

SINGAPORE Health

THE FLAGSHIP PUBLICATION OF THE SINGHEALTH DUKE-NUS ACADEMIC MEDICAL CENTRE

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The history of Singapore General Hospital (SGH) is closely intertwined with the development of medicine in Singapore. The first general hospital for British troops was established in Singapore in 1819, but it was only in 1821 that it began serving the general populace — marking the true beginnings of SGH. In celebration of SGH's bicentennial, *Singapore Health* presents snapshots of the changes in medicine and its various disciplines in the past 200 years.

A bigger and more direct role in patient care

SGH's Pharmacy Department has evolved beyond a drug-distributive role to one that is increasingly involved in the patient care journey.

by Ms Ng Hong Yen, Specialist Pharmacist, Pharmacist-Haematology Department, Singapore General Hospital



▶▶▶ Pharmacy Technicians gown up in protective gear to prepare chemotherapy medication for blood cancer patients in a cytotoxic laboratory.

Photo: Mark Lee

The discipline of pharmacy has existed for as long as there have been hospitals. In Singapore, the rudimentary origins of pharmacy can be traced back to 1821, when the first general hospital — the beginnings of Singapore General Hospital (SGH) — was established.

Medical apprentices were responsible for drug compounding and preparation. Formal pharmacy education became available in 1905 when the Department of Pharmaceutics was set up at King Edward VII College of Medicine.

Until the late 1980s, the Ministry of Health (MOH) produced generic drugs like painkillers and antibiotics. After MOH closed its pharmaceutical unit, the modern history of SGH's Pharmacy Department started. In 1989, SGH was restructured and given greater autonomy to run its operations.

The department started with five to six pharmacists, and dispensing assistants (today's pharmacy technicians or assistants). It now has almost 500 staff members, about 200 of whom are pharmacists.

A milestone was reached when pharmacists began working on medication prescription with clinicians on ward rounds — a practice pioneered by Dr Ang Hui Gek, currently Director of Allied Health, SGH.

As hospitals evolved towards multidisciplinary healthcare, pharmacists were integrated into clinical specialties, including transplantation, critical care, infectious diseases, and haematology-oncology.

In 1990, pharmacists began counselling patients on medications requiring strict compliance and monitoring, such as asthma inhalers, and warfarin, a blood thinner. Therapeutic drug monitoring was introduced as immunosuppressants, anti-epilepsy medications and antibiotics usually have to be adjusted within ranges to minimise side effects and maximise effectiveness.

These services mark the beginnings of personalised medicine. Pharmacists are directly involved in patient care, influencing drug choices, shaping medicine use with research, and empowering patients with knowledge to take charge of their health. Pharmacists also prescribe medicines under the Collaborative Prescribing Framework.

At Singapore's first Anticoagulation Clinic, which started in 2000, pharmacists prescribe, monitor and adjust warfarin dosage under the oversight of a doctor. Other pharmacist-led clinics are the Inflammatory Bowel Disease Clinic established in 2007, and the Rheumatology Monitoring Clinic in 2009 — also Singapore's firsts.

SGH pioneered the 2006 Antibiotic Stewardship Programme, where pharmacists optimise antibiotic usage hospital-wide to curb global antibiotic resistance. Now a key service in other hospitals, it is also on the national agenda. To curb antibiotic resistance, the department set up Singapore's only pharmacist-run translation research laboratory in 2007. Associate Professor Andrea Kwa was the first pharmacist to obtain the national research award



Photo: SGH

in 2013, and clinician scientist in 2018, for her work in this area.

SGH established career frameworks in the late 2000s to train and develop pharmacists in a structured manner. These pathways help build a sustainable and confident pharmacy workforce, and were adapted nationally.

Technology and automation have led to safer and more efficient pharmacy services like SGH's Outpatient Automated Prescription Dispensing System and Inpatient Automated System, introduced in the early 2010s.

To keep patients safe and away from the hospital during the COVID-19 pandemic, SGH ramped up its Medication Delivery Service and introduced paperless prescriptions in 2021. Later this year, a Good Manufacturing Practices-certified National Compounding Hub is expected to be launched to produce ready-to-use parenteral nutrition bags, antibiotic eye drops and the like for SingHealth hospitals and centres to consolidate services for greater safety and efficiency.

Follow the celebrations at www.sgh.com.sg/sgh200 and on our social media platforms: Facebook (@SingaporeGeneralHospital), Instagram (@sghseen) and TikTok (@sghseen).

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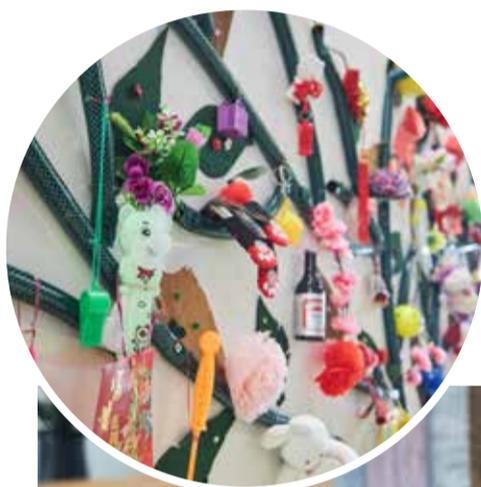
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Person-centred care that truly matters

CGH's dementia ward is making a huge difference for elderly patients with dementia.

by Eveline Gan

»» The sensory 'tree' comprises a range of everyday items that pique interests and encourage conversations among patients with dementia.



For many patients, staying in a hospital can be stressful. It can be even more challenging for those with dementia as unfamiliar environments may trigger disorientation and distress.

To help patients with dementia adjust better during their hospital stay while recovering from their medical conditions, the multidisciplinary geriatric team at Changi General Hospital (CGH) has adopted a person-centred care (PCC) model in its dementia ward.

Located within the Integrated Building of CGH, the 20-bedded dementia ward sees about 580 patients every year.

A holistic and individualised care approach, the PCC model takes into account not just the patients' physical recovery and needs, but also their psychosocial needs. This involves getting insights from caregivers into each patient's regular daily routine, personality, dietary preferences, previous occupations, hobbies, faith, and things that may

“We believe that care and compassion are part of the treatment to help patients get better. Ultimately, this model of care revolves around unconditional acceptance and care of the patient.”

Associate Professor Lim Si Ching
Senior Consultant, Department of Geriatric Medicine,
Changi General Hospital

evoke emotional responses.

Associate Professor Lim Si Ching, Senior Consultant, Department of Geriatric Medicine, CGH, who introduced the PCC model in 2015 for elderly patients with behavioural symptoms of dementia, said that the care needs of patients with dementia are higher, with routine tasks and communication requiring more time and patience.

For example, in a general ward, patients' mealtime usually lasts about 45 minutes but this can go beyond an hour

in the dementia ward.

Recounting the team's recent encounter with an elderly patient who took two hours to finish half a bowl of porridge, Prof Lim said, "One of the care assistants accompanied the patient until she finished her meal. Why do we do this? We believe that care and compassion are part of the treatment to help patients get better."

"Ultimately, this model of care revolves around unconditional acceptance and care of the patient."



»» Activities for each patient are tailored based on his or her individual personality, preferences, and cognitive abilities.



»»» A section of the ward displays items from yesteryears to jog the patients' memories.



Improved outcomes

Prof Lim said studies have shown that the PCC model — first introduced by psychologist Tom Kitwood in United Kingdom in the 1990s — can be an effective way of managing behavioural and psychological symptoms of dementia.

Findings of a recent survey conducted by CGH indicated that the initiative has improved patient outcomes and well-being in areas such as sleep duration, meal intake, mood, and agitation level. At least 62 per cent of the ward's elderly in-patients showed a positive increase in appetite.

Caregivers who took part in the survey also reported observing similar improvements in their loved ones' mood and engagement level.

The dementia ward has consistently scored the most commendations from patients' families and caregivers for every domain in CGH's patient feedback data since 2018.

For its efforts to improve patient care, CGH's geriatric care team clinched the 'Dare to Do' award at the Public Sector Transformation Awards 2020. The award recognises the spirit of risk-taking and perseverance in the public sector.

Restraint-free approach

Alzheimer's disease is the most common type of dementia, which affects around one in 10 adults aged 60 and above, and more than half of seniors over 85 in Singapore. The condition is incurable, although treatment can slow down its progression.

Some patients with dementia may exhibit difficult-to-manage behavioural symptoms, such as aggression and agitation. Other symptoms include restlessness, biting, scratching, shouting,

anxiety, and depression.

