

A TEST OF OUR TIME

Annual Report 2020/2021





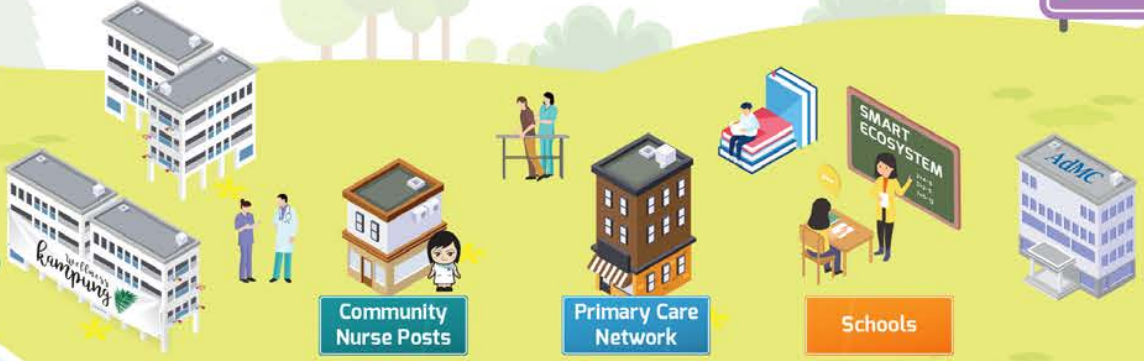
Determinants of Health



Sanitation • Education • Food • Housing • Water • Employment

RIVER SYSTEM

BETTER CARE



Living Well

People Renewal

Organisation

Living with Illness



Patient Value Compass



SOSI

BETTER PEOPLE



Energy for Performance



Toyota Production System



Financial Security



Innovation & Tech



Green & Sustainability

Knowledge & Learning



OF LIND

M EXCELLENCE

Determinants of Outcomes



Better • Faster • Cheaper • Safer



Acute Service Lines
Elective Service Lines
Complex Care Clinics

Triple
AIM

Polyclinics

Elder Care
Centres

PERSON-CENTRIC CARE MODEL



CARE PHILOSOPHY

Care that is good enough for our own mothers without making special arrangements

QUALITY, AFFORDABLE & HASSLE-FREE HEALTHCARE WITH SCIENCE, LOVE & WISDOM

Crisis & Complex Care

Living with Frailty

Leaving Well

Integrity

Compassion

Stewardship

Leadership & Relationship

SYSTEM HEALTH



A TEST OF OUR TIME

The COVID-19 outbreak has been one of our biggest healthcare crises to date. Truly a test of our time, it has confronted us on every front. But Yishun Health has met every challenge thrown up by the pandemic with resilience, and held our ground to keep our communities safe. In these pages, we have captured the numerous ways in which we have adapted through the deployment of technology and furthering our culture of process innovation to drive care and safety within our campus and bolster community health resilience.

ABOUT US

Yishun Health is a network of medical institutions and health facilities in the north of Singapore, under the National Healthcare Group. It comprises Admiralty Medical Centre, Khoo Teck Puat Hospital and Yishun Community Hospital. It also includes community extensions such as Wellness Kampung.

EDITORS

Hannah Wong
Sabrina Ng
Sharon Ng
Albert Foo

CONTRIBUTORS

Various
departments
across
Yishun Health



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aha@ktph.com.sg

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RISING UP
TO THE
CHALLENGES
OF THE
PAST YEAR

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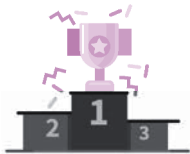
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MISSION

Provide good quality,
affordable and hassle-free
healthcare with science,
love and wisdom

CARE PHILOSOPHY

Care that is good enough
for our own mothers
without making special
arrangements

VISION

Adding years of
healthy life

The National Healthcare Group (NHG) is a leader in public healthcare in Singapore, recognised at home and abroad for the quality of its medical expertise and facilities. Care is provided through an integrated network of six primary care polyclinics, acute care and tertiary hospitals, national specialty centres and business divisions. Together, they bring a rich legacy of medical expertise to our philosophy of integrated patient-centred care.

NHG's vision is 'Adding Years of Healthy Life'. This vision goes beyond merely healing the sick to the more difficult and infinitely more rewarding task of preventing illness and preserving health and quality of life. With some 18,000 staff, NHG aims to provide care that is patient-centric, accessible, seamless, comprehensive, appropriate and cost-effective.

As the Regional Health System for Central Singapore, it is vital for NHG to partner and collaborate with stakeholders, community advisors, and voluntary welfare organisations. Together with our patients, their families and caregivers, we aim to deliver integrated healthcare services and programmes that help in Adding Years of Healthy Life to all concerned.

A MESSAGE FROM THE GROUP CEO, NHG

The ongoing global pandemic has reshaped our world, and the healthcare landscape in particular has had to adapt even faster than it has before. Across the NHG family, extensive efforts were taken to respond to the crisis.

To manage the ever-changing situation, our staff worked relentlessly to raise hospital capacity, limit disruptions to care, keep patients and families safe, look out for each other, and extend help to the community. It has been a massive undertaking – a long, ongoing battle of over 20 months. And it is thanks to the swiftness, dedication and tenacity of our staff that we have achieved good overall outcomes. The work done has put Singapore in a good position to transition into the new normal of living with COVID-19 as an endemic disease.

Over the last year, as we adapted to keep pace with the pandemic, our NHG ethos of evolution and improvement has helped us refine and enhance our approach to healthcare to better meet the needs of our nation.

In recent years, we have made strides in enhancing the delivery of care, moving from episodic illness care to the holistic management of health across all its dimensions. Guided by our River of Life (ROL) framework, we have advocated health optimisation across all stages of life, with a focus on proactive and preventive care.

In line with this, NHG has made several changes in our key leadership structure, reorganising and aligning our population health efforts and clinical care delivery into the Accountable Care Organisation (ACO) anchored by three Integrated Care Organisations (ICO): Central Health, Yishun Health, and Woodlands Health Campus. Known as the ACO-ICO framework, Yishun Health will oversee the population in the North, streamlining care

to target health and social interventions tailored to more specific needs in the demographic. Prof Chua Hong Choon, CEO of Yishun Health, takes on the role of NHG Deputy Group CEO (Strategy & Transformation).

These changes will better position us to address our ROL Framework and be in sync with the Ministry of Health's National Population Health strategy. More work will continue to be put in place to help us better achieve our overall strategic intent to pursue our greater mission of care. Despite being a little battle-weary, I believe NHG has emerged stronger and more resolute in our work than before to support our vision of Adding Years of Healthy Life!

Prof Philip Choo
Group Chief
Executive Officer,
NHG





A MESSAGE FROM THE CEO



This year's Annual Report pays tribute to the tenacity and resilience of all our staff at Yishun Health. Amid the gruelling and ongoing challenges of the past year, our teams responded to the test of COVID-19 with courage, compassion and creativity.

Drawing strongly from our fundamentals of care, collaborative 'can do' spirit, and DNA of continuous improvement, the Yishun Health family has kept true to our mission of care and continued to keep our patients and community safe.

In these pages, you will read about the swift, decisive and wide-ranging work taken to bolster and drive our pandemic response, and the many teams that have gone beyond the call of duty to ensure Yishun Health continues to stand ready and steady in this ongoing crisis.

For one, we accelerated our digitalisation drive to leverage technology, enabling us to expand care and maintain critical functions in care delivery, medical education, and more. An even greater effort was made to improve our processes and innovate for better outcomes as well as raise the level of patient care and safety. Beyond the Yishun Health campus, we also continued to support the community in the North to maintain their

health, monitor their conditions, self-manage with confidence, and access right-sited care and support within their homes and neighbourhoods.

And while keeping a keen eye on the evolving pandemic, we also kept nimble and vigilant in maintaining a delicate balance between restrictions and the resumption of hospital services. Assimilating to the new normal has meant thinking outside the traditional confines of care delivery and looking at new ways of connecting with, caring for, and empowering our community.

CONTINUING OUR COMMITMENT OF CARE IN THE NORTH

Take the Diabetes Centre at **Admiralty Medical Centre** (AdMC). It continues to be instrumental in driving self-management and equipping patients with the knowledge and skills to live well. Some of its educational programmes include the Diabetes Empowerment Programme and Skills for Life.

At **Kho Teck Puat Hospital** (KTPH), many teams have striven to improve existing initiatives to make care better for our patients. A prime example is our Ophthalmology and Visual Sciences team, whose members have thought of ways to make its services more affordable and accessible to our residents within the community.

Over at **Yishun Community Hospital (YCH)**, teams relooked and refined multiple areas of care to implement projects. These included efforts to implement new technology for wound debridement, and a move towards Transitional Rehabilitation, which enables more community-based self-management that can be supported by video consultation, patient education, and collaborations with community partners.

Much good work has been done by the **Population Health and Community Transformation (PHCT)** team, too. Asset-based community development continues to drive many of their initiatives as they build connections among residents and partners, growing sustainable community-driven projects and bonds.

We have come so far. Though the road ahead is unknown, it is motivating to look upon these achievements and improvements to spur us onwards. If anything, this pandemic has shown that we have the capacity to create solutions and turn challenges into opportunities. One of my priorities is the well-being of our staff, so that we can continue to serve our mission and purpose as healthcare workers in the long run.

WORKING TOGETHER IN THE YEAR AHEAD

I am excited to work alongside the Yishun Health team to continue the good work achieved over the years. And I look forward to serve with the leadership of Yishun Health, both in the Board Committee and the Senior Management.

On this note, I would like to warmly welcome Ms Lock Yin Mei, our new Yishun Health Board Committee Chairman, appointed on 1 October 2020. She takes the place of Mr Robert Chew, who joined the then AHS Board in 2007, and was appointed Chair of Board IT Sub-Committee. When we amalgamated with NHG in 2017, he was appointed Chairman of Yishun Health Board Committee until 30 September 2020. A fond farewell also goes out to Prof James Best, who served from 2017 until 2021. Thank you, Robert and Prof Best, for your long years of support, wisdom and guidance.

The heartiest of thanks goes out especially to the outgoing CEO of Yishun Health, Mrs Chew Kwee Tiang, who has served a total of 35 years in the public healthcare sector. Mrs Chew was Chief Operating Officer at Alexandra Hospital before her appointment as CEO of KTPH in 2012. She took on the concurrent role of CEO of Yishun Health in 2017. She has been instrumental in building the campus' service standards and

cultivating a strong *kaizen* culture. We wish her all the very best in her new roles as Senior Advisor of Yishun Health's Kaizen Office, and in NHG as Senior Director, Wellness, and Senior Advisor, NHG Board of Advisors.

Our Annual Report this year shows that, against one of the greatest tests of our time, Yishun Health has not just survived, but thrived – finding in ourselves new-found resilience and resourcefulness that we have channelled productively and creatively to bring better health to our population.

Prof Chua Hong Choon

Chief Executive Officer
Yishun Health





BOARD COMMITTEE



MS LOCK YIN MEI



MR TOW HENG TAN

SENIOR MANAGEMENT



PROF CHUA HONG CHOON
Chief Executive Officer



A/PROF PEK WEE YANG
Chairman, Medical Board



MS YEN TAN
Chief Operating Officer



DR WONG SWEET FUN
Chief Transformation Officer;
Deputy Chairman, Medical Board
(Population Health); Clinical Director,
Population Health &
Community Transformation



A/PROF TERENCE TANG
Chief Clinical Informatics Officer;
Deputy Chairman, Medical Board
(Clinical Informatics,
Innovation & Patient Engagement)



A/PROF WONG MOH SIM
Deputy Chairman, Medical Board
(Clinical Quality & Manpower Development)

WE WOULD LIKE TO THANK THE FOLLOWING FOR THEIR CONTRIBUTION:

Mr Robert Chew
Prof James Best

Board Committee Chairman (until 30 September 2020)
Board Committee Member (until 31 March 2021)



PROF PHILIP CHOO



PROF CHUA HONG CHOON



MS SHIRLEY HENG
Chief Nurse



MS CYNTHIA LEE
Chief Human Resource Officer



MR ROGER LEONG
Chief Financial Officer



A/PROF PHOA LEE LAN
Deputy Chairman, Medical Board
(Care Integration & Clinical Standards)



A/PROF TAN KOK YANG
Deputy Chairman, Medical Board
(Service Development)



DR LEE KOK KENG
Medical Director,
Yishun Community Hospital



DR BIN WERN HSIEN
Medical Director,
Admiralty Medical Centre

Mrs Chew Kwee Tiang
Ms Magdalene Chai

Chief Executive Officer (until 31 January 2021)
Chief Human Resource Officer (until 31 August 2020)



