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Bringing healthcare innovation to new heights

The A.L.I.C.E @ SGH Campus is a collaborative space where healthcare innovators and SingHealth clinicians work together to define tomorrow's medicine.

by Chua Kim Beng



CHROMA, the acronym for Computational Health Research and Optimisation for Medical Advancements, is a supercomputer capable of processing large amounts of clinical data quickly. For example, it allows clinicians and healthcare innovators to pre-train artificial intelligence (AI) models for large-scale and complex research. It can be used for applications such as developing AI algorithms for disease risk prediction and facilitate personalised medicine.

...
A.L.I.C.E @ SGH Campus is purpose-built to accelerate the development and adoption of healthcare innovations such as medical technology and digital healthcare solutions.

CHROMA is a key feature of a new facility within the Singapore General Hospital (SGH) Campus that officially opened on 22 September 2023.

Hub for commercial partners and clinical experts

The Alice Lee Innovation Centre of Excellence @ SGH Campus (A.L.I.C.E @ SGH Campus) is purpose-built to accelerate the development and adoption of healthcare innovations such as medical technology and digital healthcare solutions.

"A.L.I.C.E @ SGH Campus is a resource centre for commercial partners and clinical experts to convene, co-develop and test highly impactful healthcare innovations," said its Clinical Director, Associate Professor Henry Ho.

"We have dedicated spaces for innovation activities including living lab mock-ups and innovation playpens for our young innovators to explore their creativity and test out new innovations safely. There will also be a germination greenhouse to grow our early projects. Start-ups will also be able to run their pilots and implementation trials."

The company suites at A.L.I.C.E @ SGH Campus house commercial partners of SingHealth's innovation ecosystem, putting multidisciplinary key players within close reach of healthcare innovators. "This gives healthcare innovators easy access to expertise, resources and commercial connections they may need to bring their budding innovation projects to fruition," said Ms Lee Chen Ee, Group Director, Innovation and Transformation, SingHealth.

Assoc Prof Ho added that A.L.I.C.E @ SGH Campus actively seeks out partners in different industries and collaborators such





3D printers and prototyping tools offer staff the opportunity to design and develop their proof-of-concept models.



A.L.I.C.E @ SGH Campus is a resource centre for commercial partners and clinical experts to convene, co-develop and test highly impactful healthcare innovations.

Associate Professor Henry Ho
Clinical Director, A.L.I.C.E @ SGH Campus

There are also laser-cutting machines in the prototyping laboratory.



as the Agency for Science, Technology and Research (A*STAR), National University of Singapore and Nanyang Technological University, to showcase their works in innovation. These collaborations lead to the exchange of healthcare expertise and assets, domain knowledge and expansion of networks.

It was through such a partner, the National Supercomputing Centre (NSCC) Singapore, that CHROMA was installed in A.L.I.C.E @ SGH Campus. "This collaboration between NSCC and SingHealth opens new horizons for large-scale and computationally complex healthcare research. We are excited to see the transformative impact it will have on healthcare in Singapore and beyond," said Associate Professor Tan Tin Wee, Chief Executive, NSCC.

CHROMA is equipped with software specific to AI and Deep Learning. "This will aid in doing breakthrough research and developing new AI innovations to address challenges faced by the healthcare system."

Beyond supercomputers

Besides CHROMA, A.L.I.C.E @ SGH Campus is also equipped with innovation facilities and tools in Makerspace such as 3D design and simulation software, 3D printers, and space for collaborators to design and develop their proof-of-concept models.

It empowers and equips healthcare innovators with toolkits by giving them access to innovation spaces, development resources and assets, and professional services developed for innovators. Furthermore, digital sandboxes offer a safe space for innovators to immerse themselves in a conducive environment to test their



...
The CHROMA supercomputer allows clinicians and healthcare innovators to pre-train artificial intelligence (AI) models for large-scale and complex research.



A.L.I.C.E @ SGH Campus plays a core role in supporting the Academic Medicine Innovation Institute and collective aspirations of our innovators.

...
Ms Lee Chen Ee
Group Director, Innovation and Transformation, SingHealth

systems, devices, rehabilitation equipment and innovative ideas from trial to implementation. This provides a holistic experience of clinical adoption without impediment to the healthcare system.

Assoc Prof Ho added that A.L.I.C.E @ SGH Campus will be a concierge for the wider healthcare innovation ecosystem to connect with healthcare innovators within SingHealth. Working with a wide range of partners also creates opportunities for SingHealth to adopt ready solutions that are implementable, customisable and scalable. This helps the cluster to continually sharpen the way we deliver care for better clinical outcomes and patient experience.

positive feedback from commercial partners and healthcare innovators.

Assistant Professor Yu Na, Senior Dental Surgeon, National Dental Centre Singapore, shares that A.L.I.C.E @ SGH Campus has helped her pursue her passion for innovation and impact patient care. It provides guidance on grant application, prototyping, product development, as well as ways to push innovation projects towards commercialisation.



Scan the QR code to view a video A.L.I.C.E @ SGH Campus.

Positive feedback

Despite its infancy, initiatives under A.L.I.C.E @ SGH Campus has garnered



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Did you know?



The A.L.I.C.E @ SGH Campus

- is named after Mrs Alice Lee, wife of the Lee Foundation's founder, the late Lee Kong Chian, in recognition of a transformational \$50 million donation from the Lee Foundation empowering doctors, nurses, allied health professionals, researchers and administrators to advance innovation and research across the SingHealth Duke-NUS Academic Medical Centre.
- is strategically located within the SGH Campus to be near other SingHealth institutions so as to quickly learn of and solve their unmet clinical needs.
- has 590 square metres of usable space.



Dr Shaun Loh (left) and Assoc Prof Toh Song Tar talk to patient Joel Foo as Senior Sleep Physiologist Shakina Abdul Rahim uses a tablet to calibrate the settings on the pulse generator. The device is turned on a month after surgery, where two incisions of about 5cm are made over the right chest and under the chin. Patients are discharged after observation for a day, but the department is aiming for the procedure to be done as a day surgery.



PHOTOS: VERNON WONG

Stimulating nerves for quality sleep

An implantable pulse generator to help keep the airway open is now available in Singapore for patients with obstructive sleep apnoea.

by Goh Bee Lian

The standard therapy for obstructive sleep apnoea (OSA) is to use a continuous positive airway pressure (CPAP) device to keep the airway open and breathing regular. But the CPAP machine is uncomfortable and needs to be worn for at least four hours every night. A new treatment offers promise — a tiny implant that works much like a pacemaker to deliver mild stimulation to keep the airway open, providing sufferers uninterrupted sleep during the night.

OSA often affects older or heavier people with weaker or slacker throat muscles, which can relax too much when breathing during sleep. As a result, the airway narrows or closes, hampering breathing for a few seconds, rousing the person from sleep. “Hypoglossal nerve stimulation (HGNS) therapy is a good complement and alternative to other treatment options because it is the only procedure that addresses the issue of weak muscles in patients’ airway, to allow them to breathe during sleep,” said Dr Shaun Loh, Consultant, Department of Otorhinolaryngology – Head & Neck Surgery, Singapore General Hospital (SGH).

“This is a real game changer in that it is a minimally invasive procedure that is a good alternative to CPAP. It has been proven to reduce breathing interruptions and improve daytime functions. Patients have reported that they are able to comply to the use on a nightly basis.”

The HGNS treatment consists of a programmable neuro-stimulator in the chest, connected to a pressure-sensing lead to detect breathing, and a stimulator lead to mildly stimulate the tongue nerve. Patients undergo surgery — lasting about two hours — to implant the stimulator or pulse generator about the size of three 50-cent coins in the chest just below the collar bone.

Once the device is activated by the patient using a remote control, the stimulation of the airway occurs in sync with the patient’s breathing. Whenever the patient breathes in, the tongue is pushed forward and the airways open. Patients turn on the device before going to bed to gently stimulate the throat muscles while sleeping.

Introduced by the department and SGH’s Sleep Centre in May 2022, the new treatment was first performed on a patient on 27 May 2022. Since then, more than 20 patients have undergone the treatment.

HGNS has been available in the US and Europe since 2014, with more than 40,000 patients having been implanted with the device, and 150 studies published on its efficacy. A *New England Journal of Medicine* study reported that the device was just as effective at the five-year mark as at the time of implant.

Good sleep is needed for brain performance, mood and health. Not getting enough quality sleep increases the risk of diseases and disorders from heart disease and stroke to obesity and dementia. Worldwide, 6–17 per cent of the adult population have at least moderate OSA, while one in three Singaporeans are estimated to suffer from the disorder.