Prof Lim pointed out that there are often underlying reasons for behavioural symptoms in dementia patients, many of whom can no longer use words to clearly express their needs.

"The first thing we tell ourselves when the patient is displaying such behaviour is to view it as a breakdown in communication. The patient needs something from us, but because there is a communication failure, the message is lost in translation. It could be that the patient is tired, in pain, or has a certain routine he or she is used to. In order to provide PCC and not restrain the patients, we have to understand why the patients behave the way they do," she said.

In CGH's dementia ward, patients enjoy the freedom of movement with close supervision.

The use of physical or pharmacological restraints is avoided and used only as a last resort in instances when patients are at risk of endangering themselves.

"Agitated patients are never left out of sight. When necessary, we will have the patient sit in a geriatric chair near to the nurses' counter," Prof Lim said.

While the PCC approach requires more time and commitment from the ground staff, Mdm Sinnatamby Savithri, Senior Nurse Manager at the dementia ward, said that the care team at the ward has worked together to implement this care model to manage patients in a



»»» (Left) Wallpaper is pasted on the doors to prevent patients from mistakenly wandering out of the ward.

»»» (Below; from left to right) Senior Nurse Manager Sinnatamby Savithri, Associate Professor Lim Si Ching, Assistant Director Ong Siew Yit, Nurse Clinician Anna Liza Pada Bantilan.



restraint-free environment.

The team meets regularly to discuss care plans and goals for each patient.

"When the patients first arrive, the nurses try to find out more about them as individuals — for example, how they want to be addressed, their preferred language for communication, their past occupations, and whether they have certain memories that may trigger unhappiness. These details and their cognitive abilities are taken into account when we tailor activities to keep them meaningfully occupied," Mdm Savithri said.

During their stay in the ward, patients may engage in music therapy, art and craft, simulation therapy, or even interact with a robotic pet as part of their therapy sessions, depending on their preferences.

There is a corner dedicated to paraphernalia, such as games, an old sewing machine, and other knick-knacks that help jog memories. A sensory 'tree' filled with various everyday items like tangerines and spice sachets encourages conversations among patients.

Feels like home

The layout of CGH's dementia ward is designed with patient safety in mind. To simulate a calming and reassuring home-like environment, corridors are fitted with grab bars to enable patients to walk safely and more confidently. Doors are plastered with wallpaper to prevent patients

from mistakenly wandering out of the ward. The nurses' station is also located nearer to the beds, allowing the staff to keep a closer watch on the patients.

Social interaction among patients and their family members is also encouraged. There is a communal dining area, where patients can gather at meal times, although these activities have been temporarily halted due to the COVID-19 pandemic.

Patients can also choose to have their breakfast while seated at a breezy balcony.

Mdm Savithri said that patients sleep better after socialising and participating in afternoon activities or therapy. In a survey conducted by the team, more than 90 per cent of the patients slept for seven to nine hours on days when they had therapy, compared to 44 per cent on days without therapy.

The nurses also provide education and counselling for caregivers so that the latter can learn to manage their loved ones' behavioural symptoms and keep them meaningfully occupied even after they are discharged from the hospital.

There are plans to gradually implement the PCC care model across other wards in CGH's Integrated Building.

"Besides patients with dementia, the PCC model of care is suitable for patients with developmental and intellectual abnormalities, and to some extent, patients with psychiatric issues, too," said Prof Lim.

»»» (From left) Deputy Prime Minister Heng Swee Keat, NHB's Chang Hwee Nee, Health Minister Gan Kim Yong and SGH CEO Kenneth Kwok planted a tree at SGH's new Bicentennial Garden.

evolved, its priorities changing in tandem with advancements in the country. It stepped up expeditiously to face the COVID-19 pandemic, as it had done in the past when the country was buffeted by deadly infections and epidemics.

"Your dedication to patients and commitment to help Singapore overcome the pandemic is commendable. I am glad that you also faced the uncertainties with courage, and adapted and innovated as the situation evolved," said Mr Heng.

Professor Kenneth Kwok, SGH Chief Executive Officer, likened SGH to a magnificent tree whose deep roots have been nourished by generations of healthcare professionals and supporters, and which sprouted branches — its sister institutions within SingHealth, namely Singapore National Eye Centre, National Heart Centre of Singapore, National Cancer Centre of Singapore and National Neuroscience Institute — on SGH Campus.

Prof Kwok said that SGH's achievements did not come by chance. Its people share a sense of purpose, a passion to serve, and the courage and tenacity to face and overcome adversities. These attributes were passed on from the very first pioneers through the ages; and from generation to generation, to the present.

"We have journeyed and will continue to journey with the nation through good times and tough ones. We share in the belief that our patients, regardless of their station in society, should have access to excellent care that matters most to them. As the current custodians in SGH, it is our responsibility to reimagine and define tomorrow's medicine so that SGH will continue to be the beacon of hope for Singaporeans," he said.

During the ceremony, Prof Kwok also announced a social movement named One Kind Act in appreciation of SGH's patients, whom he described as heroes who inspire with their courage and fortitude. "As the name suggests, each of us will do 'one kind act' every day for another person as a way of giving back. It is to remind us that we are privileged to care for and to have the trust of our patients and the public," said Prof Kwok.

Guests were given a preview of the refurbished SGH Museum, which is housed in Bowyer Block, a national monument. The Museum, co-curated by SGH and the Preservation of Sites and Monuments under the National Heritage Board, will open later this year.

Photo: Ministry of Communications and Information



Sinking new roots on rich historical grounds

The new Bicentennial Garden will serve as a reminder to its staff of all that Singapore General Hospital stands for — having a sense of purpose and the passion to serve and care, backed by the courage and grit to face difficulties that are sure to come its way.

by Tricia Ang and Clara Chee

A strong conviction to serve and care has driven Singapore General Hospital (SGH) since its inception in 1821. Thus, it is fitting that on 29 March 2021, that date should be marked by the launch of a Bicentennial Garden on the grounds where it eventually settled — Sepoy Lines in the Outram area.

The Garden is a reminder of healthcare professionals' hallowed responsibility to Singapore's public healthcare, while the planting of trees by a host of dignitaries and representatives of SGH's leaders signifies the laying down of roots for its future growth and development.

Deputy Prime Minister Heng Swee Keat, guest-of-honour at the celebrations, noted how SGH has



»»» (From left) Mr Peter Seah, Chairman, SingHealth; Professor Fong Kok Yong, Deputy Group Chief Executive Officer (Medical and Clinical Services), SingHealth; Mr Gan Kim Yong, Minister for Health; Professor Kenneth Kwok, Chief Executive Officer, SGH; Mr Heng Swee Keat, Deputy Prime Minister; Professor Ivy Ng, GCEO, SingHealth; Mdm Chang Hwee Nee, Chief Executive, National Heritage Board; Associate Professor Ruban Poopalalingam, Chairman, Medical Board, SGH.

Collaboration gives new hope for children with rare cancers

Increased research and the growing knowledge of childhood cancers have led to new tests that diagnose patients more quickly and accurately.

by Suki Lor



»» With advanced in-house testing capabilities, KKH is able to allocate appropriate treatment more efficiently, says Associate Professor Kenneth Chang.

The KK Women's and Children's Hospital (KKH) is now able to diagnose tumours more quickly and accurately, leading to better and more precise treatment.

This is thanks to new molecular tests designed by the VIVA-KKH Paediatric Brain and Solid Tumour Programme, a collaboration started in 2015 between KKH, the Singapore-based charity VIVA Foundation for Children with Cancer, and St. Jude Children's Research Hospital in the United States.

The programme seeks to improve clinical care, and research into brain and solid tumours in children to improve treatment outcomes. A majority of children with these illnesses in Singapore are cared for by KKH. Such rare cancers are difficult to treat and have higher mortality rates compared to blood cancers like leukaemia.

"Previously, without these molecular tests, it was much harder to precisely diagnose these tumours, and patients often had to seek testing at overseas centres. Now, with such advanced in-house capabilities, we can facilitate the allocation of appropriate treatment more efficiently," said Associate Professor Kenneth Chang, a member of VIVA-KKH programme's steering committee, and Head and Senior Consultant,

Department of Pathology and Laboratory Medicine, KKH.

The service has been extended to other hospitals in Singapore and the region, said Dr Amos Loh, Chairman of the programme's steering committee and Senior Consultant at KKH's Department of Paediatric Surgery.