KHOO TECK PUAT HOSPITAL

| | |
|---------------------------------|--|
| A/Prof Toh Hong Chuen | Head and Senior Consultant, <i>Acute and Emergency Care Centre</i> |
| Dr Bin Wern Hsien | Head and Senior Consultant, <i>Anaesthesia</i> |
| Ms Teresa Foong | Deputy Director and Senior Principal Clinical Psychologist, <i>Allied Health Services and Pharmacy</i> |
| Dr Patrick Lim | Head and Consultant, <i>Cardiology</i> |
| A/Prof Lim Su Chi | Clinical Director and Senior Consultant, <i>Clinical Research Unit</i> |
| Dr Sylvia Tay | Head and Senior Consultant, <i>Dental Surgery</i> |
| A/Prof S Tavintharan | Clinical Director and Senior Consultant, <i>Diabetes Centre</i> |
| Dr Paul See | Head and Senior Consultant, <i>Diagnostic Radiology</i> |
| Dr Siew Chee Weng | Head and Senior Consultant, <i>Family and Community Medicine</i> |
| A/Prof Phoa Lee Lan | Head and Senior Consultant, <i>General Medicine</i> |
| A/Prof Tan Kok Yang | Head and Senior Consultant, <i>General Surgery</i> |
| A/Prof Angeline Seah | Head and Senior Consultant, <i>Geriatric Medicine</i> |
| A/Prof Wong Moh Sim | Head and Senior Consultant, <i>Laboratory Medicine</i> |
| Ms Jenny Goh | Deputy Head and Principal Medical Social Worker, <i>Medical Social Services</i> |
| Ms Chow Pek Yee | Head and Principal Dietitian, <i>Nutrition and Dietetics</i> |
| A/Prof Yip Chee Chew | Head and Senior Consultant, <i>Ophthalmology and Visual Sciences</i> |
| | Education Director, <i>Education Development Office</i> |
| Dr Sandeep Uppal | Head and Senior Consultant, <i>Otolaryngology (ENT), Head and Neck Surgery</i> |
| Dr Timothy Teo | Head & Consultant, <i>Orthopaedic Surgery</i> |
| Ms Supadhara Ramaiyah | Head and Senior Principal Clinical Pharmacist, <i>Pharmacy</i> |
| Ms Chelsea Law | Principal Podiatrist, <i>Podiatry</i> |
| Dr Goh Kah Hong | Head and Senior Consultant, <i>Psychological Medicine</i> |
| Ms Mabel Yum | Head and Principal Clinical Psychologist, <i>Psychological Services</i> |
| Ms Ng Lih Yen | Head and Senior Principal Physiotherapist, <i>Rehabilitation Services</i> |
| Dr Teoh Chin Sim | Clinical Director and Senior Consultant, <i>Sports and Exercise Medicine Centre</i> |
| Dr Molly Eng | Head and Senior Consultant, <i>Urology</i> |
| Mr Albert Foo | Head and Director, <i>Corporate Communications</i> |
| Dr Ng Yeuk Fan | Director, <i>Corporate Development</i> |
| Ms Angela Lim | Director, <i>Finance</i> |
| Mr Donald Wai | Director, <i>Hospital Planning and Infrastructure</i> |
| Mr Liew Phey Bong | Deputy Director, <i>Information Systems & Technology</i> |
| A/Prof Edwin Seet | Clinical Director and Senior Consultant, <i>Office of Clinical Governance</i> |
| Ms Fatimah Moideen Kutty | Director, <i>Operations Admin</i> |
| Ms Caroline Tan | Director, <i>Operations Admin</i> |
| Ms Geraldine Yeo | Director, <i>Operations Admin</i> |
| Ms Cheong Choy Fong | Director, <i>Quality and Risk Management</i> |

YISHUN COMMUNITY HOSPITAL

| | |
|--------------------------|---|
| Mdm Chua Gek Choo | Director, <i>Nursing</i> |
| Ms Chua Ee Cheng | Head and Principal Medical Social Worker, <i>Medical Social Services</i> |
| Ms Chan Sue Mei | Deputy Head and Principal Dietitian, <i>Nutrition and Dietetics</i> |
| Ms Low Suat Fern | Deputy Head and Principal Pharmacist, <i>Pharmacy</i> |
| Mr Adon Chan | Deputy Head and Principal Physiotherapist, <i>Rehabilitation Services</i> |

POPULATION HEALTH & COMMUNITY TRANSFORMATION

| | |
|-------------------------|---|
| Ms Low Beng Hoi | Director, <i>Nursing</i> |
| Mr Bastari Irwan | Director, <i>Population Health and Community Transformation</i> |
| Ms Elaine Toh | Executive Director, <i>Regional Health Office</i> |

WE WOULD LIKE TO THANK THE FOLLOWING FOR THEIR CONTRIBUTION:

| | |
|-------------------------|---|
| Dr Sanjay Patel | Head and Senior Consultant, <i>Acute and Emergency Care Centre</i> (until 25 June 2020) |
| Dr Wu Loo Cheng | Head and Senior Consultant, <i>Dental Surgery</i> (until 31 March 2020) |
| Prof Wilfred Peh | Head and Senior Consultant, <i>Diagnostic Radiology</i> (until 31 December 2020) |
| Dr James Tan | Head and Senior Consultant, <i>Orthopaedic Surgery</i> (until 1 September 2020) |



CHAPTER 1



RISING UP TO THE CHALLENGES OF THE PAST YEAR



RISING UP TO THE CHALLENGES OF THE PAST YEAR

The challenge of keeping on top of an ongoing pandemic has been one of healthcare's greatest tests. However, despite the gruelling circumstances, Yishun Health's staff have stepped up to the task. Much of this work has taken place across four main areas, and has been the result of intense collaboration, proactive thinking, and a person-centric mindset. From making patient care and safety a priority, supporting the community, improving processes, and leveraging technology, our people have worked swiftly and creatively to pursue our mission of care.



Flight attendants were trained to become Care Ambassadors to alleviate the workload of healthcare staff

● Living Well

● Living with Illness

● Crisis and Complex Care

● Living with Frailty

● COVID-19 Response

CARE & SAFETY

Our priority in delivering safe care took on greater urgency during the pandemic as we moved swiftly to implement additional infection control measures, simultaneously pivoting to ensure that we meet our ongoing commitments to bring quality, person-centred care to our community.

WINGS FOR WARDS ●

More than 100 Singapore Airlines (SIA), SilkAir, Scoot and Jetstar flight attendants traded their 'wings' for wards and passengers for patients from April to August 2020. Taking on new roles as Care Ambassadors, they underwent training and stepped in to supplement manpower needs brought on by the COVID-19 outbreak. Taking vital signs, feeding, turning patients in bed, helping them with toileting needs, and transferring them around the hospital, these Care Ambassadors provided basic caregiving and service-related support.

Some even took on roles as Service Support Officers (SSO), being screeners, patient greeters, visitor management and tele-visit officers, patient service associates, supply chain coordinators, and pharmacy service support staff, helping to alleviate the increased workload of healthcare staff.

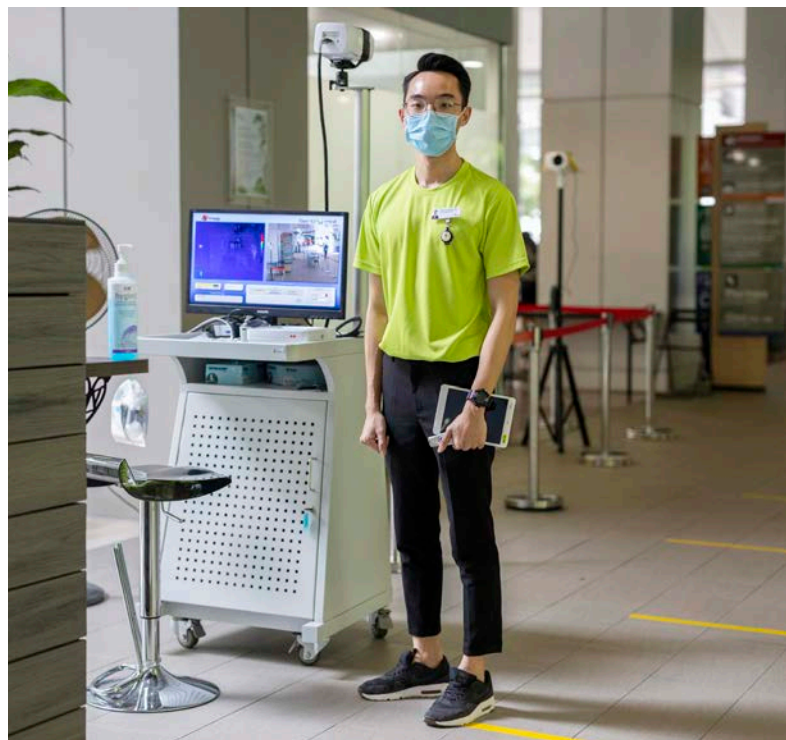
MAKING FUNDAMENTAL CONTACT ●

A large part of the work to contain the COVID-19 outbreak did not take place in just clinical facilities, but across desktops and through phones for the critical work of contact tracing. Contact tracing is an established public health strategy that identifies and isolates anyone who has been exposed to an infectious disease. This enables speedy and effective containment to dramatically decrease the impact of an epidemic or pandemic.

Across Yishun Health, staff from 35 different departments stepped in to help keep operations running 14-hours a day, seven days a week. At its peak, the 70-person team was contact tracing more than 80 cases a day, more than 400 cases a week.

MAKING ACCESS SAFE & SECURE ●

Temperature screening and visitor management were important aspects of COVID-19 security and surveillance. The challenges were many: time pressures, designating entry and exit points in an open-concept hospital, and setting up centralised screening stations. In the initial



Our SSO ready for duty at the lobby!



Our contact tracing team has managed more than 1,800 index cases to-date



days, many hours were spent late at night working out the best processes and layouts. There was also a learning curve – engaging people, fostering compliance, and explaining the necessity of screening.

Despite the obstacles, Yishun Health's Operations team made sure a robust Visitor Management System was ready to oversee the well-being of hundreds of visitors and patients who flow in and out of the hospital each day. They even set up a tele-visit facility to enable communication between patients and their loved ones when no visitors were allowed.

THE HEAT IS ON IN THE KITCHEN ●

Even as many things ground to a halt during the pandemic, some everyday routines became even more essential. In the Yishun Health kitchens, the team had to ensure that there was no disruption to food supplies and meals, and additionally meet the increase in staff meals for clinical and non-clinical areas – while at the same time adapting to pandemic plan protocols. These meals provided patients with the nutrition to get better, and staff with the energy to push on in their various duties.

BEING A FRIEND IN A TIME OF NEED ●

Yishun Health staff showcased their empathy for migrant workers who had been affected by COVID-19. Medical Social Services (MSS) developed a resource kit to address psychological stress. Via teleconference and



Food Services delivering food for staff during shifts



A typical teleconference with patients who are foreign workers involves a medical social worker and a translator

with the aid of translators, the team worked to alleviate the anxieties that had arisen due to job insecurity and prolonged isolation.

Many proactively donated clothes and other necessities from home as well as buying SIM cards and providing handphone chargers to help them keep in touch with their loved ones during their isolation.

The 'Wheels on the Bus' initiative saw staff across the hospital going beyond their duties to chip in and ensure that workers who were admitted had essential items. It served as an outlet for those – be they individuals or organisations – who wished to give, and as a platform for individuals in need to receive.

EASY TO CHEW, SAFER TO EAT

Choking is a growing problem for seniors, and the second-highest cause of accidents after falls. With an ageing population comes growing issues related to frailty, dementia and other conditions, which increase the risk of choking.