A common but potentially life-threatening disorder, OSA tends to affect more men than women, and people with a large neck, low-lying soft palate, enlarged tonsils and small jaw with receding chin. Patients can benefit from lifestyle changes such as weight loss and good sleep hygiene. However, for many patients, these lifestyle changes alone are insufficient.



HGNS therapy is a good complement and alternative to other treatment options for OSA, say Dr Shaun Loh (above) and Assoc Prof Toh Song Tar (top), Senior Consultant and Head, Department of Otorhinolaryngology – Head & Neck Surgery, SGH

Newest polyclinic in Tampines North

New polyclinic leverages technology and a multidisciplinary care model to guide and support patients in building better health.

by Goh Bee Lian



“We expect to serve around 500 patients per day initially, and up to 700 patients per day in future,” says Dr Sabrina Wee, Clinic Director, Tampines North Polyclinic.

A new polyclinic to provide comprehensive and holistic primary care for the growing population in Tampines North was officially opened on 29 September 2023 by Minister for Health, Mr Ong Ye Kung.

“Tampines North Polyclinic will be an important healthcare facility in Tampines New Town. It will provide holistic care for the whole family, whether it is a baby needing vaccination, a school-going kid who has caught the flu, parents coming in for their regular health check-ups, or grandparents requiring help from pharmacists to manage their medications,” said Mr Ong.

Worldwide, the demand for healthcare has risen post-COVID-19 due to the increase in cases of chronic illnesses as a result of poor self-management during the pandemic. The healthcare sector has to continue managing high patient loads even after the pandemic is over. “To address this, we are catching up on the expansion of our primary care capacity, which was delayed due to COVID-19,” said Mr Ong.

Spanning four levels, Tampines North Polyclinic is the 10th clinic within the SingHealth Polyclinics network.

The Tampines planning area has the third-highest population (259,900 in the 2020 census) in Singapore after Bedok and Jurong West, and this number is increasing. Located at the junction of Tampines Avenue 6 and Tampines Street 61, the new polyclinic is in the vicinity of a number of new Housing and Development Board build-to-order (BTO) blocks completed in recent years. It will supplement the primary care services provided to date by Tampines Polyclinic, which has been operating since 1990. “We expect to serve around 500 patients per day initially, and up to 700 patients per day in future,” said Dr Sabrina Wee, Clinic Director, Tampines North Polyclinic.

Telemedicine

The inauguration of a new clinic offers opportunities to incorporate best practices and new technologies.

During the COVID-19 pandemic, many people tried telemedicine and got used to the convenience of not having to travel for face-to-face consultations with doctors. Seniors

who are less mobile can also save a trip to the polyclinic for simple conditions that can be tended to using telemedicine.

Telemedicine, especially video consultations, are suitable for a range of primary care delivery, typically non-urgent cases, such as attending to patients with common cough and cold, those who need a medical certificate, or follow-up consultations with patients with chronic conditions.

SingHealth has started a small-scale pilot service offering teleconsultations for patients with acute conditions. Some SingHealth Polyclinics offer teleconsultations for wound care, direct observed therapy for tuberculosis patients, and allied health services. For a start, Tampines North Polyclinic will offer video consultations for physiotherapy.

SingHealth will be setting up a centralised telehealth hub at Eunos Polyclinic, bringing clinical and administrative staff together in one location for the delivery of telehealth, adding convenience to patients. There will also be technical support and customer service officers to support patient administrative services, including scheduling of appointments.



Unlike typical primary care services where doctors have to assess patients in person, telehealth services can be centralised and delivered remotely. The hub is equipped with soundproof pods, making it conducive for teleconsultations to be conducted.

“As of April 2023, SHP has conducted over 36,000 video consultations for our patients. As we expand our services and tap on technology to empower our patients in self-monitoring of their blood pressure and blood glucose levels, we will increase our efforts to enable those who are less digital-savvy or unable to afford telemedicine services through community partnerships,” said Dr David Ng, Chief Executive Officer of SHP.

Multidisciplinary care

Like the rest of SingHealth Polyclinics, Tampines North Polyclinic adopts a multidisciplinary care model called My Care Team (MCT) whose members – doctors, nurses, ancillary and administrative staff – have workstations located in the same area of the clinic to offer seamless communication and stronger coordination to deliver comprehensive and more holistic patient care.

“You can have multidisciplinary teams working together, but often they are in different parts of the building. Our hope is that, with these teams closer in proximity, patients can reach their healthcare team more easily and efficiently,” said Dr Wee.

The team members, known as Health Pals, will advise patients on their medical, social and preventive care needs, and coordinate their health screening and vaccination appointments, in line with Healthier SG aims of preventive healthcare and promotion of healthier living.

MCT-enrolled patients benefit from having a dedicated healthcare team who will consistently work with them on their healthcare goals, with each patient receiving a personalised care plan, as well as practical advice and tips to stay healthy.

Among the many visitors to the polyclinic on its first day of operation was Madam Tang, who moved from Bedok to her BTO flat across the road from the new polyclinic two years ago. She has been watching the progress of the building over the years as she passes by on weekdays while sending her grandson to and from his kindergarten, located near the clinic. Despite moving to Tampines, she has continued going to Bedok Polyclinic for her medical appointments. “I will definitely switch to this clinic as it is so convenient, being so close to my home,” she said.



Tampines North Polyclinic offers primary care services, including

- Outpatient medical care and treatment
- Travel medicine
- Women and children's health
- Diabetic foot screening
- Diabetic retinal photography
- Diagnostics radiology (x-ray, mammogram, ultrasound)
- Dietetics
- Dressing
- Medical social services
- Minor surgical procedures
- Physiotherapy
- Podiatry
- Acute care
- Directly observed therapy
- Immunisations



Tampines North Polyclinic is designed to be sustainable

Besides boasting an ethnobotany garden, the clinic incorporates elements of nature and sustainability into its design:

- Nature-themed, with leaf motifs and green hues in décor
- Rooftop solar panels
- LED lights
- Energy-saving motion sensors
- High-efficiency air-condition chillers
- Naturally ventilated washrooms
- Gardens and greenery at all levels
- Bicycle parking lots for visitors

Telemedicine services available at SHP clinics

Acute-On-Demand Telehealth (AODTH) service

For general medical conditions such as:

- Mild acute respiratory illness
- COVID-19 infection
- Gastroenteritis
- Urinary tract infection
- Muscle or joint pain

Patients may book an appointment using the Health Buddy app to consult a doctor virtually on the same day.

Primary Tech-Enhanced Care (PTEC)

Home Blood Pressure Monitoring Programme enables patients with high blood pressure to manage their conditions in their own homes with the help of easy-to-use technology and teleconsultations from the polyclinic.

TeleHEalth Service for Seniors (THESS)

THESS is SHP's collaboration with community partners and community nurses to set up support video consultation services at Active Aging Centres (AACs) and in patients' homes to access telehealth services provided by SHP.

AI ups accuracy in calculating surgical risks

More accurate risk-assessment tool ensures patients have fewer complications and appropriate post-op care, lower costs and better use of hospital resources