Over the years, the programme has chalked up several notable achievements. In 2018, it launched a molecular tumour board initiative at KKH using data from genetic tests to identify targeted treatments that are customised to the individual. Since then, more than 250 local and regional patients have benefited from this personalised medicine initiative.

Under the programme, workshops offering training in paediatric pathology and paediatric surgical oncology were also initiated.

Prior to COVID-19 restrictions, doctors from regional countries were also able to benefit from exchange attachments, which provide training to help them develop the multidisciplinary teams in their home countries to care for patients with childhood brain and solid tumours.

Research findings

The programme has made notable advancement in research too. It has collaborated with National Cancer Centre Singapore to offer

clinical cancer genetic testing to children and families suspected to be at risk of cancer predisposition syndromes.

"Cataloguing our experience, we were the first to describe the profile of cancer predisposition syndromes in Asian children with brain and solid tumours," said Dr Loh. (Refer to page 14 to find out more about the medical conditions resulting from solid tumours)

In the first local study of Wilms tumour (a rare kidney cancer) in Singapore's multiracial population, the programme's researchers found that Asian children had a better survival outcome compared to their Caucasian counterparts.

Global effort needed

Dr Loh stressed that advancing care for childhood cancer requires a global effort. "Due to the diversity of tumour types, and the range of clinical and research expertise required, it becomes critical to collaborate with international groups with a similar focus."

He pointed out that Asian childhood solid tumours are under-represented in existing research, with major international studies on such tumours largely based on Caucasian and African-American populations.

A better understanding of various aspects, such as clinical outcomes, tumour biology and the socio-economic impact of paediatric cancer in Asian populations, will allow current evidence to be better applied here and in the region.

Dr Loh believes that the combined research and education thrusts of the programme will have long-lasting benefits for the care and treatment outcomes for children with cancer.

"By increasing knowledge in childhood cancer through research, we can empower centres in Singapore and beyond to sustain continuous improvement in the level and quality of care delivered," he said.

Dr Soh Shui Yen, Head and Senior Consultant, Haematology/Oncology Service, Department of Paediatric Subspecialties, KKH, and a member of the VIVA-KKH programme's steering committee, concurred. "The treatment for children with cancer needs to be readily accessible and managed such that there are milder and fewer side effects. Breakthroughs in research can definitely help with that. A child who is cured of cancer has a whole life ahead of him or her. We hope to help more patients and seek better treatments with higher efficacy," she said.



»» (From left) Exchange attachment participants Dr Mary Nheb and Dr Chen Wanwan, with Prof Kenneth Chang in the pathology laboratory.

New knees within 23 hours

An enhanced recovery programme, along with a new surgical technique for total knee replacement surgery, gets patients out of hospital within the day.

by Thava Rani

Within hours of her total knee replacement surgery, Mdm Tay Mee Tiang was able to walk. The 64-year-old was discharged and back in the comfort of her own home the same day.

Typically, patients who undergo knee replacement surgery take three to four days to recuperate at the hospital. But Singapore General Hospital (SGH) is able to shorten this to just 23 hours with its enhanced recovery programme, which includes a new surgical method. The hospital is the first in Asia to offer same-day total knee replacement surgery.

"The programme allows the procedure to be done as a day surgery and reduces postoperative physical and psychological stress to patients. This reduces their recovery time and financial burden," said Dr Jerry Chen, Consultant, Department of Orthopaedic Surgery, SGH.

It is especially relevant during the current pandemic, as a shorter hospital stay for eligible patients means a smaller chance of catching the virus, he added.

The programme was piloted in August 2019 with 50 patients. Elective surgery resumed in September 2020, and since then to January 2021, more than 200 patients have benefited from the programme. SGH sees about 1,800 total knee replacement patients a

year, and about half could benefit from the programme.

Total knee replacement surgery is commonly performed on patients with end-stage knee arthritis. Patients eligible for the programme attend a Joint Replacement Class to prepare them for what to expect during and after the surgery.

Conducted by a multidisciplinary team on the same day of their pre-op assessment, the session teaches them rehabilitation exercises as well as pain management and wound care. This aims to ease patients' anxiety, and to encourage them to walk short distances with the help of a physiotherapist soon after surgery.

A new surgical technique promotes better recovery as it aligns the artificial knee to the patient's natural leg orientation.

"The kinematic-alignment technique restores the patient's anatomy to how it was before arthritis had set in — whether bow-legged, knock-kneed or somewhere in between — and that

speeds up recovery," said Dr Chen.

Post-op pain, nausea and vomiting are minimised through the use of spinal anaesthesia, instead of general anaesthesia.

Returning to the hospital for outpatient physiotherapy and wound dressing changes can be a worry for patients, especially those without a carer to bring them.

With the enhanced recovery programme, patients continue to be cared for after discharge. Home visits are conducted by physiotherapists in the first week, during which they help build patients' confidence to get up and go about with their new knee. For instance, they walk with them to nearby coffee shops to buy their meals.

Community nurses visit in the second week to check their wound dressing, vital signs, and general well-being. Should patients have concerns, they can call a hotline.

"Sometimes patients experience pain and swelling of the knee joint. These are to be expected, and the nurses will

remind them to ice their knee," said Dr Chen.

To date, none of the patients on the programme have needed readmission within 30 days. Only patients who are generally fit, and are able to walk independently with a walking aid, get in and out of bed on their own, and climb stairs are eligible for the programme.



»»» The programme allows total knee replacement surgery to be done as a day surgery, which reduces postoperative physical and psychological stress, says Dr Jerry Chen.



»»» Mdm Tay Mee Tiang underwent a knee replacement procedure under SGH's enhanced recovery programme in September 2020. She suffered from arthritis and walked with a limp for many years, but is planning to have her other knee replaced soon.



»»» Under the A-CARE programme, Senior Staff Nurse Jenneth Leow provides asthma counselling and education on inhaler use to patients like Ms Katrina Tan (right), who was unaware of the severity of her symptoms until she was admitted to SGH's ED in 2019 for a severe asthma attack.

»»» (Below) Like other chronic conditions, asthma requires long-term treatment and management to reduce readmissions, says Associate Professor Mariko Koh.



Moving towards zero asthma emergencies

A pilot programme, which incorporated asthma counselling into the patient journey at the Emergency Department, brought about improved asthma management and outcomes.

by Dang Hui Ling

When patients do not understand their asthma or how to care for their condition, they find themselves seeking treatment — often repeatedly — at the emergency departments (ED) for severe symptoms, such as breathlessness and chest tightness.

Severe asthma attacks can be life-threatening. Of 376 patients with life-threatening asthma who were admitted to the intensive care units of four restructured hospitals, 47 died during admission, a 2011-2015 study found. Severe asthma attacks also tend to occur at night, when temperatures drop.

To reduce ED visits and hospital admissions, an asthma specialist nurse has been included in Singapore General Hospital's (SGH) ED night team under a pilot programme called Asthma-COPD (chronic obstructive pulmonary disease) Afterhours Respiratory Nurse at Emergency, or A-CARE.

"When patients come to the ED with an acute asthma attack, the ED physician performs initial treatment. When their condition stabilises, they are transferred to the short-stay unit for up to 23 hours. That is when the A-CARE nurse comes into the picture," said Dr Kenneth Tan, Head and Senior Consultant, Department of Emergency Medicine, SGH.

Asthma nurses have been part of SGH's ED team for over 10 years, but this is the first time that one has been placed on night duty. Asthma nurses provide important clinical support to ED doctors, assessing patients' overall conditions, recommending inhalers, and arranging post-discharge follow-up.

Like other chronic medical conditions, asthma requires regular and long-term treatment and management, said Associate Professor Mariko Koh, Senior Consultant, Department of Respiratory and Critical Care Medicine, SGH.

"Patients do not realise that asthma, like diabetes and high blood pressure, is a chronic condition that requires long-term care," said Prof Koh, adding that regular outpatient follow-up and management can help cut down on readmissions as patients' asthma stabilises.

Long-term asthma therapy involves controlling inflammation with inhaled corticosteroids (ICS), which are used daily; oral corticosteroids (OCS) and Short-Acting Beta-Agonists (SABAs) inhalers — commonly known as 'blue puffs' — for temporary relief of symptoms.

Overuse of the blue puffs, which open up the airway, can be dangerous.

"Patients either do not have an

inhaler, or they only have a SABA inhaler, which should only be used for relieving acute symptoms. Some have both ICS and a blue puff, but do not know how and when to use them," said Ms Jenneth Leow, Senior Staff Nurse, SGH, who works three nights a week at the ED under the A-CARE programme.