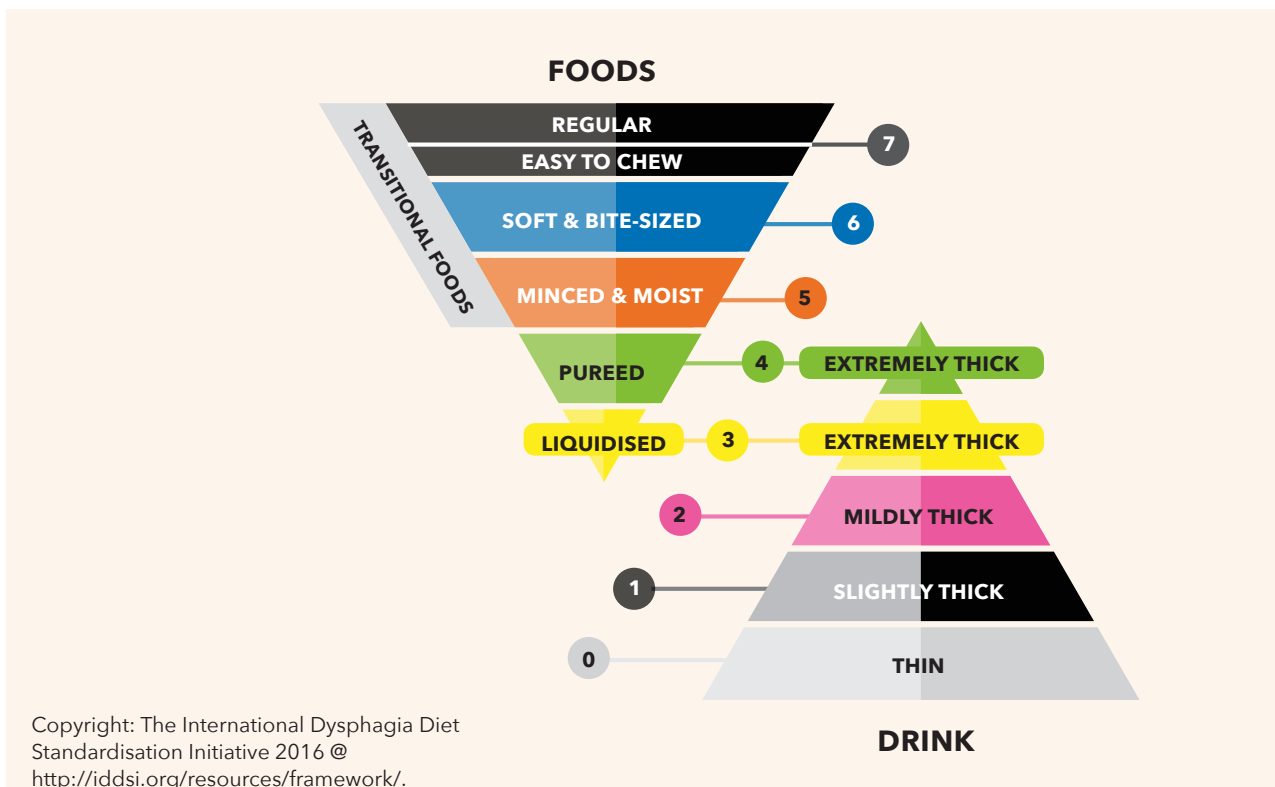
To address this issue, Yishun Health started a Frailty Ready Nutrition Subgroup to review the existing menu for elderly patients and enhance its safety. This builds on the International Dysphagia

Diet Standardisation Initiative (IDDSI) adopted in 2019. The current food texture for soft diets (Level 6 on the IDDSI) is a uniformly chopped or minced form, which can be visually unappealing and is limited in dish options. This can result in nutritional imbalances.



The Easy To Chew team coming together to ensure the texture of food is right for patients with presbyphagia

International Dysphagia Diet Standardisation Initiative (IDDSI) Food Texture Chart



Copyright: The International Dysphagia Diet Standardisation Initiative 2016 @ <http://iddsi.org/resources/framework/>.



The team – comprising Food Services, Nutrition & Dietetics, and Speech Therapists – identified a more palatable option on the IDDSI, the ‘easy to chew’ texture, which lies between ‘regular’ and ‘soft’. ‘Easy to chew’ refers to food that breaks off easily when cut with the side of a fork or spoon. This allows for more variation in dish options to improve patient appetite, and is also safer for frail patients with presbyphagia (before dysphagia), as well as patients with impaired judgement, including those with dental issues or have had oral procedures.

Since the ‘easy to chew’ diet was rolled out in KTPH in a soft launch in September 2020, there has been an average increase of 3.5% and 4% of such meals served per month in 2020, and in 2021 (till February) respectively. This diet is also being rolled out in YCH.

PARTNERING GPs TO DELIVER DIABETES CARE ●

Due to the COVID-19 pandemic, fewer patient slots were available for diabetes mellitus (DM) appointments at the KTPH Specialist Outpatient Clinics (SOC). To tackle this, a shared care programme was initiated with community General Practitioners (GPs). This overcame the limited efficacy of teleconsultations, as laboratory tests are usually required for diabetes monitoring.

Started on 1 December 2020, the DM Shared Care pilot is a collaboration by the Shared Care Partnership Office, Admiralty Medical Centre (AdMC) and Frontier Healthcare Group. Under this initiative, patients with stable DM are

co-managed by Frontier Healthcare Group GPs. They will see and pay the GP for consultations, tests and procedures, while still receiving subsidised medication from Yishun Health. This helps to right-site patients in the community, grow the capability of GPs, and maintain links to specialist care at Yishun Health. Since its launch, 21 patients have signed up for DM Shared Care and benefited from the programme.

EXERCISE IS MEDICINE ●

In 2020, Yishun Health’s Sports Medicine Clinic renamed itself as the Sports and Exercise Medicine Centre (SEMC). This new name underpins the team’s belief that movement and physical activity are key to prevent and treat many chronic diseases. This sets the tone for its new ‘Exercise Is Medicine (Singapore)’ initiative that will complement the efforts at risk-factor modification and management of chronic diseases for patients and the community.

SEMC aims to drive minimally invasive treatment options for patients with musculoskeletal problems. To support this, SEMC added Tenex, a treatment for recalcitrant tendinopathies, to its modalities. SEMC physicians have also started performing ultrasound-guided injections in the operating theatre alongside orthopaedic surgeons.

SEMC started the Heel Pain Clinic in November 2020 as a one-stop solution for plantar fasciitis and Achilles tendinopathy. This offers coordinated, hassle-free, cost-effective and timely treatments by sports physicians, foot and ankle surgeons, as well as physiotherapists, podiatrists and acupuncturists.



Dr Dinesh Sirisena, Consultant, Sports and Exercise Medicine Centre, performing the minimally invasive Tenex procedure on his patient

COMMUNITY HEALTH RESILIENCE

Yishun Health looked beyond our campus to bolster the health resilience of our community, ensuring that those who needed extra support could access it readily throughout the year. Besides caring for the COVID-19-afflicted and the vulnerable, we also raised patient literacy and capability through education, awareness and skills-building.



One of the ways PHCT supported the community was through assisting swab exercises at nursing homes

HELPING BEYOND OUR CAMPUS

Our COVID-19 response went beyond managing cases on campus. Responding to the cases in nursing homes and dormitories, Yishun Health deployed teams to these facilities beginning in April 2020 to expand our scope of care.

The Population Health and Community Transformation (PHCT) team partnered GeriCare and various departments to form swabbing teams. About 100 staff were trained and 1,400 swab tests were conducted across three residential homes, as well as for the staff of Northpoint City mall.

In addition to swabbing, they developed pictorial guides for community care partners to improve awareness, education and recognition of infection control measures; they also trained nursing home staff to conduct swabs independently. The teams made extra effort to manage the fear and anxieties of the senior and frail residents.

The PHCT team's support for nursing homes went beyond swabbing exercises. Doctors stepped in to fill the shortfall in clinical manpower during times when nursing homes had staff under

quarantine order, making clinical decisions for residents who were unwell.

And while the team took precautions to maintain physical distancing, they worked to become even more socially connected. The three Wellness Kampung rallied close to 740 active residents to keep in touch with 2,000 other Yishun residents.

Other members of the MSS team took on new roles, providing on-site administrative support at the CSC Loyang Swab Isolation Facility, helping nurses provide basic patient care in the wards, and working in logistics to coordinate Yishun Health's COVID-19 response.



The PHCT team reporting for swab duty!



A FOCUS ON DIABETES SELF-MANAGEMENT

One of the goals of the AdMC Diabetes Centre is to 'activate' patients towards self-care through individual clinic sessions as well as group education programmes. In FY2020/2021, the team focused on enhancing the content, messaging and delivery mode of its education programmes, especially for those with complex diabetes and diabetes complications.

It built on existing Skills for Life programmes by PHCT, offering it in different languages and via online seminars [see page 22 for more on Skills for Life]. More specific courses were also

developed, including Diabetes Empowerment Programmes on insulin management, lifestyle modifications, managing diabetes during fasting, and more.

Despite a delay in the roll-out due to the pandemic, the team successfully launched the first diabetes-related Skills for Life session in July 2020 via Zoom. Since then, 10 education programmes have been conducted.

HOLISTIC MANAGEMENT OF OBESITY

The Integrated Care for Obesity and Diabetes (ICOD) adapted to the restrictions and disruptions of the pandemic in FY2020/2021

As the Wave Subsides - Obesity Management Beyond COVID-19
3 October 2020, Saturday 2.00pm - 3.45pm

PROGRAMME

- 2.00pm - 2.10pm**
Obesity and COVID-19
Obesity is a recognized risk factor for severe COVID-19 and people with obesity will need special care during this period. This talk sets the stage for the afternoon.
Dr Benjamin Lam, Consultant, Family and Community Medicine
- 2.10pm - 2.40pm**
Managing COVID-associated Mental Health and Sleep Difficulties Impacting Obesity
COVID-19 has brought along increased mental health issues which contribute to worsening weight problems. Simple strategies and resources for GPs will be discussed.
Mr Patrick Phor, Senior Clinical Psychologist
- 2.40pm - 3.20pm**
Teleconsultation in Obesity Management
Find out about:
• Current evidence, practices, challenges and take home tips for weight management video consultation
• Exercise history taking and assessment of common musculoskeletal conditions for obese patients
Ms Hedy Cheng, Senior Dietitian
Mr Jozmin Hanson, Senior Physiotherapist
- 3.20pm - 3.35pm**
Bariatric Surgery Referral During the COVID-19 Pandemic
Resumption of bariatric and metabolic surgery during the pandemic must be gradual and prudent. Find out which patients need to be prioritized for surgery during the "new normal", and the steps that have been taken in KTPH to minimize transmission risk during surgery.
Dr Tan Chun Hai, Consultant, General Surgery
Dr Tan Bo Chuan, Consultant, General Surgery
- 3.35pm - 3.45pm**
Q & A

2 CME credits pending approval. Scan QR code to register. You can view a schedule of all returning CMEs by KTPH at <https://ktp.hk/en/education>. For enquiries, contact our Shared Care Partnership Team at scpteam@ktp.hk or 9114 2819

A Global Health problem

- T2DM and its related complications are a major cause of morbidity and mortality. This remains a problem for global health care
- Bariatric & Metabolic surgery is highly effective in the treatment for not just obesity, but also T2DM
- "Diabetes Surgery" for "Dia-besity"

TeleConsultation for Exercise Consult and Musculoskeletal Assessment

Who to go first?

- BMI > 35kg/m²
- Diabetes (HbA1c > 6.5%)
- Hypertension (SBP > 160mmHg)
- Dyslipidaemia (LDL-C > 190mg/dL)
- OSA
- CVD
- CKD
- COPD
- Depression
- Medication management

Obesity is a chronic complex disease with negative health consequences

- Obesity is now recognised as a chronic complex disease
- Obesity leads to a number of serious complications
- Obesity reduces life expectancy (At BMI 30-35kg/m², median survival is reduced by 2-4 years and at 40-45kg/m² by 8-10 years)

Strategies for Virtual Diet Assessment

- Use your hand as a guide
- Carbohydrates: 1 cup/bowl/fist/1tsp



The ICOD team is multidisciplinary, and has organised many educational webinars online

On World Obesity Day, staff from KTPH and Tan Tock Seng Hospital led online participants in an exercise session to get their hearts pumping and excited for the day's programme

through focusing more on public outreach and primary care engagement. Dr Benjamin Lam, Family Physician & Consultant, Family and Community Medicine, appeared online and in newspapers to share his insights on the link between sleep deprivation and weight gain, as well as on obesity.

The team also organised webinars, including one for general practitioners. Held on 3 October 2020, it discussed the implications of COVID-19 on obesity and vice versa, managing COVID-related mental health issues impacting obesity, the use of teleconsultation in obesity management, and bariatric surgery during the pandemic.

For the public, a Health4Life webinar took place on 6 March 2021 in conjunction with World Obesity Day. It was a collaborative effort between KTPH, Tan Tock Seng Hospital and National Healthcare Group Polyclinics. The interactive session included an exercise segment, a cooking demonstration, a sharing session with a bariatric patient, and a segment on weight management resources.

The ICOD team was also involved in the organising committee of the Singapore OBES Congress, held in October 2020, and shared their perspectives, experiences and insights.

IMPROVING ORAL CARE FOR INPATIENT SENIORS ●

An oral health education programme piloted in

FY2020/2021 by Geriatric Medicine (GRM) and Dental Surgery departments has improved the overall oral cleanliness of patients in the geriatric ward, resulting in decreased unhealthy signs – a worrying category of oral cleanliness in the Oral Health Assessment Tool performed at admission and discharge.