by Goh Bee Lian

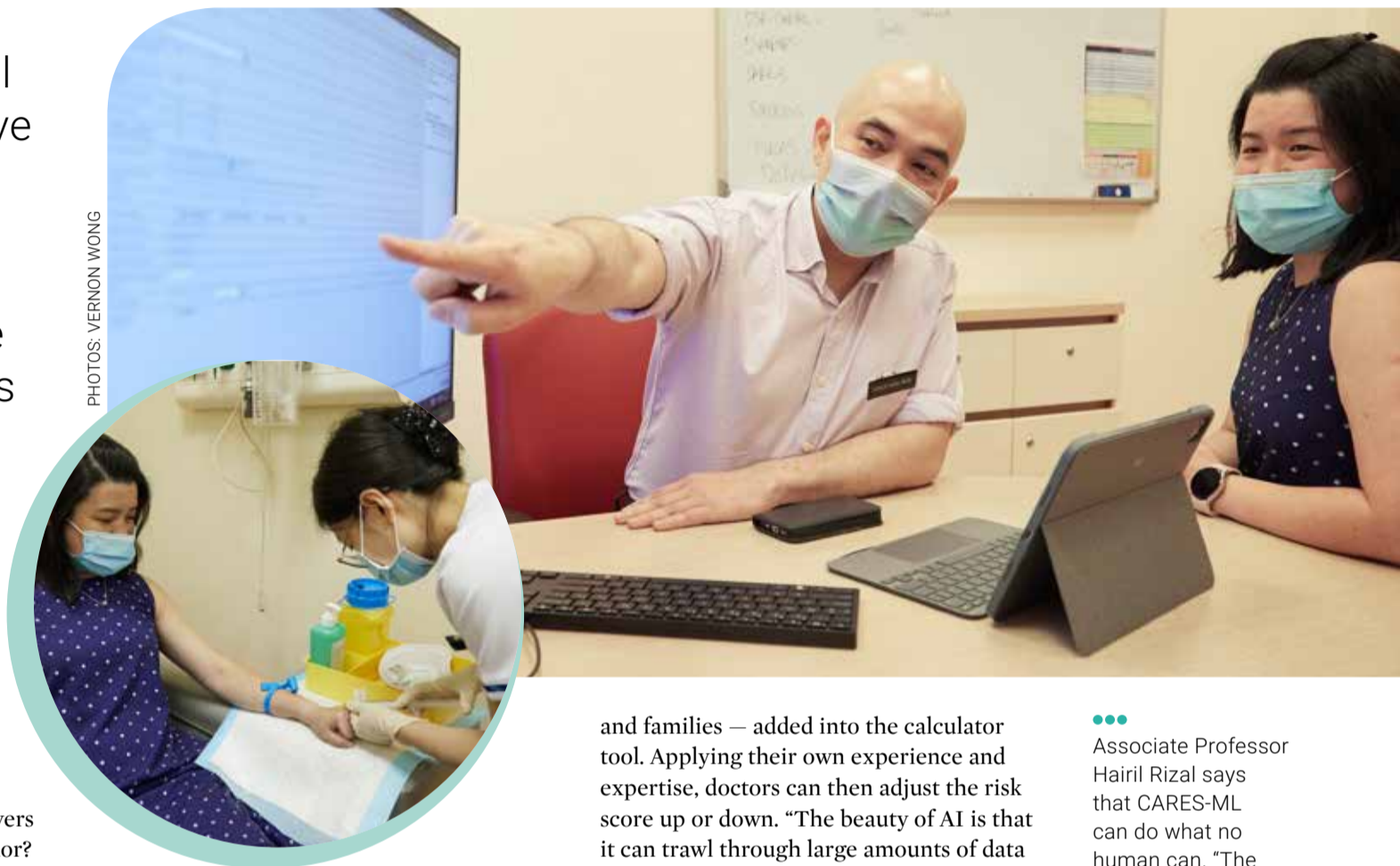
When a surgery is scheduled, tests and investigations are ordered to assess the patient's fitness and risks in undergoing the procedure.

What medical conditions does the patient have? Will they affect his risks during the operation and how he recovers from it? Is the procedure major or minor? Is he likely to face complications and will he then need intensive care (ICU) post-surgery? Is an ICU bed available at the time?

To ensure accuracy and consistency in pre-surgery assessment of patients, Singapore General Hospital (SGH) began using an intelligent calculator known as CARES-ML (Combined Assessment of Risk Encountered in Surgery – Machine Learning) for all surgeries in June 2023. CARES-ML is an enhanced version of an earlier tool, CARES, developed in 2017 using artificial intelligence (AI) to collect and interpret data from 100,000 SGH patients.

All data from the patient's pre-surgical assessments are added into the tool, which then calculates his risks and generates a report that includes a risk score. The higher the score, the greater the risk of a negative outcome with surgery.

"We have a 90 per cent certainty that the AI engine will be able to tell whether the patient needs ICU, a very important factor. Similarly, we have 83–86 per cent accuracy in predicting 30-day mortality (whether the patient will die within 30 days after surgery)," said Associate Professor Hairil Rizal, Senior Consultant, Department of Anaesthesiology, SGH. "CARES-ML is a human-in-the-loop system, where humans are involved in both the training and testing stages of building an algorithm. It does not make the decision, but provides decision support. The final risk assessment is made by the clinician based on his professional judgment."



As with most other AI engines, added Assoc Prof Hairil, the tool keeps on learning. "Over time, as new data come in, the tool becomes more and more accurate," he said.

Every surgery carries some degree of risk. Of the more than 300 million major surgeries performed around the world annually pre-COVID-19, 17 per cent developed one or more complications. Knowing the risks lets the medical team consider ways of mitigating them or even to postpone the operation.

At SGH, patients scheduled for surgery are assessed by the anaesthetist and surgeon about 10 days before surgery. This allows the medical team to give the patient appropriate interventions if needed. Patients assessed as low-risk can typically proceed to surgery, while efforts are made to search for modifiable risk factors and optimise them for low-moderate, moderate-high and high-risk patients.

Patients with anaemia, for instance, have an increased risk of complications – including infection, stroke or kidney injury – but may not be aware of it. When anaemia is spotted early, patients can be treated for it. For patients in the higher risk categories, it may be necessary to consider less invasive surgical alternatives like keyhole, non-surgical options, or to postpone the surgery if an ICU bed is unavailable.

Just before surgery, the patient is assessed again, with the latest health data – test results, feedback from patients

and families – added into the calculator tool. Applying their own experience and expertise, doctors can then adjust the risk score up or down. "The beauty of AI is that it can trawl through large amounts of data within a few seconds. No human can do that," said Assoc Prof Hairil.

Being able to accurately predict whether ICU will be required means better management of costly ICU resources. Patients who need ICU but were not assigned to one may experience suboptimal outcomes, while identifying those who do not need it frees up the resources for others.

Following the risk calculation for 30-day mortality and ICU needs, the team is using the same engine to develop estimates for other complications, such as heart attack, respiratory complications and kidney failure.

While many predictive ML models developed worldwide have demonstrated excellent accuracy, conclusive studies are still lacking on how their deployment in real-world healthcare systems actually improves patient outcomes or the value of clinical care provided, said Assoc Prof Hairil.

SGH, thus, will be conducting a randomised control trial on the Impact of Machine Learning-based Clinician Decision Support Algorithms in Perioperative Care (IMAGINATIVE Trial) on 9,000 patients to assess the impact of CARES-ML deployment on healthcare outcomes such as complication rates, mortality and ICU utilisation. The study is funded by the National Medical Research Council, and its findings are expected to be ready by 2026.

Associate Professor Hairil Rizal says that CARES-ML can do what no human can. "The beauty of AI is that it can trawl through large amounts of data within a few seconds."



"We have a 90 per cent certainty that the AI engine will be able to tell whether the patient needs ICU, a very important factor," says Assoc Prof Hairil.

Like a joey in a kangaroo pouch

SGH-designed tool for preterm babies helps them bounce to health more quickly.

by Sol E. Solomon

New parents are encouraged to practise kangaroo care – cuddling their newborn against their skin promotes the baby’s health and development, and increases the mother’s breast milk supply.

But when the baby is premature or a preemie, challenges arise. At between 23 and 28 weeks, preemies are tiny, with some weighing as little as 500g. As they are usually underdeveloped, they need critical care support with their breathing, circulation and nutrition, and are often connected to many tubes and monitors. When parents hold their tiny babies for an hour or so, which maternity wards at Singapore General Hospital (SGH) and KK Women’s and Children’s Hospital

recommend, many parents worry about dislodging the tubes, especially the breathing tube, which is often their lifeline.

“The attachments are secured to the parent’s arm or shoulder with a piece of surgical tape. Imagine sitting reclined, using a hand to support the baby – however light the baby is – for an hour while remaining still to avoid having the tapes supporting the ventilator tubings coming off the shoulder,” said Ms Lee Xiaoting, Senior Physiotherapist, SGH.

Thus, an idea emerged to develop a wearable device to help nervous parents practise kangaroo care as early as possible. Named Joey, the wearable is a baby seat that is secured to the parent with a silicon belt and positioned to let the baby lean

comfortably against the parent’s chest. A tube holder swivels over a base, keeping the breathing tubes secure while allowing the parent to move about easily.

Initiated and led by a former physiotherapy colleague, Ms Teh Wan Ying, the project involved a team of doctors, physiotherapists and nurses from the hospital’s Department of Neonatal and Developmental Medicine. The wearable was tested on hospital colleagues holding mannequin babies, and their comments helped the team to make improvements. Ms Lee has taken over as project leader, and is working towards testing the wearable on patients. The project was funded by the Allied Health Innovation Challenge 2021.