The 17-month A-CARE pilot, which ran between September 2016 and February 2018 and involved 300 patients, saw more asthma patients started on long-term ICS inhalers (from 30 per cent to 70 per cent). Patients under Ms Leow's care were also more likely to stick to their appointments with respiratory specialists (from 15 per cent to 40 per cent).

"The A-CARE nurses are a great help to ED physicians. While we attend to other life-threatening cases, they speak to asthma patients under observation and make recommendations that facilitate our decision-making," Dr Tan said.

SGH, which collaborated with global biopharmaceutical company AstraZeneca on A-CARE, hopes to begin training other ED nurses to ensure round-the-clock asthma counselling at the ED. Depending on the COVID-19 pandemic situation, phase 2 of the initiative could start in 2021.

Prosthetic eyes made by dentist



Did you know?

Patients who have lost one eye suffer from 25 per cent reduction of vision. Their binocular vision is also halved.

At SingHealth, the making of ocular prostheses involves the work of prosthodontists who specialise in restorative dentistry.

by **Domenica Tan**

The making of glass eyes began as early as the 16th century in Venice, Italy, while other forms of artificial eyes were introduced even before that. The art of ophthalmology, a niche field of making prosthetic eyes, and its links to dentistry, can be traced back to 1943, when dental technicians in the United States Army created the first impression-fitted acrylic eyes using dental materials. Until today, prosthetic eyes are mostly made of acrylic.

Indeed, there are many commonalities between ocular and dental prosthetics. In SingHealth, the prosthetic eye fitting service, a highly specialised treatment that requires the combined effort of an ophthalmologist and a maxillofacial prosthodontist, is offered at Singapore National Eye Centre (SNEC), in collaboration with the National Dental Centre Singapore (NDCS).

Coordinated care

The Ocular Prosthetic Clinic, led by Clinical Associate Professor Teoh Khim Hean, Senior Consultant at NDCS's Prosthodontic Unit, was established in 2003 as part of SNEC's drive towards patient-centric care.

Prof Teoh, who is also Deputy Director for Clinical and Regional Health at NDCS, specialises in Prosthodontics, which involves procedures such as restoration of teeth, maxillofacial prosthetics, and implant rehabilitation.

"The overall management and treatment of a patient who loses one or both eyes are

highly complex, and require a multidisciplinary approach to achieve the best possible outcome. We wanted to offer a convenient one-stop centre for patients who require ocular prostheses, and saw real value in creating a seamless integrated pathway for patients to receive such care in one setting. With the collaboration, we can harness our collective expertise and work closely with ocular plastic surgeons in SNEC to improve patients' lives," said Prof Teoh.

This highly coordinated care is evident in NDCS too. Laboratory skills honed in dentistry are also essential in the making of ocular prostheses. "The concept and process of fabricating ocular prostheses for eye sockets are similar to that of making dentures for the mouth," added Prof Teoh, who also trains junior prosthodontists and lab technicians in fabricating ocular prostheses.

A boost of confidence

For most patients, the loss of an eye is a traumatic experience that has devastating psychosocial consequences. Often, these patients feel conscious about their appearance. Having a prosthetic eye can help them regain confidence, restore essential daily functions, and ultimately improve their quality of life.

Fun fact

The veins in the sclera (white part of the eye) of the prosthetic eye are made using red silk threads.

In some severe cases, a patient may have lost an eye due to the extension of a tumour from the mouth to the eye socket. This would have resulted in the removal of the upper jaw, eyeball and eyelids, and would affect speech, swallowing and appearance.

In such situations, an obturator and an orbital prosthesis are created to fill the spaces in the oral (mouth) and orbital (eye) cavities respectively. For these patients, having a maxillofacial prosthesis can help restore the function of swallowing and make eating a more comfortable experience. It also helps with speech pronunciation to improve communication.

What to expect

The making of prosthetic eyes is as much an art as it is a science. Every piece is customised to meet the needs of each patient.

The process begins six weeks after the surgical removal of the eye. An impression tray is inserted into the ocular cavity and a mould is taken to determine the size of the prosthesis.

The iris is designed and matched with the patient's other eye, or with a photograph of the original eye. "The challenging part comes when there are variations and shades of brown or black that require careful curation of colours to create a realistic look," said Prof Teoh. "Currently, we are also exploring 3D-printing technology to make the fabrication process more efficient. This potentially offers significant time savings."

Once completed, the prosthesis is then inserted where it can move like a normal eye.

"Patients are inevitably worried about changes and their ability to adapt. Very often, I get questions about how to wear the prosthesis, whether it will fall out, the types of activities that can or cannot be done, and how the prosthesis will look like when worn," said Prof Teoh. "I educate them on the use, maintenance and management."

The prosthesis can be worn for the entire day and removed for cleaning when there is discharge. Annual polishing is encouraged to remove any build-up of discharge and ensure that the prosthesis is kept in good condition.



» Despite specialising in restorative dentistry, Associate Professor Teoh Khim Hean goes beyond his area of practice to fabricate ocular prostheses for patients who have lost an eye.

A balancing act

Senior Principal Physiotherapist Dr Dawn Tan, who specialises in neurological and balance disorders, is happiest when working with her patients.

by Eveline Gan

When Dr Dawn Tan was going for her doctorate studies in clinical physiotherapy, someone asked why she needed to study so much. After all, physiotherapy “involved only walking patients”.

That is one of the most common misconceptions about her profession, said the Singapore General Hospital (SGH) Senior Principal Physiotherapist.

“Physiotherapy is a science-based practice that uses facts, clinical reasoning processes, and tests to assess a patient’s condition. We may look like we are merely ‘walking the patient’ but in fact, we are analysing his gait. There is a science behind mobilising patients out of bed and using gait analysis,” she said.

Physiotherapists are also often mistaken for masseurs, although massage techniques are a form of treatment for some conditions, Dr Tan added.

Dr Tan received a scholarship to study physiotherapy in



London after her A-Levels. But it was while she was observing a total knee replacement surgery when she was on clinical

attachment that she realised how crucial a role everyone in a healthcare team, including physiotherapists and other allied health professionals, plays in a patient’s recovery.

“The surgeon had done a brilliant surgery but postoperative care had to be very good, too (to ensure the patient recovers well),” Dr Tan said.

After her undergraduate studies, Dr Tan worked her way towards a doctorate while juggling full-time work at SGH. She also holds a Master’s degree in neurological physiotherapy and a Master’s degree in applied statistics.

At SGH, Dr Tan works with patients with neurological disorders, such as stroke and Parkinson’s disease, to help them manage symptoms and improve mobility.



▶▶▶ Dr Dawn Tan supports the mock patient while helping her into a position (called the Dix-Hallpike test) to assess her for vertigo. The patient wears infrared Frenzel goggles, which allow Dr Tan to check her eye movements.

She also runs a multidisciplinary Movement Assessment Clinic for patients with Parkinson’s disease to help identify impairments or symptoms so they can start treatment early. “If they have speech or swallowing problems, we can refer them to a speech therapist. If they are experiencing a lot of anxiety, we can refer them to our colleagues in the Psychology Department,” she said.

Another group of patients that Dr Tan works with are those with balance disorders that arise from inner ear and vestibular issues, such as benign paroxysmal positional vertigo, which can leave patients with recurrent bouts of vertigo and dizziness.

She started taking a special interest in vestibular rehabilitation after she took over a colleague’s work during the 2003 severe acute respiratory syndrome (SARS) outbreak.

“At the time, it felt like a crash course but I could see that patients were improving and their dizziness was alleviated after physiotherapy,” Dr Tan said.

To further hone her skills and

knowledge in that area, Dr Tan attended courses in the United States, and a clinical attachment at a vestibular clinic in Australia.

In addition, Dr Tan is an educator, mentor and researcher. She holds a teaching appointment at the Singapore Institution of Technology (SIT), where she introduced vestibular rehabilitation to the curriculum.

In research, Dr Tan looks at how motor and non-motor symptoms in patients with neurological disorders, such as Parkinson’s disease, gait disorders and sleep problems, impact their quality of life.

Yet, Dr Tan is happiest when interacting with patients and their caregivers. “It is a privilege to journey with patients and their caregivers. It is very fulfilling to empower them to achieve their goals,” said Dr Tan.

Outside of work, Dr Tan loves travelling and aims to exercise more. “I am well aware that I should practise what I preach. So whenever I can, I try to walk more or take the stairs to increase my physical activity,” she said.

It is a privilege to journey with patients and their caregivers. It is very fulfilling to empower them to achieve their goals.