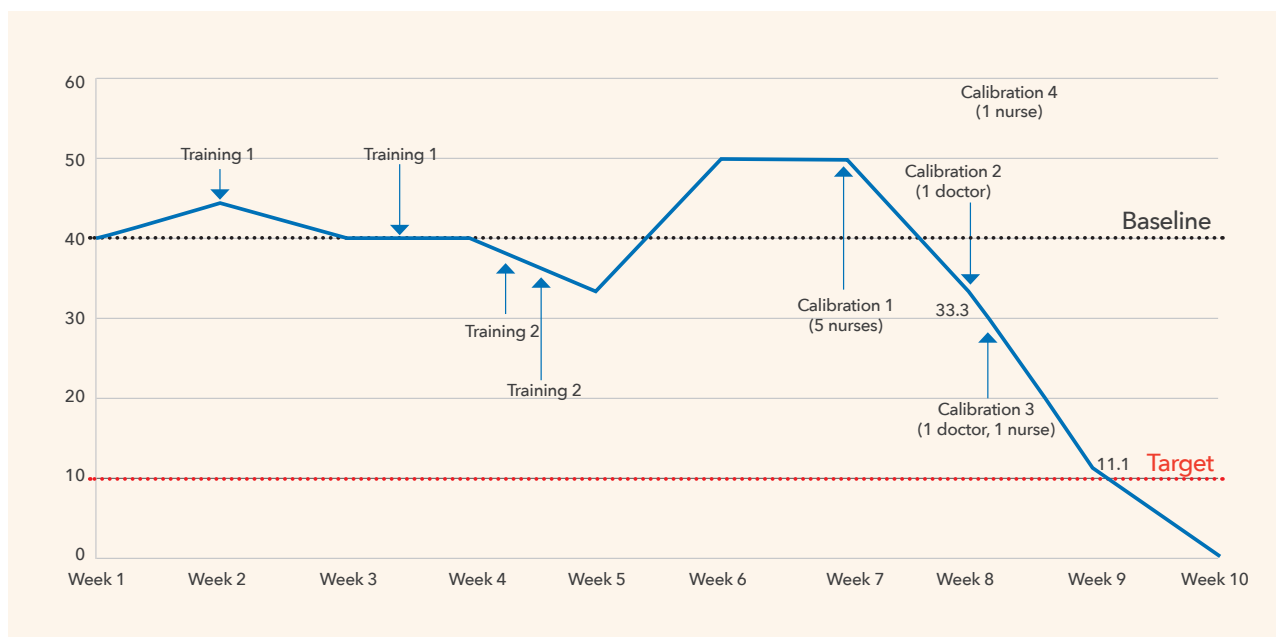
Some 43 staff members – including doctors, nurses, health care assistants, dietitians, occupational therapists, and speech therapists – underwent a comprehensive oral health training course. Putting their learning into practise in the wards resulted in:

- Significant improvement in mean oral health knowledge scores
- Increased confidence in providing oral care for patients and caregiver training
- Increased confidence in recognising oral diseases and knowing when to make a dental referral
- Improved oral hygiene among patients at discharge



During oral health education sessions, participants were divided into smaller groups for discussion and hands-on training with the Dental Team

Percentage of Unhealthy Signs in Oral Cleanliness at Time of Discharge





To further increase oral health awareness in the acute setting, information pamphlets on oral health and oral hygiene in three languages were made available for patients and their caregivers.

GRM and Dental Surgery departments aim to grow the reach of the programme to further train staff to be oral health champions, and guide new nurses on oral health assessments and oral hygiene for geriatric patients.

CAN'T KEEP A GOOD CHAMP DOWN ●

When in-person sessions for the Coaching for Health Action and Management Programme (CHAMP) had to cease for safety, its health action coaches quickly adapted to the online space. They started a Facebook group, CHAMP Connects, and began running sessions via Zoom. CHAMP's health action coaches also worked with physical trainers from PHCT to livestream exercise classes. This helped to maintain support and guidance so that participants continued to be motivated in their healthy lifestyle changes.

ARMING THE COMMUNITY WITH COVID-19 KNOWLEDGE ●●

Yishun Health's long-running Mini Medical School (MMS) reached one of its largest audiences yet in its first online forum. Some 341 'students' signed up for the *Covid-19, 20-21...* webinars, held in December 2020.

In all, three lectures were delivered by speakers from the National Centre for Infectious Diseases (NCID) and NUS Saw Swee Hock School of Public Health. The first covered how and why the global pandemic happened, and Singapore's public health measures. The second was on psychological resilience, and included an interactive session on community preparedness. Capping off the series were interviews with the community to illustrate strength in the commons.

The webinar format allowed for greater interaction and questions, with more time for participants to research, do extra readings, and enhance their understanding of the lecture. At the end of each lecture, students were given a quiz to assess their understanding of the lecture. More than 100 submissions were received for the quiz questions each week.

The webinars were later recorded, edited and uploaded onto the National Silver Academy website for seniors to access and watch at their own convenience.

VIRTUAL SKILLS FOR LIFE! ●●●

To adapt to the restrictions brought on by COVID-19, the Skills for Life! @ Community team reworked their experiential healthy lifestyle programme. This not only ensured continuity for the health-promoting initiative, but also raised the level of outreach in a safe-distanced way.

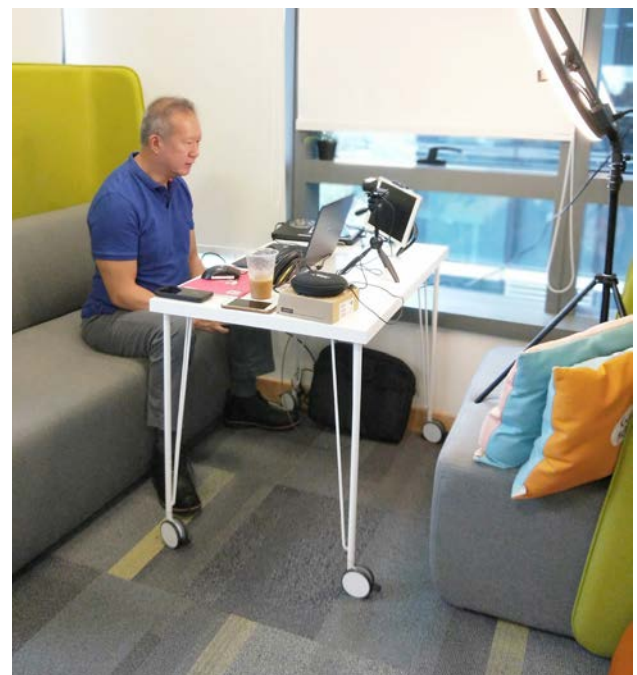
Moving to the online space improved accessibility and convenience for people, allowing the expansion of class size from 15 to 30 per run. In FY2020/2021, five virtual Skills for Life! @ Community sessions were held, benefiting a total of 148 participants. Beyond the sessions, the team also used Facebook to engage and encourage participants to share their experiences.

Skills for Life! @ Community focuses on encouraging people to lower their risk of chronic disease by adopting three health actions:

- No free-sugar
- Half plate of non-starchy vegetables in every meal
- Wholegrain substitution

THE CREATION OF COMMUNITY PRIDE ●●

PHCT's Regional Teams activated their Asset-Based Community Development (ABCD) philosophy to great effect in FY2020/2021, especially in boosting community resilience amid a crisis. In ABCD, we focus on what is strong (asset-based), not what is wrong (deficit-based).



Dr Chan Keen Long, Senior Consultant, Psychological Medicine, anchoring the MMS session over Zoom

By identifying and mobilising these assets, we support residents to take ownership of improving their own health and community.

Our Regional Teams actively highlight opportunities for residents to participate and be included in their community. When residents participate to the extent that they are comfortable and able, they gain belonging, social connection, and a sense of pride and ownership. This improves personal well-being and, over time, shapes a culture of self-help and mutual care.

One initiative rolled out after a conversation with lower-income residents in Nee Soon East was a WhatsApp group called 269AB Community Pride. It was formed for residents to update each other about available resources, and coordinate volunteer efforts for food distribution. The group grew from 12 to more than 70 members, and has become a useful platform for the sharing of social capital. Today, residents use the group to share timely information with each other, make offers and requests, and even support each other's businesses.

CREATING LINKS WITH OUR COMMUNITY PARTNERS

PHCT's Regional Teams look beyond medical needs to build connections between residents, social and community agencies, and local businesses. This multi-level, multi-sectorial partnership led to many co-created initiatives and actions during the COVID-19 pandemic that matched needs with donors and vice versa.

During the Circuit Breaker, the teams heard about the struggles that lower-income residents had with the heat and boredom, as well as difficulties accessing face masks. Residents with long-term conditions also shared that they found it challenging to monitor their health. At the same time, there were others who wished to direct their Care and Support pay-outs towards those in need. This led to the purchase of 50 fans, radios, masks, and automated blood pressure monitors, all of which were distributed to the residents.

The teams also linked up with Amoris Lumine, a choir that offered to distribute Christmas gifts and care packages to residents identified by community leaders who would benefit most. In the run-up to the December 2020 event, Singapore Red Cross also connected the group

to a local barber who wanted to provide free hairdressing services. Sixty-two seniors benefited from this meaningful event, made possible from the joint efforts of residents, community partners, and a local business.

During regular door-knocking efforts in Sembawang, Regional Connectors met a sewing enthusiast who was a member of a Knit & Crochet Facebook group. They had crocheted 500 mask extenders intended for healthcare workers. However, this did not pan out due to infection control measures. Instead, the Connectors suggested sharing the mask extenders with low-income families and partnered them in a distribution that began in February 2021.

AGEING WELL AT HOME

To continue care for patients transiting from hospital to home, and relieve the surging demand for beds in the hospital, the Ageing-In-Place Community Care Team (AIP-CCT) ramped up its capacity to take on more patients with medical needs at home, even over weekends. AIP-CCT repackaged its service to include intensive and continual home rehabilitation for Hip Fracture, Orthopaedic, Neurology, and General Medicine patients.



Behind each online MMS session, there is a dedicated PHCT Team working hard



Foreign domestic helpers formed a support network of their own – Guardians of Wellness Kampung – with members also participating in initiatives like mask distribution



Mr Teoh Gin Wah, WK Coordinator (left), builds connections with everyone who passes through the WK

From April to September 2020, there was a 21% increase in patients enrolled, and 30% increase in home visits were made by the multidisciplinary teams compared to FY2019/2020.

CAREGIVERS, HELPERS & GUARDIANS

Residents are not the only ones who have formed bonds at Yishun Health’s Wellness Kampung (WK). Domestic helpers who accompany their charges also become regulars, forming a support network of their own. Tapping on their connection and skills, WK coordinator, Mr Teoh Gin Wah, encouraged them to form a

group, which has become known as the ‘Guardians of Wellness Kampung’.

Their insights into the needs and well-being of seniors make these domestic helpers an invaluable source of useful information. They act as ‘eyes’ and ‘ears’, looking out for them during WK sessions. During the Circuit Breaker, the Guardians formed a chat group to share exercise videos, recipes and caregiving tips, filling the gap in activities when the WK were closed.

PROCESS ADAPTATION

Adaptation was the name of the game during the highly fluid and uncertain times of the pandemic. From the rapid shoring up of infection control measures and capacity-building in the initial days to more long-term efforts to provide continuing care, the Yishun Health family kept pace – many in full PPE – to expand facilities, services and other functions to meet ever-changing and growing demands.



In the ESW, A&E staff responded rapidly not only to the influx of patients, but also to evolving directives and situations

THE SCREEN TEST

When Singapore confirmed its first case of COVID-19 on 24 January 2020, Yishun Health's Acute & Emergency Care Centre (A&E) responded rapidly. In 48 hours, an Expanded Screening Wing (ESW) was set up outside its doors, ready for patients.

The ESW was eventually extended all the way to the YCH lobby to meet the demands from rising cases in the foreign worker dormitories. To accommodate the large volumes of patients awaiting swab test results, a total of five holding areas (H1-5) were progressively set up between January and May 2020. Manning these areas was a team of doctors, who were complemented by Allied Health Professionals redeployed from a wide range of specialties.



The YCH Lobby was converted to a Holding Area, with staff and necessary equipment ready and accessible



The Nee Soon GRC MPs, NHG Group CEO Prof Philip Choo, Yishun Health Senior Management, and partners from Fullerton Health, Tzu Chi Foundation, and FutsalArena @ Yishun at H5



A site recce being done at one of the YCH wards to convert it into a ward for COVID-positive patients



Even before Circuit Breaker began, the team was already dealing with bed surge and forward planning of ward conversions

A STATE OF CONVERSION ●

From the A&E to the wards and critical care areas, conversions and workflow adaptations were constantly taking place to keep ahead of the cases and ensure patient safety. At the A&E, additional steps were taken to reorganise workflows and spaces so as to minimise interactions and infection risks between patients as well as between staff. 'Hot' and 'cold' zones were demarcated to keep A&E patients – whose critical and co-existing conditions put them at high risk – safe.

As screening, holding and treatment facilities were expanded, numerous measures were put in place to manage and maintain patient flow throughout the hospital system, including tapping on community resources to safely discharge patients back home.

