemented in Sengkang Community Hospital and rolled out to Outram Community Hospital subsequently?

Under the programme, the use of antibiotics by patients is reviewed and audited regularly. This has resulted in improved antibiotic use, a reduced duration in antibiotic use, and lower risk of developing antibiotic resistance. Treatment for patients is also optimised by reducing antibiotic-related side effects and costs while completing the course.

SCH ASP is co-led by a multidisciplinary workgroup comprising SCH doctors and pharmacists, with support from the Singapore General Hospital ASP team, which provided training and advice on improvement of work processes.



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GLUCOSAMINE: Not effective or not the right BRAND of glucosamine?

Before buying a glucosamine brand,
ask yourself these questions:

1. How many clinical studies have proven that the brand works for painful joint conditions?
2. How many clinical studies have shown that the brand does not work?
3. How many long term, large-scale studies were conducted using the brand to prove its safety for long-term use?

For Viartil-S:

1. There are more than 100 clinical studies and all the studies have proven that Viartil-S works for painful joint condition.
2. No clinical studies have shown that Viartil-S does not work.
3. There are long-term studies using Viartil-S involving over 7000 patients proving its safety for long-term use. These include one 2-year, one 2.5-year & two 3-year studies with an 8-year follow-up study which has also shown that Viartil-S reduces the risk of Total Knee Replacement surgery by 57%.

What about the glucosamine brand that you are taking?

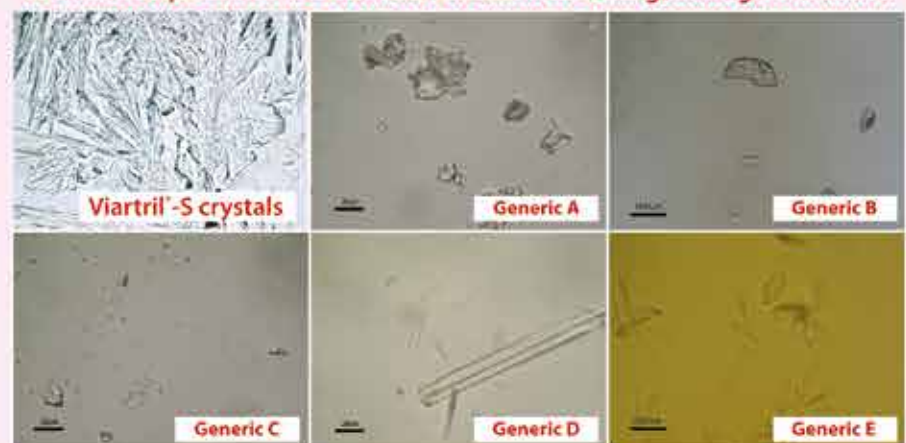


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The microscopic structure of Viartil-S is different from generic glucosamine:



1. Goto-Ogino et al. JAMA. 2018;320(13):1544-1550. 2. Oebel Brodersen et al. Seminars in Arthritis and Rheumatism 44(2014) 255-263. 3. Briviere G. Arthron 10. Reigstad Z. J. Semin Arthritis Rheum. 2018 Feb;48(4):Suppl:12-1.



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