Dr Dawn Tan
Senior Principal
Physiotherapist, Department
of Physiotherapy,
Singapore General Hospital

I was an aircraft engineer, now I am a doctor

On a rescue-and-relief mission to tsunami-hit Medan in 2004, Dr Lim Kheng Choon saw how his medical colleagues changed lives for the better. He then decided to give up his SAF career to be a doctor.

by Desmond Ng

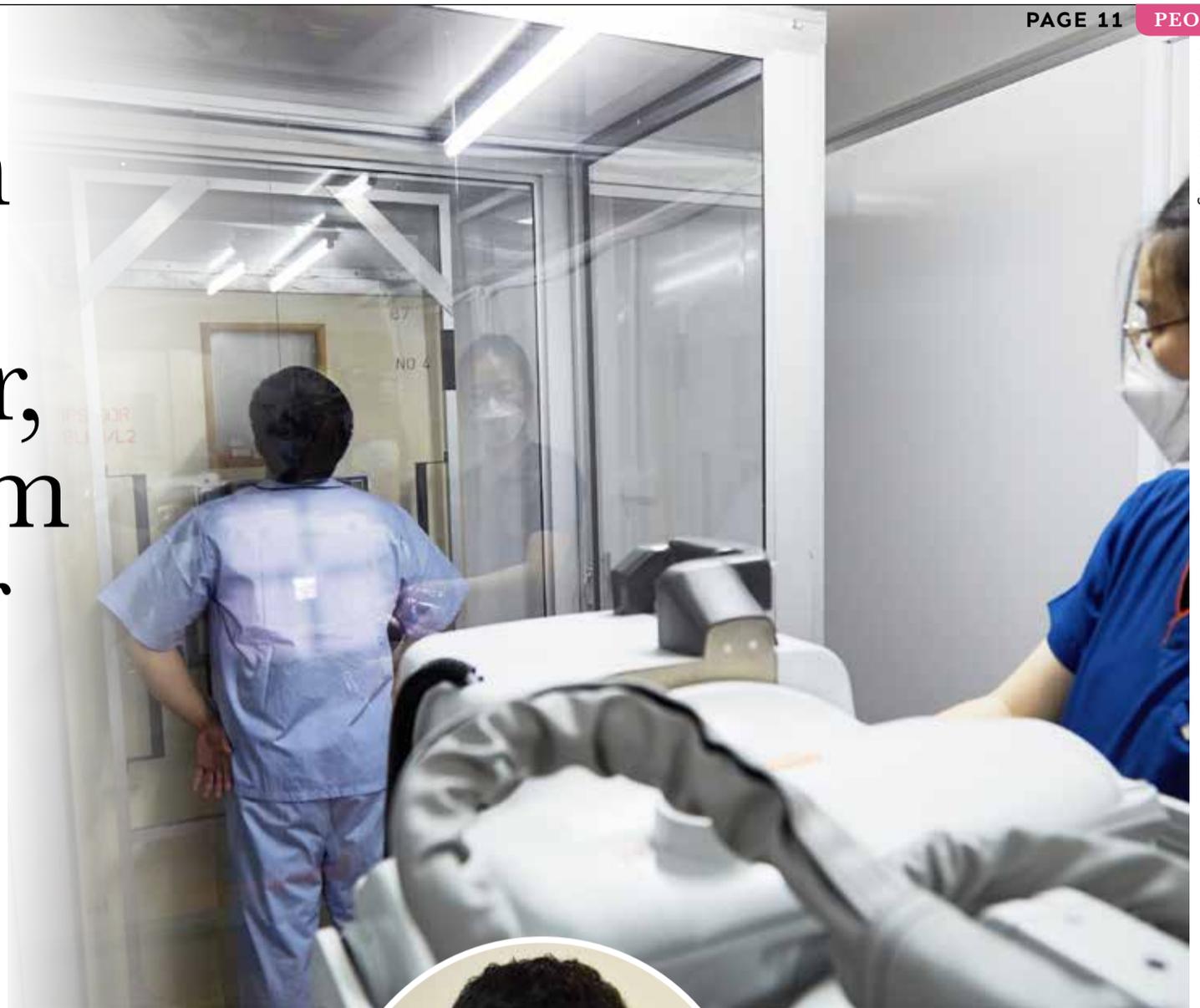
He had a successful career as a Republic of Singapore Air Force (RSAF) aircraft mechanical engineer. But on a tsunami relief mission to Medan in 2004, Dr Lim Kheng Choon had an eye-opening experience that led him to a mid-career change.

Part of the RSAF rescue-and-relief team, the then 28-year-old witnessed first-hand how the medical team provided care to critically ill patients.

"I remember we were evacuating a very seriously burnt child. Throughout the flight, the parents talked to the medical team, and I could see how grateful and relieved they were to finally get help," said Dr Lim.

"Being a doctor, and having the ability to heal and to comfort can make a very big difference. And it got me thinking."

Armed with a deeper sense of purpose, the engineering graduate decided to study medicine. Now a Consultant at Singapore General Hospital's (SGH) Department of Diagnostic Radiology, Dr Lim, 45, finds common ground between his engineering background and medicine.



»» Dr Lim Kheng Choon was instrumental in the design and development of SG SAFE.R. Patients enter the glass box (within the mobile x-ray unit) for their scan, avoiding contact with the radiographer.

I always tell my junior doctors that we should not forget what we are here to do, and how we can really change lives. That little gesture, what we say, and our body language make a big difference to patients.

Dr Lim Kheng Choon
Consultant, Department of Diagnostic Radiology,
Singapore General Hospital

"Engineering is a discipline about processing and looking at things from a systemic level, and understanding how things connect and work. I think medicine is a lot like that," he said.

Indeed, his background proved useful when the COVID-19 pandemic struck last year. He played a significant role in quickly designing a mobile x-ray unit where staff need not come into contact with patients. Although his department had considered such an idea for some time, costs were an issue.

Recalling how RSAF officers had to be inventive in the field, Dr Lim said, "When you are in

a disaster area, there is no way to find an office so you just use containers, which can be moved to different places quickly."

Similar to the idea of a photo booth, a shipping container is converted into an x-ray room with a clear polycarbonate plastic box inside. Patients enter the container and stand against one side of the clear box to have x-rays taken. Named SG SAFE.R, the booth cost about \$7,000 to build. The booth, said Dr Lim, is an example of how his engineering experience adds value to his current work.

Dr Lim had considered studying medicine at university

but chose engineering after getting a Singapore Armed Forces (SAF) scholarship.

In 2005, the establishment of Singapore's first graduate medical school gave Dr Lim a chance to return to school. He and his wife were just starting a family, and although the Duke-NUS Graduate Medical School offered him a bursary, it still meant the couple would be relying on a single income for some years.

"My wife was supportive but worried. We had to make some lifestyle changes. I sold my car and downgraded our flat," said Dr Lim, who graduated in 2011.

As a radiologist, Dr Lim helps diagnose illnesses or injuries of patients based on the imaging scans he receives from the radiographers. He considers the interaction with patients to be one of the most sacred aspects of his job.

"I always tell my junior doctors that we should not forget what we are here to do, and how we can really change lives. That little gesture, what we say, and our body language make a big difference to patients," he said.

With three children aged between 7 and 15, Dr Lim has little time for leisure. Still, to keep fit, he jogs when he has the time.

Don't forget to wash your hands!

World Hand Hygiene Day on 5 May is a good reminder to make hand hygiene an important part of our daily lives.

Information provided by **Dr Ling Moi Lin**
 Director, Infection Prevention and Epidemiology, Medical Board, Singapore General Hospital

Cleaning hands properly

Alcohol-based hand rub agent or hand sanitiser (preferably one with at least 70 per cent alcohol content):

- 20 to 30 seconds
- About 2 to 3 pumps, or 2.5 to 3ml



Soap and water:

- 40 to 60 seconds
- Rub hands with soap, including the palms, back of the hands, webs, sides of fingers, knuckles, fingertips and wrists



Wash your hands...

- After using the toilet
- Before, during and after preparing food
- After handling pet food or pet treats; and after touching an animal, animal feed or animal waste
- Before wearing your mask, and after taking it off
- After changing diapers or cleaning a child
- After touching public facilities and surfaces, such as door handles, tables, gas pumps, shopping carts, electronic cashier registers, and screens
- Before and after eating
- After blowing your nose, coughing or sneezing
- Before touching eyes, nose or mouth
- After throwing away garbage

Wearing gloves is not good enough

Gloves may have pin holes through which body fluids and germs can pass through. Clean hands immediately after removing gloves.