Over at the wards, a conversion planning team of senior administrators, bed management teams, and nurses had to work with urgency and strategic foresight to turn multiple KTPH and



The Post-Anaesthesia Care Unit dedicated beds for non-COVID-19 patients who also require ICU care

YCH wards into COVID-related and operationally ready Intensive Care Unit (ICU) wards. Surge plans had already been proactively raised in late February and, when case numbers rose in April 2020, stable YCH patients were decanted to other community hospitals so the space could be allocated to acute and subacute COVID-19 wards.

At KTPH, more than 60% of wards were progressively converted, while at YCH, all beds were dedicated to COVID-19 patients [see page 30 for a surgeon's perspective on running a COVID-19 ward].

Over at the critical-care end, steps had to be taken to ensure upstream preparedness for intensive care needs. From early April 2020, KTPH's 22-bed ICU capacity was progressively increased to 90 beds through the conversion of wards and the Post-Anaesthesia Care Unit. To ensure sufficient medical support for the expanded intensive care facilities, clinical departments had to reorganise their work from eight- to 12-hour shifts.

In all, 120 nurses from varying disciplines were mobilised to support the ICU, undergoing training on patient management in a new care setting. About 40 non-ICU trained doctors also learnt the fundamentals of ICU management, intubation, and ventilator-setting and troubleshooting.

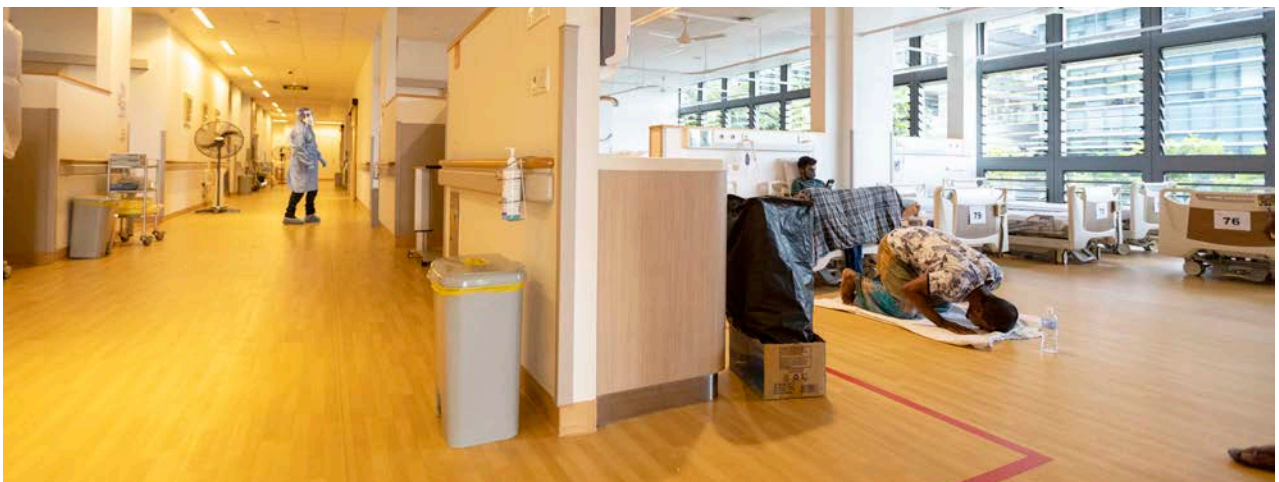
To support the medical professionals deployed to this new specialty, senior nurses who had cared for patients during SARS acted as mentors, sharing their experiences and helping juniors and peers process their anxieties and fears.

FACE DOWN FOR BETTER OUTCOMES

Beyond their day-to-day work, Yishun Health's ICU nurses and the physiotherapy team developed and rolled out a potentially life-saving practice: using prone positioning for respiratory failure. The team found that encouraging patients to lie on their front resulted in better outcomes. This position improves heart and lung function, clears the airways, and improves oxygen intake in patients with severe respiratory failure associated with COVID-19. It also minimises post-ICU-acquired complications.



The Facilities Management team worked long hours, moving equipment and converting spaces



A converted ward that housed patients who were foreign workers



LOGISTICAL MANOEUVRINGS ●

Retrofitting and converting spaces for infection control facilities and ward conversions was a logistical feat that took the combined effort of multiple teams – from clinical departments to Facilities Management, Security, Materials Management, and Operations Support Services. The vast scope of work included sourcing critical supplies and equipment, relocating staff and patients, coordinating with contractors and suppliers, while also tackling manpower and time constraints.

In tandem with the space reconfigurations was another extensive logistical and planning feat: the moving of patients out of the wards through discharges, transfers and decantments, as well as the conversion, cleaning and reorganising of numerous spaces. This was a massive task undertaken by the Facilities Management department. Meanwhile, allied health, admin

and ancillary departments – including Food Services, Environmental Services, Linen, Portering, Security, Visitor Management and Materials Management teams – all had to adapt their workflows to accommodate the new processes in an immense collaborative effort.

A WAVE OF TESTS ●

With hundreds of patients being swabbed, the Department of Laboratory Medicine had to keep pace with the huge volume of tests coming their way. They developed a robust and accurate in-house COVID-19 test, adapting a method from NCID's National Public Health Laboratory. The team also optimised its existing Polymerase Chain Methodology test to identify two specific genes in the COVID-19 genome.

To cope with the exponential increase in the workload, staffing was ramped up by adjusting shifts and deployments. Boosting the numbers were eight volunteers from the NUS Faculty of Medicine who were trained to meet manpower needs. This gave medical technologists who had been working 12-hour shifts since February some much needed reprieve, and added to an increased headcount at the Molecular Diagnostic section from 1.5 to 11. At the height of the crisis, the laboratory could test some 800 samples daily, up from 120 samples per day in January.

PUTTING INFECTION CONTROL AT THE FOREFRONT ●

The long-standing priority of Yishun Health's Infection Control team to tackle infections and the spread of superbugs took on heightened importance during the pandemic. Their work extended from setting up the ESW, adapting the Extended Diagnostic Treatment Unit into an Acute Respiratory Wing, converting General Wards to COVID-19 wards, and sanitising COVID-19 care areas.

Another challenge was to secure adequate supplies of protective equipment and intensify PPE training – rolling these out with initial live-fitting exercises, posters and teaching videos. The Infection Control team also coordinated the distribution of Powered Air Purifying Respirators, and trained staff working in the converted wards to use these machines, which are typically only used in high-risk areas, such as the ICU and Isolation Wards.

Clinical implementations aside, the team kept up-to-date with the latest developments and knowledge, implementing tile carpets as disinfectant mats to lower viral spread.

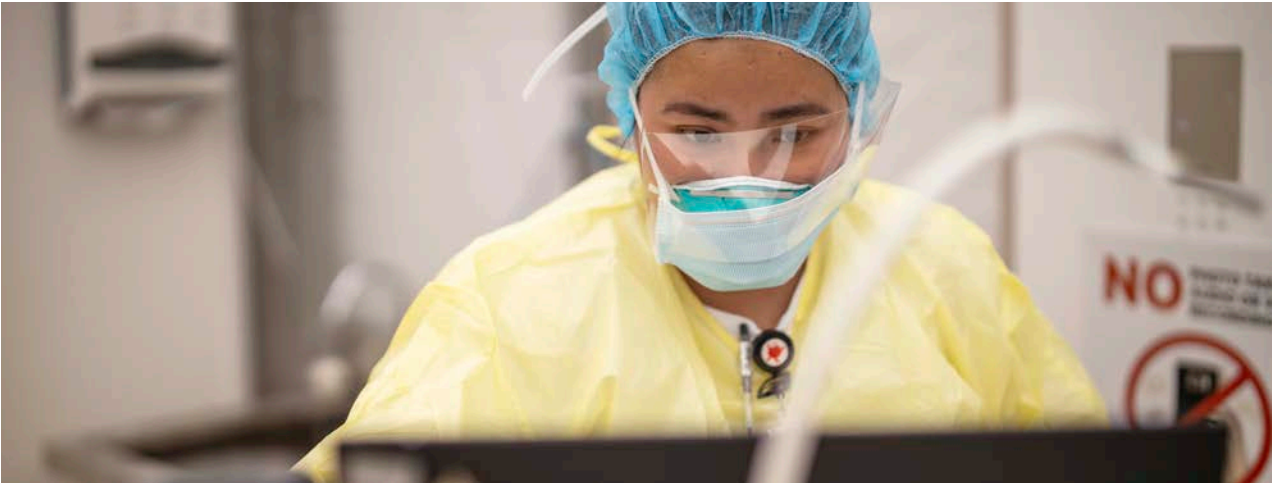


Everyone – including clinical and support staff – has a part to play in Infection Control



Allied Health Professionals were deployed to fulfil roles outside their comfort zones during the pandemic, including Holding Areas and Swab Isolation Facilities





ALLIED HEALTH PARTNERS, ASSEMBLE! ●

Coping with the large volume of cases and workload could have taken the frontliners to the breaking point, but support was at hand – thanks to the valiant involvement of Yishun Health's Allied Health Professionals (AHP) and Pharmacy staff. They provided much needed support in multiple roles across the hospital's and community's pandemic response efforts.

Dental assistants, physiotherapists, occupational therapists, speech therapists, therapy assistants, and more were deployed to screening and holding areas, supporting nurses in basic nursing duties, vital-signs monitoring, and engaging the patients. This included manning H4, one of the holding areas designated for patients as they await their transfer to Community Care Facilities and Community Recovery Facilities. In addition to helping with inpatient care, allied health colleagues played critical operational, logistical and administrative roles at the Contact Tracing Centre as well as the Hospital Command Centre, where 125 AHP and Pharmacy staff were deployed.

Beyond the campus, many also volunteered and trained for secondment to swabbing facilities and Swab Isolation Facilities across Singapore. Medical technologists and radiographers were also called upon to augment the manpower at the NCID.

ON THE FRONTLINE: A SURGEON'S PERSPECTIVE ●

With the physician workforce stretched to capacity, Yishun Health's surgeons put aside their scalpels to assist with COVID-19 clinical responsibilities and patient management. One of them was General Surgery Consultant Dr Clement Chia, who

was tasked to lead a COVID-19 cohort ward comprising patients with mild severity.

He shared his experience in a letter to the journal, *BJS*, identifying three phases of work: preparatory, ward execution, and sustenance. This sharing shed insight on workflows and procedures for PPE-use, clinical management, and zoning, as well as how to target approaches so as to maximise efficiency of interactions with patients in the ward. This optimisation also extended to judiciously planned investigations for resource management and to limit exposure to staff. Tying all this together was the need for leadership and a focus on staff safety and well-being, including the challenges of working in PPE and preventing burn-out.

ENHANCED RECOVERY AFTER SURGERY FOR HEPATOBILIARY SURGERY ●

Better outcomes have been achieved since the Hepatobiliary and Pancreatic (HPB) surgery team rolled out its Enhanced Recovery After Surgery (ERAS) programme in FY2019/2020. A year on, it has reduced the overall length of hospital stay, with lower post-operative complications.

In FY2020/2021, a total of 33 patients received care under the ERAS programme, versus 19 who received conventional care the preceding year. ERAS has:

- Reduced the mean post-operative length of stay from 21 to 10 days
- Reduced post-operative complication rates from 68.4% to 45.5%

The evidence-based multimodal ERAS initiative deploys a standardised protocol for the peri-operative care of HPB surgery patients, covering areas such as:

- Pre-operative screening and counselling
- Pre-operative nutrition, such as immuno-nutrition and avoidance of prolonged pre-operative fasting
- Pre-habilitation and operative mobilisation
- Peri-operative nursing
- Reduction in effects of peri-operative anaesthesia
- Targeted post-operative antibiotics, thromboprophylaxis, early removal of drain and nasogastric tubes, as well as prevention of nausea and vomiting

ENHANCED & STREAMLINED EYE CARE ●

Yishun Health’s Ophthalmology and Visual Sciences (OVS) clinic sees over 4,000 patients a month, a majority of whom undergo regular monitoring for stable eye conditions. To cope with the workload and deliver care more efficiently, the Supplementary Primary Eyecare Clinic (SPEC) was established in July 2017 at AdMC. As of February 2020, SPEC had managed a total of 649 patients.