The environment in the Neonatal Intensive Care Unit (NICU) can stress preemies and affect their brain development. Early parental involvement helps to ameliorate the stress, leading neonatal staff to encourage parents to be involved in their baby’s care as early as possible.

Many studies have shown that kangaroo care is an effective way to meet babies’ needs – be they full term or premature – for warmth, stimulation, safety and love, said Ms Lee. “Infants who received regular kangaroo care showed a higher daily weight gain, and also had a shorter length of hospital stay,” she added.

With kangaroo care, mothers are significantly less stressed than when their babies receive conventional care. Breast milk production is also stimulated by skin-to-skin contact, with more milk expressed after holding their babies against their breasts during a kangaroo care session. “The earlier skin-to-skin contact is initiated, the greater the effect on breastfeeding,” said Ms Lee.

Fathers play an important role, too, in early infant care. “In Asian cultures, mothers usually stay at home for a month of confinement post-delivery recovery. Thus, fathers can provide early skin-to-skin contact for the newborn during their visit,” said Ms Lee.

••• The Joey holds the mannequin preemie safely against the chest of Dr Poon Woei Bing, allowing him to cuddle and read to it without worrying about dislodging the connecting respiratory and other tubes.

••• Ms Lee says studies have shown that preemies who received regular kangaroo care gained weight faster, while mothers too were significantly less stressed.

PHOTOS: VERNON WONG



New ward

Following renovations, Singapore General Hospital’s (SGH) new neonatal intensive care unit (NICU) is equipped with new features to not just promote babies’ development and well-being, but also to encourage closer parent-premature baby bonding.

While the rooms are separated by glass panels and glass doors for the care team to monitor the preemies closely at all times, curtains around each bed offer parents privacy when breastfeeding or practising skin-to-skin kangaroo care. The glass panels can also be turned opaque at the flip of a switch.

“The new NICU, which began accepting patients from 30 January 2023, is designed to facilitate infection control measures, breastfeeding, family-centred care and developmental care,” said Dr Poon Woei Bing, Senior Consultant and Head, Department of Neonatal and Developmental Medicine, SGH.

The ward has two rooms of four beds each and two single rooms to isolate patients during infection outbreaks. The glass walls can be configured for extra single beds should additional contact precautions be needed.

Almost all the beds in the ward benefit from natural lighting during the day, compared to the harsh fluorescent lighting in the old ward. Lighting intensity is adjustable, while focus lighting shines only on the bed during examinations and procedures, minimising disturbance to other babies in the room. Noise meters, meanwhile, help maintain a quiet and calm environment.

The ward has a family care room for counselling families and teaching caregiver skills, for families to stay overnight, or for spending private moments with very sick babies in the event of imminent death.



PHOTO: MARK LEE



It's not just a chair with wheels

For people who cannot get around on their own, using a wheelchair can offer them a sense of freedom and enhance their quality of life. However, it is important to know what questions to ask in order to discern the right model to get.

by Eveline Gan



When people have difficulties moving around on their own, a wheelchair can offer a sense of freedom and independence. But a wheelchair is not just a chair with wheels.

Wheelchairs come with many different features, and choosing the right wheelchair depends on each patient's needs and medical condition, said Ms Esther Tan, Occupational Therapist, Occupational Therapy Department, Singapore General Hospital (SGH). "When selecting a wheelchair, we must keep in mind that it should maximise or promote independence such that patients are comfortable, can get around and go about doing the everyday things that they need or want to do," said Ms Tan.

"Patients who have undergone surgery or who have hurt their lower limbs may not be allowed to weight-bear on their lower

limbs, meaning they can't stand or put their weight on their legs while they recover," said Ms Tan. Patients recovering from hip or knee surgery, for instance, may need a wheelchair for a few weeks, added Ms Tan, who works mostly with geriatric patients.

Meanwhile, older patients who have reduced mobility should consider using wheelchairs that ensure comfort for prolonged use. "In general, a wheelchair is a means of transport that should not be used for long hours of sitting unless the patient has permanent paralysis. More attention should then be paid to customising a wheelchair for optimal seating posture and pressure relief," said Ms Tan. For better sitting posture and support, patients should be transferred to chairs when they reach their destination.

Wheelchairs for general everyday use, like the ones available at hospitals and public places, may have bigger rear wheels with a

push rim. These allow the user — usually someone with good upper limb strength who also has a good sitting posture — to propel or move the chair himself. Those requiring someone to push — known as a pushchair — have smaller rear wheels and no push rim.

A more compact form of the pushchair, known as a transport chair, is more suited for indoor use, such as at airports.

For bigger patients who need wider seats, the sturdy heavy-duty or bariatric wheelchair has a reinforced frame and weighs more than 20kg.

Besides general-use aids, wheelchairs for specific needs are also available. A tilt-in-space wheelchair is recommended for patients with poor head, neck or trunk control, severe stroke or spinal cord injury. With a seat that can be tilted backwards at an



“In general, a wheelchair is a means of transport that should not be used for long hours of sitting unless the patient has permanent paralysis,” says Ms Esther Tan.



PHOTOS: VERNON WONG

●●● Wheelchairs come with many different features, and choosing the right wheelchair depends on each patient's needs and medical condition, says Ms Esther Tan.

angle, this mobility aid can prevent the user from sliding in the seat and also reduce the risk of pressure injury from prolonged sitting.

Another is the reclining wheelchair, which comes with an adjustable backrest that allows the user to go from a sitting to a lying-down position and is suitable for patients who experience sudden drops in blood pressure or are unable to sit upright for prolonged periods.

People with disabilities who are long-term wheelchair users and who want to continue leading an active lifestyle can consider a sports wheelchair. These are customised to the user's body size and activity needs, and allow participation in sports such as basketball and table tennis while maintaining stability and agility.

Sports wheelchairs are compact, can be manoeuvred easily, and favour users who have a good sitting posture and upper limb strength. While these users may lead an active and sporty lifestyle, they still need to undergo assessment and training to ensure that they are able to manage the sports wheelchair safely.

Users who want independence, especially when traversing longer distances, but do not have sufficient upper body strength or endurance to propel a manual wheelchair, can consider a motorised wheelchair or scooter. They should have good eyesight and cognitive ability to use them safely.

Besides considering the user's condition and needs, thinking about the activities that he does and the environment that he normally operates in will have a bearing on the size of the wheelchair. Does he visit the hawker centre to buy his meals every day? On the way, will he have to navigate through tight spaces, kerbs or undulating pavements?

Another area of consideration is the needs of the carer. Does the carer, usually a helper, need to bring the wheelchair into and out of the car boot regularly? "We need to look at the weight of the device — will the carer be able to pick it up and put it into the car boot safely? A basic wheelchair can weigh 13kg or more," Ms Tan said.

IN 2020
50,000
IN 2000
25,500

The number of residents aged 65 and above with mobility issues in 2000 and 2020. As the population ages, more people will require assistive mobility devices.

Attendant-controlled motorised wheelchairs can be controlled by the caregiver using a remote control or joystick, and may be helpful in situations where the patient cannot self-drive or the caregiver is physically unable to push the wheelchair.

For the user's comfort, especially when sitting in a wheelchair for long periods, which can lead to pressure injury or pain, a foam, gel or air seat cushion can help to better distribute body pressure.

Patients or caregivers who need help selecting a suitable wheelchair or require training on wheelchair use can ask their doctors for a referral to see an occupational therapist.