Sick to the stomach

Though not uncommon, gastroparesis often remains undiagnosed for many years, affecting patients' health and quality of life.

by Annie Tan



▶▶▶ Patients often suffer from gastroparesis for a long time before getting diagnosed. Once they understand their condition and start treatment, they can take better control of their health, says Dr Andrew Ong.

Nausea, bloating, abdominal pain, and vomiting, sometimes even throwing up what was eaten the day before. These symptoms may be easily dismissed as gastric problems like indigestion and stomach ulcers — and indeed, these indications are often diagnosed and treated as such.

But they can also describe a little known condition known as gastroparesis, a chronic illness often associated with diabetes, especially type 1. Gastroparesis is linked to damaged nerves and muscles that control how food in the stomach empties into the intestines.

"By definition, someone has gastroparesis when the stomach takes a long time to empty itself into the intestine," said Dr Andrew Ong, Senior Consultant, Department of Gastroenterology and Hepatology, Singapore General Hospital (SGH).

When food is not emptied but accumulates in the stomach, the person then develops nausea and vomiting as a result. "That is what gastroparetic patients experience because the food basically has not left the stomach. It has been there since the day before," he added.

Though not widely known, this disease is fairly common. "Data from the US and Europe suggests that 20 per cent of diabetic patients suffer from it. While we do not have Asian data, it is fair to say that conservatively, 10 per cent of diabetic patients in Asia have some form of gastroparesis," said Dr Ong.

Patients with persistent symptoms referred to hospital specialists usually undergo an endoscopy first to rule out stomach obstructions, before taking a gastric emptying test to determine if they have gastroparesis.

Patients often suffer from gastroparesis for years before receiving an accurate diagnosis. If undiagnosed and untreated, gastroparesis can affect patients' quality of life. Besides daily discomfort, persistent retching and vomiting can lead to tears and bleeding in their food pipes. Some experience so much discomfort that they avoid eating, losing weight and important nutrition.

Besides patients with diabetes, those with Parkinson's disease, post-viral illnesses, and post-surgery complications can also develop the condition.

Type 1 diabetes usually occurs in childhood, so if gastroparesis occurs, it does so at a younger age

for these patients — in their 30s — as it takes years for diabetes to affect their nerves. For patients with type 2 diabetes and Parkinson's disease, gastroparesis may occur only later in life.

"For diabetics, the biggest problem is their sugar control, which can go all over the place," said Dr Ong.

A patient who does not know that he has gastroparesis will continue taking insulin even when food has not been absorbed. He effectively overdoses on insulin, pushing sugar levels down. Hours later, his sugar levels rise as the food empties into the small intestines. "This makes it very confusing for both the patient and the healthcare provider trying to control his sugar," Dr Ong said.

Apart from short-term medication to help empty the stomach and longer-term pain relief medication for stomach discomfort, patients will be advised to make dietary and lifestyle changes. A low-calorie, low-fat, and low-fibre liquid diet that empties from the stomach faster ensures patients' calorie and nutritional needs are met. Eating smaller and more frequent meals also helps, while smokers should quit the habit as smoking can irritate stomach nerves.

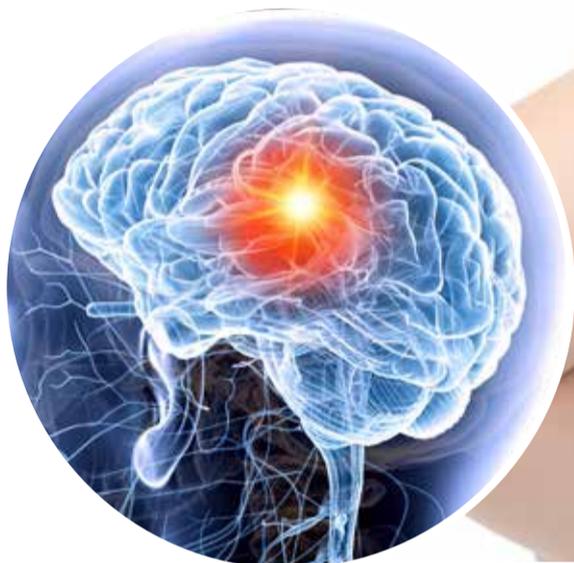
Surgery to dilate a narrow passage between the stomach and small intestines can improve gastroparesis caused by a tight opening.

"Many patients will have this condition for a long time so they need to be empowered. Once they know what they can eat and what triggers their symptoms, they can be creative in making adjustments and take control of their lives," said Dr Ong.

Cancer in children

Brain and other solid tumours account for almost 60 per cent of all childhood cancers, but such tumours are usually diagnosed late because they are rare, diverse and often under-recognised.

by Suki Lor



About 150 children are newly diagnosed with cancer in Singapore every year. Cancer is the second leading cause of death in children here and in other developed countries.

"In children, the types of cancer and their incidences are very different from the cancers in adults," said Dr Amos Loh, Senior Consultant, Department of Paediatric Surgery, KK Women's and Children's Hospital (KKH).

The types of tumours that prevail also differ among children of different age groups.

"In infants and toddlers, we see higher rates of tumours in growing organs, such as the brain, kidney, liver, and nervous system. Tumours of the bone, muscle and connective tissues are more prevalent among adolescents," Dr Loh said.

Cancer predisposition

"While childhood cancers are driven by genetic cues that have lost their normal regulation and control, in general these are mostly random events and are not often hereditary or genetically predisposed," said Dr Loh.

A study by KKH and National Cancer Centre Singapore on local children with brain and solid tumours found that 10 per cent had verified mutations associated with genetic predisposition, but only half of them had known family histories of cancer.

"As scientific knowledge continues to grow, we may uncover more about paediatric cancer predisposition syndromes. Nevertheless, it is still important to screen for genetic predisposition syndromes as they can have important bearing on family members and the patient," he said.

Becoming cancer-free

Over the years, the success rates of treating childhood cancers have generally improved, with over 80 per cent of children and adolescents being free of the illness for the long-term. This is largely attributed to the better survival outcomes in children with blood cancers, namely leukaemia and lymphoma, which account for about 40 per cent of cancers in children and adolescents.

However, the situation for brain and solid tumours is far less positive. "Such tumours are notoriously difficult to manage and complex to treat," said Dr Soh Shui Yen, Head and Senior Consultant, Haematology/Oncology Service, Department of Paediatric Subspecialties, KKH.

For instance, over 90 per cent of children with Wilms tumour (the most common kidney cancer in children) and retinoblastoma (the most common eye cancer in children) recover from the disease. However, for some aggressive childhood cancers, such as diffuse midline gliomas (an aggressive

brain cancer) and stage 4 sarcoma (a rare cancer in the bone and soft tissue), the outcomes are dismal.

"It is difficult to advance treatments via clinical trials due to the diverse varieties of tumours and the small numbers of patients for each tumour type. More research and global collaboration will be helpful in expanding the understanding of these diseases (refer to page 6 to find out more about the VIVA-KKH Paediatric Brain and Solid Tumour Programme) thereby improving patients' outcome in the long run," Dr Loh said.

Multifaceted therapy

As with adults, children with cancer are treated using various combinations of chemotherapy, surgery, radiotherapy, and/or cellular-immunotherapy.

"Treatment of complex oncologic conditions in children are best supported by a comprehensive range of paediatric medical and surgical specialties as well as paediatric allied health care in a children's hospital," said Dr Soh.

Patients can be as young as newborn babies; hence, treatment must also consider the possibility of acute and long-term side effects. All childhood cancer survivors attend clinics for long-term follow-up and to check for potential late effects.

Apart from medical treatment, a host of support services (play and music therapy, art therapy, and child psychology) and staff (medical social workers and child-life specialists) ensure that holistic care is provided to these young patients.



»» Dr Amos Loh believes more research and global collaboration will improve the understanding and management of aggressive childhood cancers.



»» Brain and solid tumours in children have relatively poor outcomes due to the difficulty and complexity of treatment, says Dr Soh Shui Yen.

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What should I look for when buying alcohol-based hand rub (ABHR)?

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5 most common baby problems

A follow-up to the article published in a previous issue, here are five other common baby problems and their solutions.

by Annie Tan

Parenthood has its share of challenges and new learning curves. In the November–December 2020 issue, Dr Alvin Ngeow, Consultant, Department of Neonatal and Developmental Medicine, Singapore General Hospital (SGH), talked about jaundice, vomiting, colic, abdomen distension, and plagiocephaly. In this article, Dr Ngeow discusses five additional common baby problems and useful tips to help you with your child's early years.