The HPB team (bottom, L-R) Dr Tan Tzu Jen (Senior Consultant), Dr Tan Ming Yuan (Consultant); (top) Dr Wang Yi Liang (Associate Consultant), Dr Sivaraj Gunasekaran, (Consultant), and Josephine Boo (Assistant Nurse Clinician)

Comparison of SPEC vs E-SPEC

| Before SPEC | SPEC [AS IS] | | E-SPEC [TO BE] | |
|--|---|--|--|---------------------|
| Clinic Workload | Clinic Workload | Current SPEC | Clinic Workload | New E-SPEC |
| Ophthalmologists | Ophthalmologists | Optometrists (75%) Ophthalmologists (25%) | Ophthalmologists | Optometrists (100%) |
| New, complicated and stable cases | New and complicated cases | Stable cases | New and complicated cases | Stable cases |
| Ophthalmologists oversee new, complicated and stable cases | Ophthalmologists oversee only new and complicated cases, while stable cases are taken care of by optometrists with ophthalmologists’ physical supervision | | Ophthalmologists continue to oversee only new and complicated cases, and stable cases are taken care of by optometrists with ophthalmologists’ virtual supervision | |



Results of Implementing Transitional Rehabilitation at YCH Day Rehabilitation Centre

| Current model | Problem statement | Solution | Results |
|---|--|---|---|
| Active Rehabilitation (AR): Aimed at improving functional status | Many patients either remain at AR or transit to ME at the DRC, but not into the community. This results in fewer slots for new patients. | Once patients have reached their AR goals, they will go through Transitional Rehabilitation (TR) that aids their integration back to the community for self management. | <ul style="list-style-type: none"> • DRC client population fell from 31.6% to 20.3% • ME clients reduced from 25% to 11% • Increased availability of AR and TR slots • Lead time reduced from 3-4 weeks to 1 week |
| Maintenance Exercise (ME): Aimed at reducing functional decline | | | |

In FY2020/2021, SPEC was further enhanced. The Enhanced Supplementary Primary Eyecare Clinic (E-SPEC) streamlines care by training optometrists to manage stable cases with virtual supervision by ophthalmologists. This reduces the financial burden on patients and the healthcare system. It also enhances the independence and clinical competency of optometrists. E-SPEC cuts down on visit time and cost as patients need not see an ophthalmologist.

Since the implementation of E-SPEC in September 2020, 183 patients have benefited from this scheme for a total patient cost-savings of \$1,509.75.

ACTIVE TRANSITIONS ●

As initiatives to right-site patients become more ubiquitous, longer lead times for such facilities and resources are arising. To tackle the increasing referral period at the YCH Day Rehabilitation Centre (DRC), YCH piloted a revised model of active transition by adopting the transitional rehabilitation (TR) model suggested by the National One Rehab Framework.

The aim of TR is to help patients integrate back into the community for self-management, where they get support from video consultations, patient education, or community partners. By providing a timeline for this to guide patients, patients will be less dependent on the services of the DRC and can pursue self-management and long-term wellness.

EARLY CATHETER REMOVAL TO PREVENT UTI ●●

The early removal of indwelling urinary catheters (IDC) has been shown to be effective in preventing catheter-associated urinary tract infection (CAUTI). At YCH, the CAUTI team designed and implemented a Trial-Off-Catheter (TOC) protocol over a three-month

period in three out of five wards to encourage the review of its appropriateness. The TOC protocol equips clinicians and nurses with an objective way to assess the appropriateness of IDC use and possible early removal.

Since its trial, which took place from October-November 2020:

- Catheter utilisation ratio fell by 18%
- The rate of CAUTI per 1,000 catheter days dropped by 45%
- 77% of 35 patients assessed with the TOC protocol were successfully weaned off IDC, an improvement of 13% from baseline data
- Appropriate IDC use increased from 42% to 91%
- Zero CAUTI events were recorded post-TOC in all 35 patients enrolled

The protocol has also resulted in time savings for the care team. More importantly, it resulted in better patient outcomes, with lower cost of care, improved patient satisfaction, better mobility, and higher quality of life.

DEAR: LET'S REDUCE POLYPHARMACY ●

Patients with multiple chronic illnesses often face the issue of polypharmacy – having too many medications. This is linked to poor drug adherence and medication-related problems. Many elderly patients and/or caregivers were also non-English speaking and unfamiliar with the concept of deprescribing.

To tackle this issue, YCH's pharmacy began the Deprescribing Efforts And Raising Awareness of Deprescribing (DEAR) initiative. Deprescribing is a planned and supervised process of discontinuation or reducing the dose or frequency of medication that is not useful or causing harm.

Results of DEAR Pilot Programme

| Are you aware that you can inform your doctor or pharmacist that you have too many medicines? | |
|---|---|
| Pre-DEAR | Post-DEAR |
| 14% knew who to inform about pill burden | 74% knew who to inform about pill burden |
| Are you aware of the risks of taking too many medications? List examples out of the 6 risks counselled | |
| Pre-DEAR | Post-DEAR |
| 54% could not identify polypharmacy risks | 11% could not identify polypharmacy risks |

YCH's pharmacy team first rolled out a series of posters and educational pamphlets in multiple languages to explain the concept of deprescribing and the risks of polypharmacy, and suggested questions that patients can ask their own pharmacists or doctors. Medication counselling then ran from 1 July to 31 August 2020. During these sessions, 37% of the 35 counselled patients verbalised pill burden. Most left medication management up to

their care teams, while others thought that all medications prescribed are essential.

Results from the DEAR pilot showed an improvement in deprescribing and polypharmacy awareness.

Since October 2020, DEAR has been rolled out to all YCH wards, and the posters have been adapted into TV IPTV slides that are on loop display at hospital lift lobbies to reach out to more patients and caregivers.

TECHNOLOGY

The COVID-19 pandemic has been a catalyst in our accelerated adoption and expansion of digital initiatives. Moving swiftly to leverage IT sustained our ability to avoid disruptions and maintain critical functions in care delivery, medical education, and more.



PHCT's Telehealth initiative met the care needs of the population when face-to-face restrictions kicked in

COMMUNITY NURSING: THE TELEHEALTH WAY

Physical distancing and other pandemic restrictions led to the suspension of various community health outreach efforts, such as face-to-face sessions at PHCT's Community Nursing Posts (CNPs). However, these measures also accelerated our push towards telehealth, and provided an opportune time to create a future-ready model of care delivery to meet the needs of our population, especially vulnerable seniors and those with chronic health conditions.

In June 2020, PHCT began a community health telehealth pilot, rolling out video consultations. These are held in homes or at selected CNPs on an appointment basis. These sessions target two groups of seniors with varying needs:



- Those with stable long-term conditions
- Those with acute medical issues who require closer medical supervision for a period of time

Since June 2020, 300 residents have benefited from 61 home-based and 397 centre-based telehealth sessions. For each session, residents are loaned telehealth kits consisting of a tablet and health monitoring devices, such as automated blood pressure monitors, thermometers, and weighing scales. This enables seniors who are unable to afford digital devices to consult nurses remotely. For a more hassle-free experience and for seniors who are not familiar with digital technology, PHCT staff and/or volunteers conduct home visits to set up the video-conferencing equipment.

NGEMR: ANOTHER STEP TOWARDS OUR ONE CARE PLAN

Yishun Health made more strides in our digital transformation journey and the realisation of our One Care Plan with the adoption of the Next Generation Electronic Medical Record (NGEMR) system. This will enable more public healthcare sector users from multiple care settings to access the same records and provide more efficient care.

On 1 October 2020, the NGEMR Project Management Office (PMO) was set up, and work commenced to align systems for the go-live date, which is scheduled for July 2022. As of the end of FY2020/2021, the NGEMR PMO has onboarded Readiness Officers and Subject Matter Experts, and will subsequently move in phases to conduct workflow conversations, testing, and training. The team aims to ensure that all 5,000 staff are trained, competent, and certified, ready to use the NGEMR.



The DART programme leverages technology to teach eye examination skills to medical students on their ophthalmology rotation

TEACHING IN A PANDEMIC ●

With face-to-face interactions limited due to safe distancing and split teams, Zoom took over as the mode of instruction for medical education. Leveraging technology to enhance teaching, A/Prof Yip Chee Chew, Education Director, Education Development Office (EDO), pioneered the Distance Augmented Real-time Training (DART) programme.

DART utilises flipped classroom, guided mental rehearsals, test-enhanced learning, and cognitive feedback to teach eye examination skills to medical students on their ophthalmology rotation.

The two-module programme consists of self-directed e-learning sessions with instructional videos on eye examination techniques, and a pre-teaching MCQ test, as well as live online demonstrations of examination techniques by the student, with self, peer and faculty assessments. Online classes with case-based discussions and elaborative interrogations are also held. These sessions encourage deep learning by allowing students to link clinical signs with pathophysiological causes. The course ends with a review session for the MCQ test and a Q&A.

STEPPING UP, STEPPING OUT ●

When manpower demands in the hospital rose, the EDO staff unhesitatingly stepped out of their comfort zone to bolster the frontline to become temperature screeners, swabbers, and contact tracers, as well as to provide Command Centre administrative support. Importantly, EDO set up safe and rigorous screenings, including access to PPE, to keep medical students safe while also imparting valuable lessons in mask fitting and infection protocol.

PORTABLE GLAUCOMA SCREENING ●

Screening is an essential aspect of detecting glaucoma early so that sight can be saved. However, one of the challenges is that the test traditionally uses a machine called a Humphrey Visual Field Analyser (HFA), which is expensive and heavy.

The optometrist-run test flashes a series of white light of varying brightness, which takes time and can be subject to human error. The test is also not suitable for wheelchair- or bed-bound patients, as patients are required to sit upright for it. At the same time, HFAs are expensive to maintain, and require additional manpower to operate. Due to these downsides, OVS explored various solutions that are more portable and accessible so that the test can be made more readily available in the community.

Cost comparison of TPP vs HFA

| Category | HFA | TPP | Cost Savings |
|------------------|--|----------------------------|---------------------------|
| Equipment | \$36,000 | \$2,500 | \$33,500 (one-time) |
| Manpower | Optometrist | PSA | \$28,440/year (recurrent) |
| Value to Patient | \$37 + \$25 (SOC Consultation + Visual Field Test) | \$5 (Functional Screening) | \$57 (92%) |



The TPP conducts visual field tests similar to an HFA machine, but presents the visual stimuli on smartphone screens via a VR headset

One of these solutions is the pilot of a Virtual Reality (VR)-based visual field-testing software and Toronto Portable Perimetry (TPP), developed in collaboration with the University of Toronto.

TPP conducts visual field tests similar to a HFA machine, but presents the visual stimuli on smartphone screens via a VR headset. Just like with the HFA, they click a button when they see a light. The difference is that TPP includes a step-by-step guide that OVS developed to be available in not only English, but in Mandarin, Malay and Tamil as well. These immediate reminders lower the chance of inaccuracy. KTPH is the first institution in Asia to embark on this innovative technology.

TPP is cheaper, faster, and can be administered by trained Patient Service Associates (PSAs). Patients lying down can also easily use the headgear.

Another glaucoma screening tool is the Mobile Adjunct to Perimetry System (MAPS). Smaller and more portable than the conventional HFA, MAPS is more affordable and easier to operate. Already in use at AdMC, MAPS brings glaucoma screening into the community, offering greater convenience for residents, and making screenings safer for residents as they do not need to visit the hospital. The test, which can be conducted by optometrists, has been enhanced to eliminate some of the false positive and false negative results that can arise in a conventional test.

A BARRIER OF PROTECTION ●

Healthcare workers caring for patients run the risk of being exposed to aerosolised pathogens, especially in the emergency setting. With the COVID-19 pandemic, this risk of contact with germ-laden respiratory droplets was even more pronounced. To offer more protection to staff, an aerosol shield was designed and customised for use at the A&E. This shield serves as an additional physical barrier to infection, and provides enhanced protection for healthcare staff.

Developed specifically for use in the A&E, and taking into consideration the needs of geriatric patients, the shield forms a clear, physical barrier and is:

- Right-sized, lightweight, and portable
- Adjustable for standing, sitting, and supine patients
- Easy to disinfect
- Fitted with ports for accessibility

IN-HOUSE REHAB FOR COVID-19 PATIENTS ●

While safe distancing helped to reduce the spread of COVID-19, it also has its downsides, especially in the wards. The reduction of daily activities and prolonged periods of isolation



Not only did the *Teh Tarik* workout get patients moving during their admission, it also uplifted the spirit in the wards!

increased the risk of deconditioning and psychological stress in patients due to immobility and a more sedentary routine.

To continue providing rehabilitation services to COVID-19 patients, Yishun Health’s physiotherapists formed a Grub Team to look after 136 COVID-positive patients staying in the four isolation wards. The three-person team physically distanced themselves from their colleagues, and worked from a separate office during the whole period of segregation.

Inspired by the local *kopitiam* drink, they developed the *Teh Tarik* workout, a fun and

simple exercise sequence for patients to follow. The workout was facilitated by nurses and the Grub Team twice a day on weekdays, creating a positive impact on both the physical fitness as well as the mental well-being of patients. Videos of the workout became extremely popular among patients, and were even featured in the media and adopted by some community facilities housing patients with COVID-19. The videos were also shared worldwide through a webinar session by the Singapore Physiotherapy Association.