Wheelchair parts and their importance

Armrest

- Fixed armrests are sturdier
- Removable or foldable armrests make for easy, unobstructed transfers for patients who require help during transfers

Brake

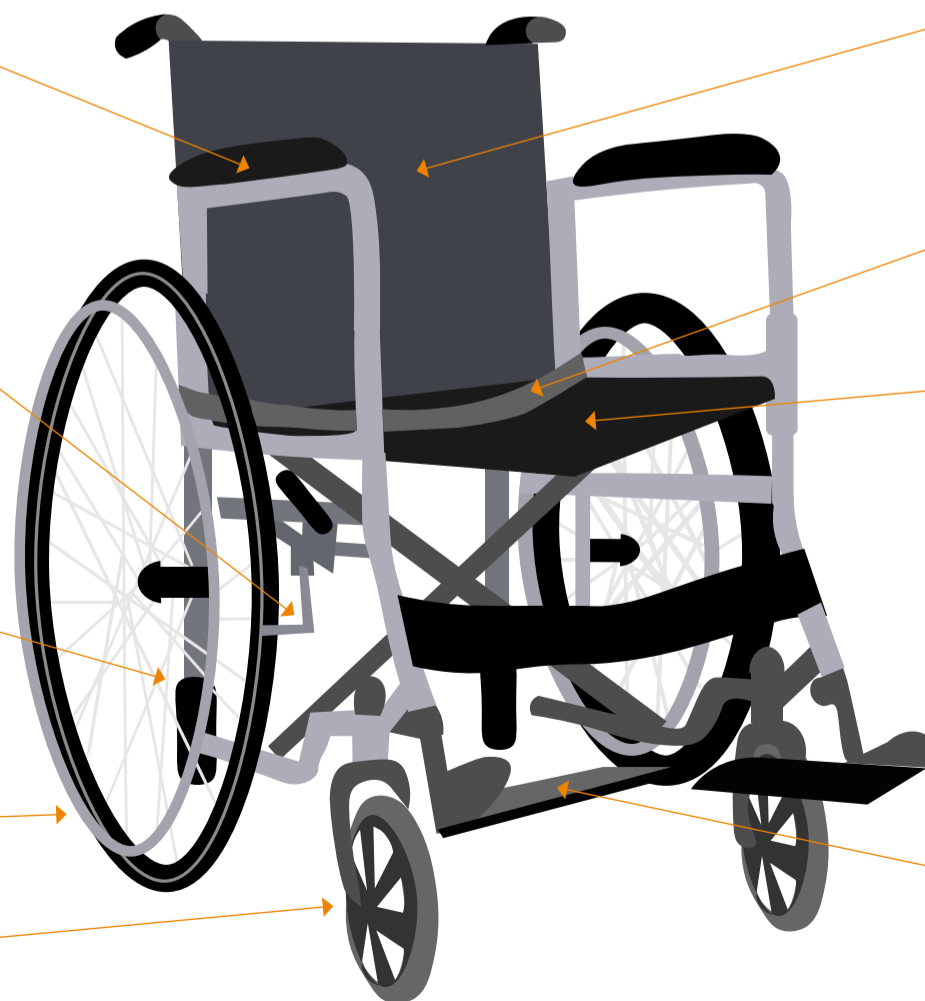
- The wheelchair's locking mechanism should operate smoothly with no loose bolts or rivets
- Lock all brakes before getting in and out of a wheelchair to prevent falls

Anti-tippers

- These safety features prevent the wheelchair from tipping backwards when travelling on slopes and over small kerbs

Rear wheels and castor wheels

- Larger rear wheels make it easier to push over uneven ground and up small kerbs
- Larger castor wheels are less likely to get trapped in MRT platform gaps or drain grills



Backrest

- Higher backrest supports users with difficulty sitting upright
- Height should allow the arms of users who propel themselves to move freely

Seat Belt

- Prevents the user from sliding or falling out of wheelchair

Seat

- Keep two-three finger space allowance on each side of the seat to allow arms to rest comfortably on the armrests
- Keep a two-finger width between the back of knees and the front edge of the seat to prevent abrasion
- Thighs should be parallel to the ground; the height of the footplate can be adjusted to achieve this

Footrest

- Feet should be fully supported on the footrests
- Allow for one-two inch clearance from ground

It is important, says Ms Vijeyaletchimi Nadasan, for sonographers to be able to calm their patients to take good-quality ultrasound images.

PHOTOS: VERNON WONG



One good egg is enough

It is not all about pictures in the ultrasound room. For sonographer Vijeyaletchimi Nadasan, an important aspect of her job is to assure anxious women struggling to conceive.

by Vicki Yang

She counts eggs. Women's eggs, that is.

It is what Ms Vijeyaletchimi Nadasan does every day as a specialist sonographer at Singapore General Hospital's (SGH) Centre for Assisted Reproduction (CARE), a one-stop fertility centre under the Department of Obstetrics and Gynaecology.

"My job is to check the number of eggs that the ovaries can produce and that can be retrieved later for in-vitro fertilisation (IVF)," said the Senior Principal Sonographer. "I trace, count and measure every single follicle that is going to mature and ovulate, starting from the second day of a patient's menstruation cycle. We track the progress of these follicles until it is time for ovulation."

Follicles contain eggs with the potential to mature. When one reaches around 18 millimetres, it is ready and must be retrieved within the short window of time available for fertilisation. Scanning a follicle takes 5–10 minutes, or 20–30 minutes for multiple follicles.

IVF sonographers at SGH and sister institution, KK Women's and Children's Hospital, journey with couples through the many stages of a pregnancy, from the check-ups and diagnoses for fertility issues to follicle tracking and pregnancy. When undergoing their ultrasound scans, patients may become anxious, which can affect the quality of the ultrasound images taken. It is important for sonographers to be able to calm their patients.

To get them to relax, Ms Vijeyaletchimi often tells them about a patient who was found to have only one good egg. The patient managed to have that single egg retrieved, fertilised and implanted. She became pregnant and delivered a healthy baby. "I always tell my patients: you don't need too many eggs. You just need one good egg to get

pregnant. Look forward to that," said Ms Vijeyaletchimi.

How sonographers communicate with their patients is also crucial. "We must listen to our patients actively and carefully. Choosing the right words, understanding their state of mind," she said.

It is a different ball game when scanning the foetus to track its growth, health and other developmental milestones. Unlike an adult who keeps still when asked, the foetus is constantly moving, making it difficult to scan different parts of its body. One solution is to have the mother go for a walk before resuming the procedure, when the foetus has changed its position, and a different part of the body can be scanned.

Not only do the scans assure parents of a foetus' healthy development, seeing the baby's heartbeat, movements and features helps create a stronger bond and connection between parents and child. "Some of them have had multiple miscarriages and are anxious when they come in, so I try to get the best images of the baby's features to show them," said Ms Vijeyaletchimi.

A keen science student in school, Ms Vijeyaletchimi settled on radiography after her sister, then a nursing officer at SGH, told her of available positions at the hospital. In the 1980s, radiography was considered unconventional, in part because of concerns over potential radiation and its effects. Ms Vijeyaletchimi was undeterred. She has since been trained in various aspects of radiography, including x-ray, CT (computed tomography) and MRI (magnetic resonance imaging). She chose to specialise in sonography, finding it so fascinating that when an advanced diploma course was introduced, she took up night classes while pregnant with her third child.

When she left for a period to work in a private hospital, she performed ultrasound



I always tell my patients: you don't need too many eggs. You just need one good egg to get pregnant. Look forward to that.

Ms Vijeyaletchimi Nadasan
Senior Principal Sonographer,
Centre for Assisted Reproduction
(CARE), Singapore General
Hospital

scans on various areas of the body, including breast, testes, prostate and thyroid. Returning to SGH in 2010, she focused on ultrasound for obstetrics and gynaecology patients. Today, she performs an average of 16 scans daily, including IVF-related as well as foetal abnormalities and fallopian tube blockages.

Having witnessed the beginning of life multiple times, Ms Vijeyaletchimi cherishes her recently acquired role as grandmother. Weekends are spent with her 15-month-old grandchild at the library, pool and parks. In her free time, she practises yoga once a week and enjoys the company of her Maltese-Poodle mix, Robin.

Aesthetics is important too

Renal medicine specialist, Dr Tan Ruyu, strives for a fuller understanding of patients' condition and situation to treat them holistically.

by Candice Cai

Aesthetics is not something that comes to mind when thinking about treatments for renal failure. But for Singapore General Hospital (SGH) renal medicine specialist, Dr Tan Ruyu, the practice of medicine must be holistic in that she wants a fuller understanding of a patient's condition. As a specialist whose work largely revolves around creating a fistula — a life-saving artery-vein connection to allow for dialysis — Dr Tan does not want to just perform the procedure without having an idea of the patient's overall medical condition.

For that reason, it is not enough to just think about better and more effective methods of dialysis and treatments for renal failure patients. She wants to also address other issues that her patients face while undergoing dialysis regularly. One of this is the embarrassment that some patients feel about their stigmata or protruding scars that form from having a fistula created under the skin of their arm.



Most are happy with endoAVF because — with no scar, no lump, no bump — it looks quite good cosmetically.

Dr Tan Ruyu

Senior Consultant, Department of Renal Medicine, Singapore General Hospital



Creating a fistula — a life-saving artery-vein connection to allow for dialysis — forms a large part of Dr Tan Ruyu's work.

"That's why some patients wear long sleeves all the time; they do not want people to know that they have a fistula or that they're on dialysis," said Dr Tan, Senior Consultant, Department of Renal Medicine, SGH. "We make sure that emotionally they are okay, and that their vascular access is working, instead of just saying that the vascular access is not a renal issue, go see the (vascular surgeon who created the access)."