1 Skin problems

It is a common misconception that babies have perfect complexions. In fact, they are prone to skin problems, such as erythema toxicum, a pimple-like rash with a red base; neo-natal

acne, which resembles pimples; and cradle cap, which is yellowish scaly plaque on the head, and sometimes the eyebrows and neck.

Doctor's advice: While these blemishes may look alarming, they will not harm your little one and will resolve on their own. For cradle cap, you can apply olive oil to your baby's head an hour before bathing to soften the flakes so that when you wash the head, you can easily wipe them off.

2 Diaper rash

These inflamed red patches are caused by irritation from urine and faeces trapped in diapers. One simple way to determine if your baby is suffering from diaper rash is to stretch its legs apart and check the area between the legs

and pubic area. As this area is not in contact with urine and faeces, it should be rash-free.

Doctor's advice: To calm diaper rash, change diapers more frequently, and clean the area with a dabbing, rather than rubbing, motion so as not to break the superficial layer of the skin. Alternatively, simply wash the area with water. A barrier cream will provide an additional layer of protection.

If you notice that the area between the pubic area and legs is affected, your baby may be suffering from a fungal infection and may need to see a doctor for an anti-fungal cream prescription.

3 Oral thrush

If you notice a white lesion on your baby's tongue, inner cheeks,

or even the roof of the mouth and gums, he may be suffering from oral thrush, a fairly common type of fungal infection.

Doctor's advice: To determine if this white substance is thrush and not milk curd, try wiping it off with a clean gauze or handkerchief. Milk curd can be wiped off easily. Oral thrush is very difficult to wipe off and will leave a red base when forcefully removed. However, it can be easily treated with an anti-fungal gel or syrup. Bear in mind that for breastfed babies, the mother's nipple may also be infected and needs to be treated too.

4 Fever

Normal body temperature falls between 36.5°C and 37.5°C. Any temperature above that may be considered a fever. This is usually a sign that the immune system is working to fight an illness, usually a bacterial or viral infection, such as upper respiratory tract infection or influenza.

Doctor's advice: Newborn infants with weak immune systems will need to be admitted to hospital if their fever reaches 38°C. However, for babies above three months old, doctors will do a thorough examination to determine the cause of their infection. In milder cases, they may be prescribed paracetamol or ibuprofen. Parents are advised to keep their child well hydrated and cool, and for the child to get ample rest.

In serious cases, viruses can go on to infect the lungs, and cause phlegm, tightening of the windpipe, wheezing and breathlessness. This is known as bronchitis or bronchiolitis. Patients may need additional treatment, such as oxygen therapy or nebulisation. Another possible cause of prolonged fever may be urinary tract infection, which may require a course of antibiotics.

5 Eye discharge

This may look like an eye infection, but it is usually less serious. When the eye produces tears, these are drained through a pipe leading from the eyes to the nose. However, babies' pipes are very small and can easily get blocked. Hence, tears and dried secretion cannot drain downwards and get stuck near the inner corner of the eyes. This condition will resolve on its own as the baby gets older and the pipe enlarges.

Doctor's advice: Wash your little finger clean with soap and water, and use it to gently massage the inner corner of the baby's eye downwards (towards the nose) to help clear the blockage. Use a clean cotton wool with cool boiled water to wipe the discharge away.

Reducing high blood pressure in the lungs

High blood pressure in the lungs, or pulmonary arterial hypertension, is a rare but serious condition.

by Suki Lor

Pulmonary arterial hypertension (PAH) is one form of pulmonary hypertension (PH), which refers to high blood pressure in the blood vessels of the lungs. Patients with PAH may eventually develop weakened right heart muscles as they work harder to pump blood through the lungs.

Symptoms include shortness of breath during physical or normal activities. The breathlessness can be so severe that even daily walking becomes a difficult chore. Patients may experience dizziness, especially when climbing stairs or standing for a prolonged period. PAH patients are advised to avoid strenuous activity and pregnancy.

PAH can affect people of any age, sex or race, but is more common in women aged between 30 and 50. People with certain autoimmune diseases or a family history of the condition are more susceptible, although in some cases there is no known cause or prevention, except for those that are drug-induced.

This progressive condition can lead to premature death. Currently, there is no cure for PAH and patients need to be on lifelong treatment.

Given its adverse impact on quality of life and life span, awareness about this little-known disease is crucial to ensure cases get diagnosed and treated early.

"It is a rare disease with very poor outcomes if untreated. It is often under-diagnosed and is not well-recognised, even though this disease entails much mortality and morbidity," said Associate Professor Jonathan Yap, Consultant, Department of Cardiology, National Heart Centre Singapore (NHCS).

A ray of hope

PAH cases are mainly discovered with the help of ultrasound scans of the heart, especially for patients with unexplained persistent breathlessness. The number of cases is expected to grow as awareness of this condition increases.

Treatment with drugs can arrest damage to the heart,



▶▶ Ms Haslina Wannor (middle) manages her IV Therapy with the care and guidance of Nurse Clinician Aidila Bte Ismail and Associate Professor Jonathan Yap, who are members of NHCS' Pulmonary Hypertension team.

improve symptoms, and help patients resume a more normal lifestyle. Oral medications that work to dilate the blood vessels of the lung are usually the first line of treatment for PAH.

"Until about a decade ago, the prognosis for PAH was bleak, but with improving treatment options, there is much hope for PAH patients," said Prof Yap.

For suitable severe cases, Intravenous Epoprostenol (IV therapy) is recommended. This is one of the few drug therapies proven to reduce PAH-related deaths. In Singapore, it is primarily available in NHCS.

Patients on IV therapy have to carry a pump — slightly larger than the size of a palm and can be carried in a bag — connected to IV tubes, which go under the skin into a blood vessel in the chest or neck to deliver medication constantly

and directly to the pulmonary artery. Patients need to return to NHCS every few months to have the tubes changed.

The pump delivers the drug slowly and continuously throughout the day, and the medication cannot be stopped abruptly. With IV therapy, many patients find an improvement

in their symptoms. They are less breathless and can lead more normal lives, including doing light exercises.

However, as IV therapy is difficult to start and manage, most patients opt for oral medication first. Many are worried about the challenges of diluting the drug, and handling the pump and syringes. It is a lifelong treatment that can be financially and psychologically straining for some patients.

Careful planning

It requires months of planning, counselling, and teaching with the help of the doctor, nurse, pharmacist and caregiver before a patient can begin this complex therapy.

A nursing team will assess the patient, and offer as many training sessions as needed for the patient to become competent and confident in managing the device, including replacing the cartridge containing the drug when it runs out. As patients may experience difficulty in managing the IV therapy at times, caregivers join the sessions to understand how things work.

"This helps ensure good preparation work, and coordination between the care team, the caregivers, and the patient. It takes a dedicated community to manage this," said Prof Yap.

Multifaceted approach

NHCS has a team of specialists from various disciplines to treat the full spectrum of PH. Apart from a weekly PH clinic run by a cardiologist, NHCS also operates a one-stop monthly clinic offering comprehensive and holistic care to PH patients. During this session, patients can consult healthcare professionals across a range of specialties, including respiratory medicine, rheumatology, and palliative care.

"The field of PH is growing, and it is important that we, as part of the healthcare team, advocate for patients with this rare condition," Prof Yap said.



▶▶ A multidisciplinary team provides timely care for patients with PAH. (From left to right) Senior Staff Nurse Sumathy D/O Perumal, Nurse Clinician Aidila Bte Ismail, Associate Professor Jonathan Yap, Associate Professor Lim Soo Teik, Associate Professor Tan Ju Le, and Senior Staff Nurse Lim Chee Lan.

Why do I stutter sometimes?



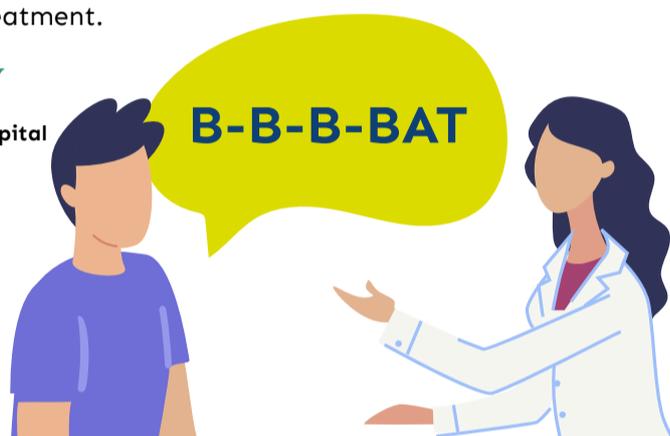
I do not normally stammer, but find myself stuttering and making errors when speaking to people I am unfamiliar with or when making presentations at work. Why does it happen?