ENHANCING WOUND CARE WITH ULTRASOUND ●

YCH’s specialty wound care team implemented the use of ultrasound technology to tackle and improve outcomes for chronic and complex wounds. This method has proven to be better than mechanical wound debridement, which is time-consuming and can be uncomfortable for patients.

Ultrasonic Assisted Wound Debridement (UAW) technology uses low-frequency ultrasonic vibrations to gently dislodge dead tissues from the wound bed. This results in less damage to healthy tissues and a pain-free experience, promoting more rapid and complete healing.

The team implemented UAW and improved the care experience, healing and outcomes for patients with chronic and complex wounds, a disabling problem that is traditionally associated with poor quality of life and is a significant burden to patients. Despite disruptions caused by the pandemic, more than 100 patients benefited from UAW in 2020.

Comparison of UAW vs Conventional Mechanical Debridement

| | Conventional Mechanical Debridement | UAW | Savings |
|---------------------------------------|-------------------------------------|---------|----------|
| Average no. of sessions per patient | 8 | 4 | 4 |
| Minutes per session | 30 mins | 10 mins | 20 mins |
| Minutes from total number of sessions | 240 mins | 40 mins | 200 mins |
| Manpower cost (60 mins = \$25) | \$100 | \$16.75 | \$83.25 |
| No. of Registered Nurses | 8 | 4 | 4 |



CHAPTER 2



DRIVING RESEARCH,
PURSUING EDUCATION,
ENHANCING HEALTH



DRIVING **RESEARCH**, PURSUING **EDUCATION**, ENHANCING **HEALTH**

We strive to improve the quality of care for our patients through research, education and innovation. In these unusual times, we have also directed our efforts to support the fight against the pandemic and affected communities.



SUPPORTING RESEARCH AND MORE

The Alexandra Health Fund (AHF) continues to drive a large proportion of Yishun Health's research work. In all, AHF has supported 35 key programmes directed at enhancing health and improving quality of life for our patients through programmes in education, research and innovation, community collaboration, and financial assistance for those in need.

During the pandemic, AHF played an important role in supporting the efforts to recognise and appreciate Yishun Health staff. In addition to this, a COVID-19 welfare fund was set up to help migrant workers who were warded or waiting for Community Isolation Facility admissions.

In FY2020/2021, AHF benefited over 400 unique patients with financial assistance. It continues to help patients live independently in the community through support services, such as transportation and home care, medical equipment, consumables, and medical treatment.

Some of the grants awarded by AHF include:

- G-CARE: Glaucoma Community-based Augmented Review and Empowerment programme
- SPEC: Supplementary Primary Eye Care clinic programme
- Get Well Fund: Supports inpatient discharges and patients of 'Ageing-in-Place Hospital-to-Home' programme
- Staff Strategic Development Grant

As of March 2021, AHF has \$177 million in its coffers, an increase from \$168 million (as at March 2020).

COLLABORATIONS AND TESTING FOR BETTER RENAL CARE

COVID-19 did not stop the Renal Medicine team from the initiation and continuation of multiple

investigator-driven clinical studies. The team continues to collaborate with the Department of Computer Science, National University of Singapore, on acute kidney injury mathematical modelling and the Biomedical Engineering & Materials Group, School of Engineering, Nanyang Polytechnic, on image analysis for ultrasonography of lungs in end-stage kidney disease patients. Both projects make use of artificial intelligence and machine learning.

Internally, the Renal Medicine team also has interdisciplinary collaborations with dietitians and pharmacists on randomised controlled trials using keto-analogues and a low-protein diet in patients with diabetic kidney disease. In addition to this, they also explore using urokinase for dysfunctional tunnelled dialysis catheters in haemodialysis patients.

Apart from clinical work, the team also supports and guides renal nurses in conducting multiple nurse-led trials under support from the Alexandra Health Enabling Grant.

EVALUATING THE EFFICACY OF NEXT-GEN FAMILIAL HYPERCHOLESTEROLEMIA SCREENING

Dr Sharon Pek, Principal Research Officer, Clinical Research Unit, KTPH

Familial Hypercholesterolemia (FH), the most common form of autosomal genetic disease, affects one in every 200 to 300 people. Patients with FH have extremely high bad cholesterol and a 50% chance of passing the defective gene to their offspring.

To better identify those with FH at an earlier stage, a local consortium of clinicians, scientists and community groups formed Familial Hypercholesterolemia: Case identification, Assessment and Reduction in adverse Events

AHF Donations FY2020/2021

| | |
|---|-----------|
| General donations (including Giving.sg and the Bicentennial Community Fund matching grant) | \$225,298 |
| Yishun Community Hospital and Community Programmes | \$2,000 |
| COVID-19 Migrant Workers Welfare Fund | \$29,000 |
| Staff Welfare Fund (supports and appreciates frontline healthcare workers) | \$150,000 |
| Yishun Health's Nursing Leaders Scholarship (including Bicentennial Community Fund matching grant) | \$200,000 |
| Kaizen Leadership Development Programme | \$750,000 |



(FHCARE) in 2015. This ensures timely treatment, lowering the risk of a premature heart attack.

FHCARE is led by A/Prof Subramaniam Tavintharan, Clinical Director and Senior Consultant, Diabetes Centre, with continued support from AHF and additional funding from Singapore Heart Foundation and Amgen. The FHCARE Registry currently receives referrals from clinicians across the NHG, SingHealth and NUHS healthcare groups.

Today, the Registry holds data from 540 index patients with clinical FH. Approximately 200 family members of these index patients have been screened by Next Generation Sequencing and biochemical methods. Half have been diagnosed with FH, of which 70% were newly diagnosed.

To evaluate the effectiveness of screening for FH, KTPH is working with health economists from Saw Swee Hock School of Public Health to assess the usefulness of Next Generation Sequencing. This collaboration is funded by the Ministry of Health (Precision Medicine Office).



Senior Consultant Dr Allen Liu (left) and Consultant Dr Grace Tan analysing images from an ultrasonography of a haemodialysis patient's lung. They were the Project Supervisor and Principal Investigator respectively

A NEW SCORING SYSTEM TO PREDICT TYPE 2 DIABETES REMISSION AFTER METABOLIC SURGERY

Dr Angela Moh, Principal Research Officer, Clinical Research Unit, KTPH

Metabolic surgery is the most effective treatment to reverse Type 2 Diabetes (T2D) in people with obesity, but not all patients achieve complete remission.

To improve patient selection for surgery and define realistic postoperative goals, a scoring system is used to predict the success of T2D remission after surgery. One commonly used scoring system in Asia is the Diabetes Surgery Score, which integrates four factors: Age, Body mass index, C-peptide, and Duration of diabetes (also known as the ABCD score). However, this system is not sensitive to Singapore's local mixed ethnic cohort.

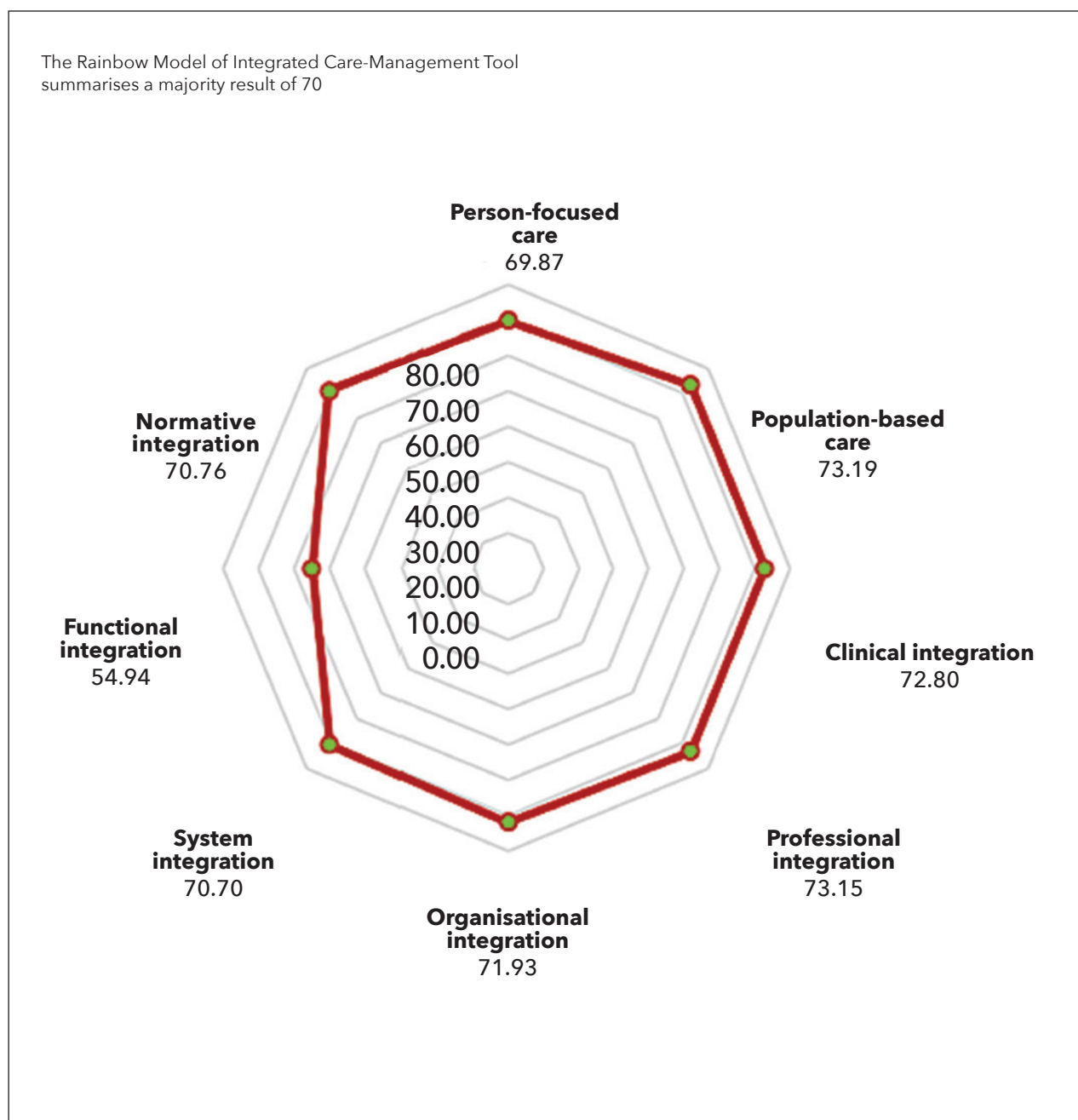
Using our growing in-depth understanding of the pathobiology of diabetes, a new scoring system was developed to improve prediction of T2D remission following metabolic surgery.

To understand the factors related to T2D remission, the research team did a retrospective analysis of adults with T2D who underwent metabolic surgery between 2007 and 2018 to identify key variables that could be used in a new scoring system.

The Metabolic surgery Diabetes Remission (MDR) Scoring System

| MDR | 0 | 1 | 2 | 3 |
|---------------------|------|------------|-------------|-----|
| Age (years) | > 50 | 41 – 50 | ≤ 40 | – |
| HOMA2-B (%) | ≤ 40 | > 40 – 80 | > 80 | – |
| DM duration (years) | ≥ 10 | 6 – 9 | 2 – 5 | < 2 |
| HbA1c (%) | ≥ 10 | 8.5 – < 10 | 7.0 – < 8.5 | < 7 |

CARITAS iCommunity@North: Rainbow Model of Integrated Care-Measurement Tool



Of the 47.4% patients who achieved complete T2D remission, factors such as preoperative age, T2D duration, HbA1c, and HOMA-B (pancreatic β -cell response to blood glucose) were isolated as key predictors.

Based on this, a new 10-point scoring system – the Metabolic surgery Diabetes Remission (MDR) score – was developed. A high MDR score implies higher probability of T2D remission after metabolic surgery. Compared with the ABCD score, the MDR score produced fewer misclassifications at the mid

to high scores, achieving a predictive accuracy of 71-100% at six points and above. In addition, MDR achieved a higher area under the receiver operating characteristic curve than ABCD for the primary outcome (0.79 versus 0.67, $P = 0.007$).

In contrast to previous scoring systems, MDR is the first of its kind to reflect pancreatic β -cell response to blood glucose. The algorithm may serve as a useful clinical scoring system for predicting short-term T2D remission after metabolic surgery in Singapore's multi-ethnic Asian population.



INTEGRATED CARE FOR PERSONS WITH DEMENTIA AND THEIR CAREGIVERS

A/Prof Philip Yap, Senior Consultant, and Dr Cheong Chin Yee, Consultant, Geriatric Medicine, KTPH

CARITAS iCommunity@North is an integrated care initiative for persons with dementia (PWDs) that extends hospital care into the community. It connects PWDs with organisations that provide services such as day care, case management, caregiver support and training, as well as home care – including home help, home medical, and nursing care.