She is proud of a project that she participated in — together with colleagues from the vascular surgery, and interventional and vascular radiology departments — to create an endovascular arteriovenous fistula (endoAVF), which leaves no scars. More importantly, it is far less likely to lead to narrowing of the blood vessels and blockage. In traditional fistulas, patients need to undergo angioplasty (ballooning) frequently to unblock the veins to their fistulas, or even to create a new fistula. Feedback from patients has been positive. "Most are happy with endoAVF because — with no scar, no lump, no bump — it looks quite good cosmetically," she said.

Not all dialysis patients are eligible for the endoAVF procedure, so creating fistulas by traditional methods is work that she finds meaningful. In this regard, Dr Tan is passionate too about research into the subject. One study involves using sirolimus-coated angioplasty balloons to help avoid the narrowing of blood vessels. Another project is a collaboration with the National Kidney Foundation (NKF) to train their community nurses to unblock their veins at NKF instead of having patients admitted to hospital renal

wards for the procedure. "Doing research is an important part of our work because only through research are we able to discover new innovations, services or devices to help improve disease outcomes or patients' lives," she said.

Receiving a New Investigator Grant from the National Medical Research Council in 2021 to perform a randomised control trial studying the efficacy of the sirolimus-coated balloon, for one, was an important achievement for Dr Tan. She described the grant as notoriously difficult to receive. More significantly, receiving it is a recognition of the importance of the work for patients as well as her standing as a researcher. Independent research, she said, reflects medical professionals' pursuit of evidence-based medicine. "It is up to people like us to try to find an answer to the efficacy of certain drugs, devices and procedures," she said.

As a senior consultant, Dr Tan teaches younger colleagues and participates in biennial courses for general practitioners (GPs) and public forums, organised as part of celebrations for her department's 50th anniversary in 2023. Dr Tan is quite unapologetic that her life revolves around her work in interventional nephrology, leaving little time or interest for anything else except watching the occasional film in cinemas or one of the streaming platforms. "If I perform a procedure successfully, I'm usually very happy," she said, adding that she finds performing procedures an exciting challenge. Indeed, her work gives her a deep sense of fulfilment, she said.

Busting mammograms myths

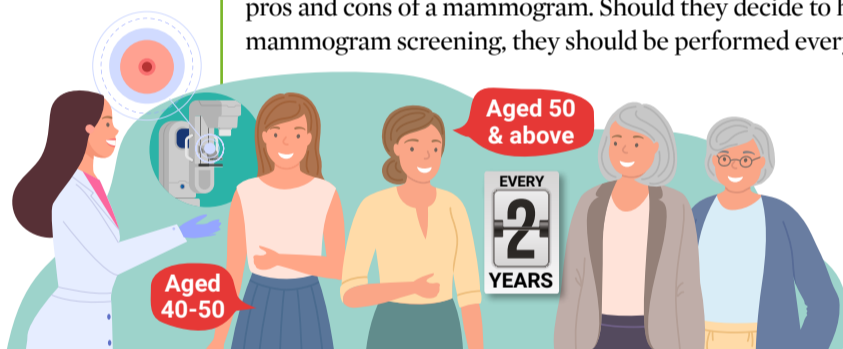
With breast cancer being the most common cancer among women in Singapore, mammogram screening is essential to keep one's health in check.

by Dr Lim Sue Zann, Consultant,
SingHealth Duke-NUS Breast Centre

More than 2,000 women in Singapore are diagnosed with breast cancer each year. Therefore, regular screening is important. Early detection of the cancer often leads to a better chance of survival.

Myth:
Women do not need to go for mammogram screening often

Fact:
For women aged 50 and above, it is recommended that they have a screening mammogram every two years. Intervals between screenings are longer because women aged 50 and above have breasts that are usually more fatty and thus less likely to obscure cancer on a mammogram. For women aged 40–49, they are advised to discuss with their doctor about the pros and cons of a mammogram. Should they decide to have a mammogram screening, they should be performed every year.



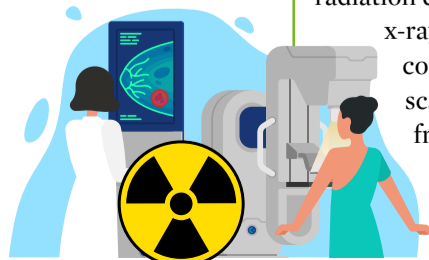
Myth:
Mammograms are painful, invasive and inconvenient



Fact:
A mammogram is an x-ray of the breast; it is performed on one breast at a time. During the procedure, the breast is placed between two plates, compression will be applied for just a few seconds and an x-ray image will be captured. Adequate compression is required to avoid errors. Firm compression may cause mild discomfort during the procedure but will not result in permanent injury.

Myth:
Mammograms expose women to large amounts of radiation and risks

Fact:
Mammography equipment produces high-quality images with low doses of radiation. The radiation dose from a conventional two-dimensional mammogram is equivalent to the dose of radiation that we receive just over seven weeks from the natural surroundings. It is higher than the radiation dose received from a chest x-ray but lower compared to a computed tomography (CT) scan. The radiation received from a routine mammogram screening will not put one at a higher risk of developing breast cancer.



Advanced surgical techniques for patients

In the event of breast cancer detection, discuss with your healthcare team about the type and stage of breast cancer, treatment options (see below) and side effects.

Conventionally, if a woman has been diagnosed with advanced breast cancer that has spread to the lymph nodes in the armpit, she would need surgery to remove the breast cancer as well as a complete removal of the lymph nodes in the armpit. This can lead to complications such as lymphedema, a swelling of the arm resulting from lymphatic fluid build-up caused by damage to the lymphatic system.

Reduced invasiveness and cost of lymph node surgery

KK Women's and Children's Hospital (KKH) has a technique, Skin Mark clipped Axillary nodes Removal Technique (SMART), for women with advanced breast cancer.

A/Prof Lim Geok Hoon, Head and Senior Consultant, KK Breast Department, KKH, shares that it is effective in removing superficial identified lymph nodes in the armpit of patients with advanced breast cancer after chemotherapy. This avoids the cost and complications associated with other techniques involving localisation devices that are used to aid the removal of the clipped lymph node during surgery for testing of cancerous cells.

SMART involves inserting a clip measuring a few millimetres into a woman's lymph node in the armpit to mark the cancerous lymph node so that it can still be identified after chemotherapy. Then, before surgery, a radiologist places a marking 'X' on the skin above the site of the clipped node, thereby eliminating the need for a localisation device. The breast surgeon will then remove the marked lymph node during the surgery, based on the marking made by the radiologist. The identified lymph nodes will be examined by a pathologist to check for any remnant cancerous cells. If there are no remaining cancerous cells, the patient will not require total removal of the lymph nodes in the armpit.

This technique is suitable for women with superficial lymph nodes, and not suitable for women with deeper affected lymph nodes.

Targeted axillary dissection (following neoadjuvant chemotherapy) is also offered at Changi General Hospital (CGH), Sengkang General Hospital (SKH) and Singapore General Hospital (SGH), and National Cancer Centre Singapore, via skin marking, wire, radar and magnetic seed localisation techniques.

Aesthetic and functional preservation for breast cancer patients

CGH, SKH and SGH's breast and plastic surgery offer minimally invasive skin and nipple-sparing full breast removal (mastectomy) with reconstruction for suitable breast cancer patients. This minimally invasive approach allows for smaller, less conspicuous incisions, and close-to-ideal breast restoration.

Surgeons can make incisions as small as four centimetres in discreet locations such as the underarm or bra line. Conventional nipple-sparing mastectomy usually involves scars on the breast, nipple and areola region, or lengthy scars along the bra line or lateral breast. In addition to the aesthetic benefit, smaller 'off-the-breast' incisions also result in less pain, minimal operative scarring and decreased nipple, skin and wound complications.

"With over 70 per cent of cancers being diagnosed at an early stage and significant improvement in survival, breast specialists today prioritise not just treating the cancer, but also aesthetics, quality of life and long-term function to preserve patients' body image and sexual identity. The greatest value of the minimally invasive breast surgery (MIBS) approach is the principle of 'aesthetically scarless' breast surgery, where incisions and scars are minimised or hidden yet the procedure remains within the range of oncologic safety," said Assistant Professor Sabrina Ngaserin Ng, Head and Consultant, Breast Service, SKH.

On top of more commonly utilised reconstruction options associated with MIBS, SKH also performs immediate abdominal free flap reconstruction, which is muscle-sparing and function-preserving for a patient's abdominal core musculature.