People who do not usually stutter can experience normal dysfluency (breaks or irregularities in speech). These dysfluencies may increase in certain situations, such as when a person is anxious, stressed, fatigued or rushed. It can also happen when speaking to people of authority or strangers, and over the phone.

If you experience speech blocks, repetitions and prolongations, you may be stuttering. Blocks are tense stoppages in the airflow during speech that result in periods of silence; repetitions are sounds that are repeated, such as “b-b-b-bat”; and prolongations are tense continuations of sounds, such as “ssssssss-un”.

Some people are not bothered by their speech, but if these issues are a concern or disrupt your day-to-day functions or communication, you can consult a doctor for a referral to see a speech therapist. The therapist will be able to determine if you are stuttering and recommend the appropriate treatment.

SPEECH THERAPY DEPARTMENT
Singapore General Hospital



Returning to sports after injury



I sprained my right ankle about four weeks ago during a football game. It still hurts when I point my toes. What should I do and when can I resume exercising?

The most common ankle sprain is due to an inversion injury, where the ankle rolls such that the sole points inwards. Many of these sprains heal well with no residual issues. However, in some cases — even if the ligament was sprained and not torn — there may be problems, such as stiffness or laxity of the ankle, loss of joint position sense, weakness, or recurrent sprains. There may also be injuries to the other structures of the ankle, such as the bone or surrounding tendons.

If you have pain on plantar flexion (the motion of pointing the foot downwards), see a sport and exercise medicine doctor to assess if there are issues, such as joint stiffness or other structural injuries, following the ankle sprain. A course of physiotherapy may be required to get you back to full activity and sports.

DR IVY LIM

Consultant, Singapore Sport and Exercise Medicine Centre, Changi General Hospital



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DID YOU KNOW...



... that inflight meals can be tasty, especially when they are iconic Singapore hawker fare served by the country's premium inflight catering company?

Since the start of the year, SATS Ltd has begun offering local fare – with its especially *sedap* (delicious) *laksa* – at Singapore General Hospital's (SGH) Housemen's Canteen. The menu features over 50 dishes of local and fusion food, including specials to commemorate SGH's 200th anniversary this year. The restaurant is awaiting *halal* certification but does not serve food containing pork or lard in the meantime.

There is no contact between the kitchen staff and customers, as food preparation is done behind a large glass window separating the kitchen and the dining area.

Customers order online at www.housemencanteen.com.sg and pay via the website. They then get an SMS with their queue number. When the food is ready, another SMS is sent with an access pin number. After keying in the number at the Collection Point, one of the many lockers opens automatically for the food to be retrieved.

As food preparation can take some time, it is best to pre-order. Housemen's Canteen sits next to Duke-NUS Medical School and is opposite Academia. It is a short walk from SGH Block 7. The car park next to Housemen's Canteen is open to the public after 5.30pm.

Housemen's Canteen is open Mondays to Saturdays from 7.30am to 8pm.

... that in celebration of SingHealth's 20th anniversary in 2020, a specially commissioned artwork, made up of 3,994 staff-contributed photos, was created?

Designed to depict the SingHealth Duke-NUS Academic Medical Centre's skyline at the break of dawn, this dynamic landscape envisions the ever-changing and enduring role of SingHealth to bring hope, comfort and care to our patients, accelerate medical breakthroughs, and foster a healthier future for Singaporeans.

The buildings are interlinked to signify the strong bonds that institutions and staff share as members of the SingHealth family. Check out the artwork displayed at the Expression Wall (behind Lift Lobby C), Level 1, SingHealth Tower.



»» (From left) Professor Ivy Ng, Group Chief Executive Officer, SingHealth, and Professor Ian Curran, Vice Dean, Education, Duke-NUS Medical School, at the launch of the commemorative mural.

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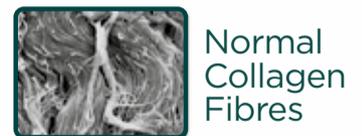
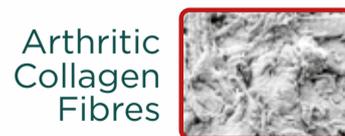
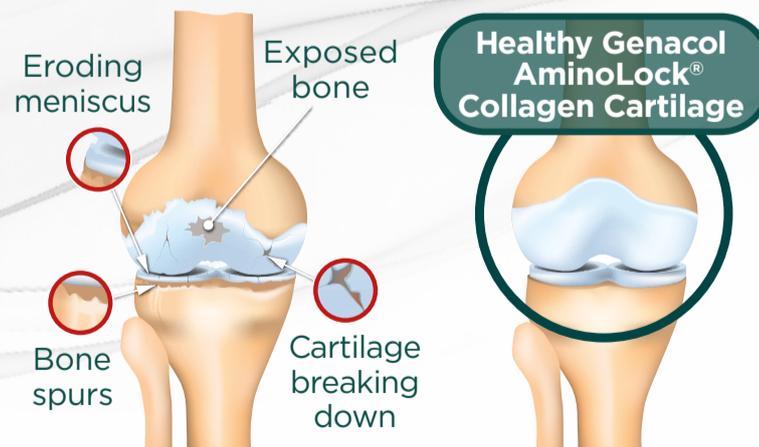


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There are many brands of ivy leaves products in the market and they are not well regulated. How do you know which brand is effective and safe?

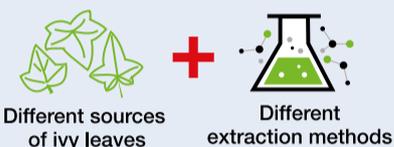
Here are some questions you can ask:

1. Is it clinically proven to be effective?
2. Is it clinically proven to be safe?
3. Is it recognised internationally or sold in just a few countries?
4. Is it reliable, i.e. has it been in the market for many years?

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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 **Viartril-S reduces the risk of Total Knee Replacement surgery by 57%.**

What about the glucosamine brand that you are taking?

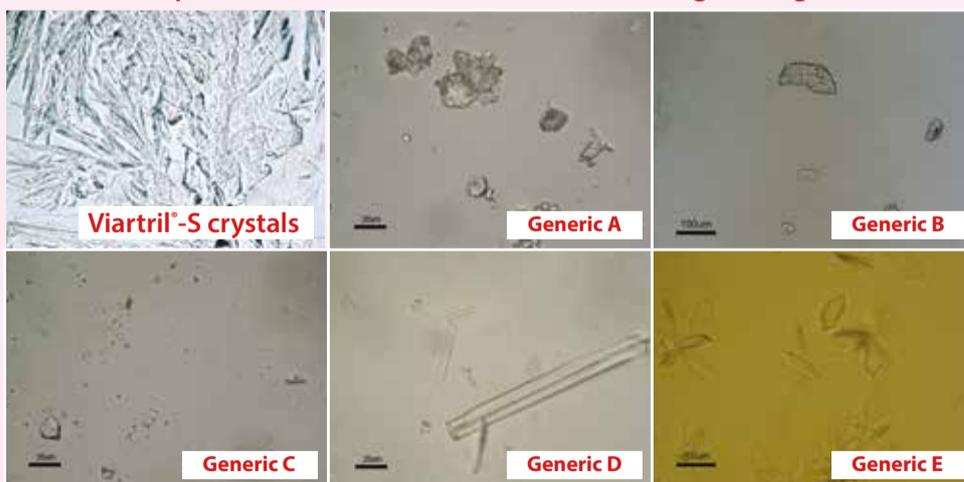
Viartril-S[®]

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In Singapore, glucosamine products are sold to public without the need for registration & approval by HSA. This means that even simple checks on purity are not required. So, the safety and efficacy of a brand can only be confirmed by lab & clinical studies.



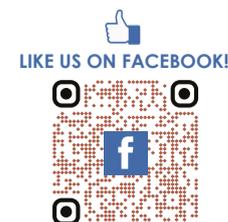
The microscopic structure of Viartil-S is different from generic glucosamine:



1. Dario Gregori et al. JAMA. 2018;320(24):2564-2579 2. Olivier Bruyère et al. Seminars in Arthritis and Rheumatism 44(2014) 253-263 3. Bruyère O, Allman RD, Reginster JY. Semin Arthritis Rheum. 2016 Feb;45(4 Suppl):S12-7.



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all successful clinical trials³



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