Assistant Professor Mok Chi Wei, Consultant, Division of Breast Surgery, CGH, echoed Asst Prof Ng's opinion and added, "With more institutions offering MIBS to their patients, suitable patients have an alternative that offers aesthetic outcomes and patient satisfaction while remaining oncologically safe. In addition, with the conclusion of the first robotic mastectomy trial in Singapore by CGH in September 2023, we are optimistic that robotic mastectomy would be a great addition to the range of MIBS options available as the trial demonstrated safety and feasibility with improved patient satisfaction."

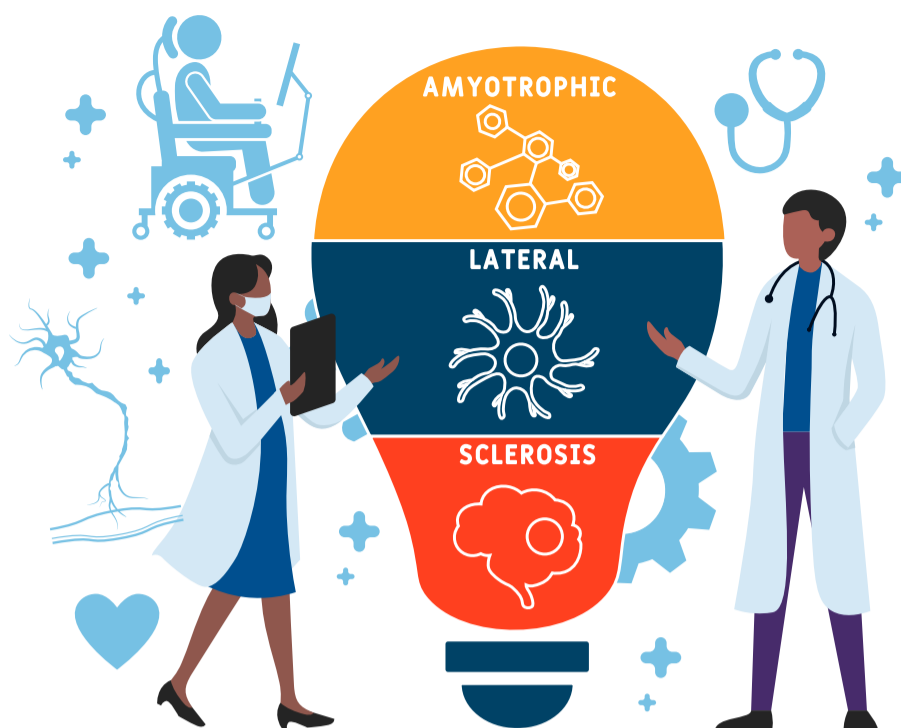


Adapted from North East Community Development Council's video on myths about mammogram. Scan the QR code to see the video.

Navigating the challenging realities of ALS

While coping with the neurodegenerative disease ALS can be an arduous journey, supporting patients to retain a sense of control and independence in its early stages is vital to an enhanced quality of life.

by Vicki Yang



Mr Philip Yap was having trouble adjusting screws. The engineer in the semiconductor industry found his fingers fumbling with the everyday tools of his day job.

It was not the only sign that something was amiss. His speech had also begun to slow. He brought his worries to a check-up at the hospital, where he underwent physical examinations, assessments of symptoms, and electrodiagnostic studies to measure the damage to his muscles and nerves. The signs pointed towards a diagnosis of amyotrophic lateral sclerosis (ALS), more commonly known as Lou Gehrig's Disease in the United States.

ALS falls under the category of Motor Neuron Disease (MND), a group of neurological conditions that affect the neurons, or nerves, responsible for movement. In ALS, the degeneration of these motor neurons leads to progressive muscle weakness, stiffness in limbs and difficulties with chewing, swallowing and breathing, culminating in death.

According to Associate Professor Josiah Chai, Head and Senior Consultant, Department of Neurology, National Neuroscience Institute (NNI) at Tan Tock Seng Hospital, most patients likely have a genetic predisposition to ALS, although genetics cannot fully account for the occurrence of this condition. Other factors, including unknown environmental ones, may also play a part. While genetic tests for ALS are available, they are usually offered to younger patients (under 50 years old) or those who have a family history of the condition.

"There is much more that needs to be understood about ALS," said Assoc Prof Chai, who explained that there are two types of ALS. The first type runs in families and is caused by "a single faulty gene" typically found in younger patients. The second type is unrelated to familial medical histories and is thought to strike at random, commonly occurring in people aged 50 years and older.

Currently, around 250–300 people are living with ALS in Singapore, with 30–40 cases diagnosed at NNI each year. Due to the ageing population, this number is expected to rise over the next few decades.

"ALS is now believed to be a multi-step disease, similar to cancer," said Assoc Prof Chai, who also serves as a member of the advisory panel at the Motor Neurone Disease Association Singapore. But unlike cancer, for which treatments could lead to remission, there is no cure for ALS. Medications merely slow its progression, leaving the average life expectancy to between three and five years, although approximately 10 per cent of patients survive beyond that. Famously, the late influential theoretical physicist Professor Stephen Hawking lived with ALS for 55 years.

While there are drugs that address ALS, the mainstay of treatment is supportive care and regular monitoring at a specialist ALS clinic to prevent problems before they occur. This multidisciplinary approach involves the collaborative input of community and specialist teams of doctors, nurses, dietician, physiotherapists, occupational therapists, speech therapists, medical social workers and respiratory therapists to best manage the unique needs of each patient. In the advanced stages, some patients may opt for mechanical ventilation to support their breathing, while others may choose palliative care.

"This is often a challenging diagnosis," Assoc Prof Chai said. "One common question is, 'How long do I have to live?'" Patients and their caregivers can experience anxiety and depression over the uncertainty of the future and quality of life. This makes it crucial to help patients maintain their function and independence as much as possible, especially in the early stages. "Exploring their goals and advance care planning can ensure that a patient's values and care preferences are respected throughout their illness and when they pass on," said Assoc Prof Chai, who added that patients who adapt to live with their condition, receive robust social support and maintain a positive outlook typically experience better outcomes.

Mr Yap's journey as an ALS patient reflects this sentiment. "I am thankful to be living in the 21st century, where I can manage my life through online shopping, banking and connecting with friends and family through technology," he said. To cope with the condition, he has also implemented smart home systems to maintain a degree of independence in daily living. Currently in the eighth year of his diagnosis, Mr Yap offered a message of hope to fellow ALS patients: "Like mine, your life may have worsened significantly, but please don't give up. Live your life to the fullest, even with ALS. Our stories are testament to the human spirit and how determination and resilience can overcome even the most challenging circumstances."

...
"ALS patients and their caregivers can experience anxiety and depression over the uncertainty of the future and quality of life," says Associate Professor Josiah Chai, Head and Senior Consultant, Department of Neurology, National Neuroscience Institute (NNI) at Tan Tock Seng Hospital



...
ALS patient Mr Philip Yap (right most, with his family) has been living with this condition for more than seven years already. "Our stories are testament to the human spirit and how determination and resilience can overcome even the most challenging circumstances," he says.

Building memories before letting go

Helping end-of-life patients and their families come to terms with extreme grief through legacy therapy.

by Thava Rani

When the life of a loved one is ebbing away, the first instinct is to try and hold on to that life for as long as possible.

For the young wife and small child of a patient – in a coma at the intensive care unit (ICU) following a horrific road accident – suddenly seeing him and knowing they had just hours before having to let him go was unimaginably hard to bear. Their medical team proposed bringing in Singapore General Hospital's (SGH) Art Therapy and Music Therapy Unit, which helps families cope with sudden grief through legacy projects.

Legacy work, part of end-of-life care, involves leaving something behind for loved ones to remember the patient by. "The act of creating or doing something with the intention of remembering may benefit both the patient and loved ones in a variety of ways. Legacy work may come in the form of a transitional object to provide comfort to loved ones as they process the grief of letting go. As a music therapist, our legacy projects tend to be auditory-based ones," said Ms Stephanie Chan, a Music Therapist with the unit. Her Art Therapist colleague in the unit, Ms Phylaine Toh, added: "It's a gentle method of encouraging a sense of closure, as well as a safe method of expressing grief and frustration with the loss."

Once patients and loved ones give their consent to start the legacy project, they decide on their preferred medium – handprints, paintings, music heartbeat recordings, songwriting or curating a playlist. Depending on what they decide,

PHOTOS: VERNON WONG



•••

Ms Stephanie Chan modified a stethoscope to help her record patients' heartbeats, while paintings help patients express their grief, anxiety and other emotions, says Ms Phylaine Toh.

the music or art therapist will facilitate the creative process and engage them in conversations about the significant moments in their lives.

A cancer patient dedicated a video of herself playing the ukulele to her family. "Watching the video after the patient's death prompted her family to reminisce about her. It brought back fond memories for them and comforted them in their moments of grief," said Ms Chan.

A daughter who felt extremely distressed with her mother's poor prognosis had the idea to create a bracelet of prayer beads. "The process of making the beads and putting them on her mother gave her a sense of control over her mother's diagnosis," said Ms Toh. The comfort the daughter felt when her mother lived beyond her prognosis also helped her cope with depression and suicidal tendencies.

A family who wanted their handprints with the patient's centred their discussions on the colour to be used and where the handprints should be placed. Having the patient's handprint in the middle, surrounded by the wife's and children's, signified the father's central role in the family and their continued support for him.

When families want to record and add the heartbeat of a dying loved one to music significant to them, Ms Chan had to modify a stethoscope to be able to capture the heartbeats, which are then edited and mixed on a computer. For one family, "having that recording was a way for them to remember that dad's heartbeat continues to live on in their lives", said Ms Chan.

Even the sterile and cold atmosphere of a hospital – particularly an ICU room – can be made a safe space for the family. Closing the door and drawing the curtains can offer a therapeutic and safe respite for the family and patient to be as emotional as they needed to be to explore and reflect on the end-of-life transition, said Ms Toh. "It may be challenging to process grief. We hope that, by listening to the music heartbeat recording or looking at the artwork created, it will bring the family some comfort," said Ms Chan.

The process is cathartic and helps lead the family towards some sort of closure and acceptance, said Ms Toh. When the family who created the handprint artwork was asked where they intended to place it, the family's reply of "the living room, where the patient used to spend a lot of time" was an indication that the family had begun to accept his demise and was moving forward in processing their grief.

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Why is it important to use alcohol-based hand rub to prevent infections?

Alcohol in the hand rub remains the main active ingredient to eliminate the microorganisms. Besides its rapid killing action, the fast-drying time is also a main plus when it comes to hand sanitizing. Many non-alcohol hand rubs contain water, they dry more slowly on the hands. Without alcohol as the main antimicrobial agent, alcohol-free hand rub will need other active(s) as a substitute. Most substitutes (e.g., chlorhexidine, benzalkonium chloride etc.) are antimicrobial but with a much slower efficacy compared to alcohol. Alcohol-based hand rubs remain the much-preferred option for the majority in COVID-19 unless the user is allergic to alcohol, which is very rare. For this cohort maybe the best option is to wash their hands with a gentle soap to maintain hand hygiene.

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

The formulation of ABHR is considered critical as both antimicrobial agents and other critical components (e.g., moisturiser) must work in tandem without compromising the chemistry within. ABHR from schülke have undergone a series of stringent tests to make sure the final product is performing as what it should be doing - to eliminate microbes on the hands. An important advantage is that they are formulated with skin caring ingredients (and dermatologically tested) to protect and care for the hands when used at high frequency, especially in this pandemic period.

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Tech gadgets can be a pain in the neck

Q I've had pain in the back of my neck and sometimes shoulders periodically for some time. To relieve the pain, I usually rub some muscle pain ointment. But recently, the pain has been persistent and the ointment doesn't seem to help. Friends say I may have tech neck. What is tech neck and what can I do about it?

A Tech neck is a term used to describe the strain and injury to the neck from the prolonged use of smartphones, tablets, computers and other tech devices. The neck muscle becomes strained when we look down at our phones, for instance. The muscle contracts to hold up the neck, and the lower we hang our head, the more our muscle needs to work to hold up our head. As a result, the neck muscle becomes tired and sore.

The muscles and ligaments in the neck become inflamed in the early stages of injury, with the person experiencing aches in the neck, shoulders and upper back. He may also feel sharp pain in the neck and experience headaches.

If nothing is done and the condition worsens, the person can experience nerve compression-related symptoms such as pain that radiates down the upper arm, forearm and hand, as well as numbness in those places. So seek medical attention if the pain persists for three to four weeks, intensifies or becomes more frequent.

Having a good posture and learning to identify muscle stress are important in avoiding tech neck. Those who use the computer for work should use a chair with good back support that also allows the elbows to rest at an angle between 70 and 90 degrees. They should also take a break from sitting or looking down at their phone every 30 minutes and do some stretches and exercises.

...
Dr Lim Yee Gen, Consultant, Department of Orthopaedic Surgery, Singapore General Hospital

Nosebleed due to past injury?

Q My son is nine years old. When he was 15 months old, he had a fall and landed on his face, resulting in some light nosebleed. In the last two weeks, he experienced episodes of nosebleed after sneezing. Should I send him for a doctor's examination?

A It is understandable that you link these episodes to your son's previous injury. If the time between this injury and recurrence of nosebleed is very long — several years in this case — the nose bleeding may be unrelated to the fall experienced as a toddler.

Most nosebleeds in children will resolve with self-care measures — sit up, lean forward and pinch the lower soft portion of the nostrils for five to 10 minutes while breathing through the mouth.

You should seek emergency medical care if your child's nosebleed:

- Involves massive bleeding or makes breathing difficult
- Causes your child to become pale, fatigued and disoriented
- Will not stop even with the self-care measures outlined above
- Occurs after an injury, such as after being hit on the face or nose
- Will not stop and your child has other areas of bleeding or multiple bruises over his body

If your child has more than five episodes of nosebleed in a month, I suggest you seek review with a paediatric ear, nose and throat specialist. Visit your nearest polyclinic to obtain a referral.

...
Dr Ronald Tan, Consultant, Department of Emergency Medicine, KK Women's and Children's Hospital





... that on 22 August this year, we held our first-ever SingHealth Nursing Care Support Staff Day?

Our nursing care support staff are a diverse and integral part of our patient care team. From healthcare assistants, dental surgery assistants and patient care assistants to patient experience associates, patient service assistants and operating theatre technicians — all of them do their part to keep patients at the heart of all we do.

Our nursing care support staff also bridge communication gaps with elderly patients who only speak dialects, and ensure medical equipment and instruments are safe for use. These warm gestures create an atmosphere of comfort and healing that is essential to the well-being of our patients.



... that Singapore General Hospital (SGH) has a Green Corridor? Located at the side entrance of SGH Block 4 leading to the MRT station, the Green Corridor has recycling bins not just for the usual plastic and paper items, but also for metal and electronics items, and even for clothes and shoes! Visitors to SGH are welcome to pick up pre-loved books, small household items and other knick-knacks left there. This Corridor serves not just as a recycling but also as an upcycling area for reusable items.

The Green Corridor, launched earlier in May this year, is part of SingHealth's commitment to sustainability and SGH's aim to be the first net-zero carbon emission healthcare campus in Asia.

While staff continually offer ideas on sustainable practices, SGH has already adopted some, including repurposing the hospital's old curtains for use as laundry bags at its sister institution, Outram Community Hospital, and practising worm composting, or vermicomposting, which converts food waste into fertiliser for plants and trees on SGH Campus.

SGH Bicentennial Garden and other green spaces have also become part of the hospital infrastructure. The Garden is an oasis of calm and relaxation for patients, staff and visitors alike, with its explosion of colours and scents from flowering plants and tropical herbs like pandan and lemongrass.



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SingHealth Investigational Medicine Unit



SingHealth Investigational Medicine Unit (IMU) is a dedicated early phase clinical research unit. Located at Singapore General Hospital, it has modern facilities to conduct clinical trials. Novel treatments, which may offer new hope to patients, are discovered through research. These medical advances are only possible with the help and participation of healthy volunteers like YOU!



Contact us at 6323 7543 / 6323 7544 or imu@singhealth.com.sg or scan this QR code to register as a healthy volunteer with us

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- > Dissolves mucus
- > Relaxes airways
- > Relieves cough

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For infants and young children, please consult doctor.*

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† IQVIA, Global Market Insights, Category 'RSC (Expectorants)', MAI 12/2019 (units)



Break free from Joint Pain

Viartril-S®
GLUCOSAMINE SULPHATE
the original



Viartril-S®
Crystalline Glucosamine Sulphate

- Superior outcome on pain relief.¹
- Superior outcome on functional impairment.²
- Reduces the risk of total knee replacement.³
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