An evaluation of CARITAS was conducted in FY2020/2021 to evaluate its clinical outcomes with respect to patients' function, quality of life, and behavioural problems. It also estimated its cost-effectiveness from a patient's perspective by benchmarking the programme against other dementia treatments and Singapore's Gross Domestic Product (GDP) per capita.

CARITAS was found to significantly reduce caregiver burden and ameliorate PWDs' behavioural problems pertaining to memory, disruptive behaviours, and depression. The benefits were comparable to other interventions for dementia, and cost \$133,056.69 per quality-adjusted life years gained. This yielded a favourable incremental cost-effectiveness ratio of 1.31 and 1.49 respectively against the cost of donepezil in patients with mild Alzheimer's disease and Singapore's GDP per capita in 2019.

In the assessment, the Rainbow Model of Integrated Care-Measurement Tool (RMIC-MT) was used to evaluate the level of integration from managerial perspectives. The RMIC-MT evaluates eight interconnected dimensions (e.g. clinical, professional, organisational, etc). CARITAS achieved a commendable score of 70 and above for a majority of the dimensions. Overall, CARITAS achieved maturity in micro-levels and meso-levels of integration, while macro-integration could benefit from increased engagement with stakeholders and implementing a shared information system.

To address the challenges of the COVID-19 pandemic in 2020, the CARITAS team worked to better identify the needs of PWDs and their caregivers. Some 101 caregivers responded to an online survey between April and June 2020. A majority (65.4%) of the caregivers reported worsening of caregiver stress. Multivariate analysis revealed that factors related to PWDs as well as

accessibility to services significantly correlated with increased caregiver stress. Caregivers expressed the need for respite support and engagement programmes for PWDs, given the closure of day care centres during the lockdown. This indicates the need for more strategies that are responsive to the needs of PWDs and their caregivers in these pandemic times.

3D FOOD PRINTING FOR MORE APPETISING PUREE DIETS

Gladys Wong, Senior Principal Dietitian, Nutrition and Dietetics, KTPH

Frail older adults, and persons with dementia or stroke typically have difficulties chewing and swallowing, which can increase the risk of choking and aspiration pneumonia. They are usually advised to eat pureed foods. However, pureed foods are challenging to prepare, and do not look or taste appetising compared to regular food. This can lead to reduced food intake and compromised nutrition. From a safety standpoint, pureed foods also tend to have inconsistent textures.

For some time now, the Nutrition and Dietetics (N&D) department has explored the use of 3D food printing (3DFP) to produce foods that are of a consistent texture, while also being visually presentable, palatable and personalised. This gives patients a safe, dignified eating experience. In FY2020/2021, one of the areas that N&D focused on designing was fresh plant-based food inks.

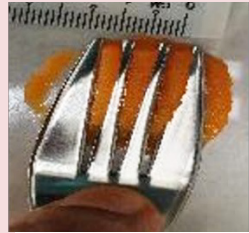
Fresh and frozen vegetables using extrusion 3DFP were categorised into three different groups, depending on their starch and water content (WC). Garden peas (WC 80%), carrots (WC 90%) and *bok choy* (WC \geq 96%) were chosen as representatives for each category. Textural modifications were done during the formulation of inks by cooking, blending, sieving, and using hydrocolloids such as xanthan gum, kappa carrageenan, and locust bean gum. Inks were further characterised by their printability, syneresis, as well as rheological and textural properties. To speed up the parallel tracks, the Foodini (natural machine) and Wiiibox Sweetin 3D food printers were used.

The 3D-printed samples were then analysed for texture, shape stability, and printing precision to allow the team to identify the ideal one. To ensure patient safety when eating, the texture of each formulation was also tested

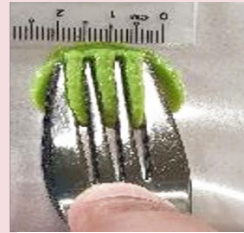
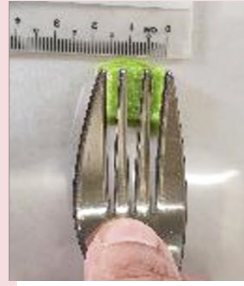
Bok Choy



Carrots



Garden Peas



The 3D food printing produces pureed foods that are more consistent in texture, and can be modified to be more presentable, palatable and personalised for patients





using Fork Pressure and Spoon Tilt tests to confirm the appropriate texture as determined by the International Dysphagia Diet Standardisation Initiative.

TAKING ON WIDE-RANGING RESEARCH IN ANAESTHESIA

A/Prof Edwin Seet, Senior Consultant, and A/Prof Kumar Chandra Mohan, Senior Consultant, Anaesthesia, KTPH

A better way to monitor obstructive sleep apnoea (OSA)

OSA is the most common sleep-related breathing disorder, but it often goes undiagnosed. People with OSA stop breathing in their sleep repeatedly because of blockage in the upper airway. This leads to low levels of oxygen in the blood. The gold standard is in-laboratory polysomnography, but this is costly, manpower-intensive, and difficult to administer.

To explore the feasibility of more accessible ways to diagnose and monitor OSA, KTPH researchers collaborated with A*STAR, Singapore University of Technology and Design, and the University of Sherbrooke to look into sensors and mobile phone applications.

One project reviewed the effectiveness of using a type of sensor known as a ballistocardiogram. These devices are embedded under patients during sleep, and have been shown to identify cardiac arrhythmias and apnoea non-intrusively. The advantage of these sensors is their simple installation and accessibility.

The Anaesthesia department also published a report on a novel smartphone app-based pulse oximetry system that is able to assess patients' risk of OSA and stratify those who require medical attention early. This convenient option may be useful in reducing the burden placed on hospital resources for in-laboratory polysomnography.

Safer airway management during eye surgery

For some eye surgeries that require general anaesthesia, a device known as a supraglottic airway (SGA) is used to reduce unwanted side effects. However, SGAs are subject to misplacement after insertion. A

good SGA placement is usually determined using Oropharyngeal Leak Pressure (OLP).

A study was conducted to improve the use of SGA devices and patient outcomes. This is the first study of its kind to compare the vertical projected height of different SGA devices in a manikin so as to determine encroachment into the surgical field and interference with surgery.

The research subsequently recommended newer modalities, such as using a videolaryngoscope to improve SGA device placement and OLP accuracy. To this end, the researchers collaborated with international researchers and proposed development of a new generation of SGA equipped with cameras and fibre optic illumination to allow doctors to visualise insertion of the device and optimise its placement.

Using simulations to improve anaesthetic skills

During eye surgery, the eyeball is anaesthetised using a procedure known as a Sub-Tenon Block (STB), in which anaesthesia is injected into the area between the sclera and the Tenon capsule (a thin membrane that envelops the eyeball).

Though STB is relatively safe, it is frequently associated with minor complications, such as chemosis (eye irritation) and postoperative subconjunctival haemorrhage (bleeding from small blood vessels over the whites of the eye). Research has shown the value in incisionless techniques, which have been further improved with the use of lacrimal dilators that result in fewer minor complications.

To better train doctors in conducting anaesthetic procedures for the eye, our researchers have also looked into simulation training using manikins. This provides an anatomically equivalent and repeatable training system that can build competence outside the operating theatre. Partnering engineers from India, the team developed a Sub-Tenon simulator for doctors to practise the STB procedure, a process that has been validated for anatomical accuracy and efficacy. Researchers have also collaborated with international researchers to trace the historical evolution, utility and suitability, complications, and future applications of STB.



CHAPTER 3



**YISHUN HEALTH,
STRONGER AS ONE**



YISHUN HEALTH, **STRONGER AS ONE**

Yishun Health continues to solidify our mission and bolster our culture of care. Together, we have continued to drive efforts to strengthen our foundations, build our capabilities, and nurture the spirit of service towards others. This ongoing pursuit of learning and improvement is part of our DNA – and how we grow from strength to strength.



ORGANISATIONAL VALUES

We continued to renew and re-energise ourselves in our mission of care by revisiting our values and priorities, and welcoming new leadership.

LOOKING AHEAD TO NEW BEGINNINGS

In the first Townhall of 2021, held on 15 January, we welcomed our new CEO, Prof Chua Hong Choon. Although he would officially take over from Mrs Chew Kwee Tiang only from 1 February 2021, Prof Chua, previously the CEO of the Institute of Mental Health, was on hand to share his excitement over joining Yishun Health, and expressed his admiration for the good work undertaken by the organisation over the last 10 years.

The handover was marked by the handing over of a symbolic 'key' and two framed posters from our Alexandra Hospital days. Staff also presented a touching tribute video to Mrs Chew, compiling words of appreciation and thanks from staff across Yishun Health.

At the same Townhall, Yishun Health launched its refreshed Yishun Health Basics, an integral part of our DNA. These 10 Basics – first developed 10 years ago – guide us as an organisation, and set the foundations of our culture and purpose.

REINVIGORATE OUR COMMITMENT TO PATIENT SAFETY

Yishun Health held its first Patient Safety Time Out on 19 March 2021 over Zoom to reinvigorate our commitment to patient safety. This culture of safety and zero harm goes beyond rules and protocols, and aims to foster a mindset and attitude of professionalism and dedication.

A five-member panel, comprising Yishun Health Senior Management, discussed five areas to work on.



Senior Management addressing questions from the ground at the Patient Safety Time Out



- **A proactive and preventative approach** to enable us to be more aware of the interplay between systems and human factors, allowing us to proactively look out for risk factors and implement more checks and balances.
- **Greater openness** to facilitate communication beyond hierarchies and disciplines so as to enable all staff to speak up – regardless of seniority or experience – to point out risks, flaws and dangers.
- **Reducing groupthink** and being open to having a devil’s advocate to avoid unconscious and implicit bias.
- Embracing **honest self- and team-examination** to acknowledge weaknesses and manage expectations for greater communication. This challenges us to step up and take ownership of situations instead of looking at what the system can do for us.
- **Supporting staff in stressful situations** using creative and innovative work design that optimises human performance while avoiding burnout.

CEO Prof Chua Hong Choon closed the session by emphasising that good and safe patient care stems from not just systems and processes, but mental resilience that is supported on a



YISHUNHEALTH 10 BASICS

- Basic 1** Care for Patients, Community, Environment & Each Other
- Basic 2** Uphold the Highest Standards
- Basic 3** Be Hands-on, See for Ourselves
- Basic 4** Take Ownership
- Basic 5** Be a Team Player
- Basic 6** Stay Vigilant & Report All Safety, Security & Emergency Issues
- Basic 7** Be Ambassadors for Health
- Basic 8** Be Proactive & Gracious in our Hospitality
- Basic 9** Think Big, Dig Deep, Start Small & Act Fast
- Basic 10** Learn Constantly & Have An Abundance Mindset

foundation of good emotional well-being at work.

PATIENT SAFETY IS A NEVER-ENDING JOURNEY

In July 2020, Yishun Health held its Patient Safety Webinar, entitled ‘Patient Safety Starts with Me’. Organised by the Patient Safety Committee, more than 330 people tuned in via Zoom, while a few gathered at the KTPH auditorium.

Patient safety is central to what we do at Yishun Health. There is no quality care without safety.





The ongoing fight against COVID-19 has become a litmus test of sorts on the robustness of our patient safety framework, as we learn to cope with evolving developments, changes in workflows, and working with less familiar colleagues under high stress.

As we continue to navigate our way through the pandemic and ease back into business-as-usual mode, delivering safe care must remain our top

priority. This was the overarching message of then-CEO Mrs Chew Kwee Tiang and CMB A/Prof Pek Wee Yang in the session.

In its second year running, Patient Safety Month brings together different teams across the campus under the same umbrella to learn from each other, and reaffirm our commitment to our patients. Over the course of the entire month, the Patient Safety Committee also pushed out posters and videos to engage staff and remind them of various safety checks put in place in Yishun Health.

KTPH CELEBRATES ITS 10-YEAR ANNIVERSARY!

In 2020, KTPH celebrated our 10-year milestone of 'Keeping The People Healthy' with a series of activities. One of the more notable events was the releasing of fish into the KTPH pond and the planting of a Tembusu tree, signifying our continued commitment to sustainability and creating a healing environment. This year's tree-planting also mirrored the events of our opening day, when Minister Mentor Lee Kuan Yew officiated and planted a Tamalan tree on our grounds.

As part of the festivities, a mural – *Caring for You Into the Future* – was also commissioned for display along the walkway into the KTPH



auditorium. Mdm Kay Kuok, Chairman, NHG, and Prof Philip Choo, GCEO, NHG, officially unveiled the mural. The mural is an artistic impression of a future-ready ecosystem of care where all residents have a 'One Care Plan', enabled by hassle-free access to dignified, safe and value-driven care. Mrs Chew also launched a special KTPH10 commemorative book, *Growing Excellence*, while an anniversary video showcasing Yishun Health's care ethos made its debut.

COLLABORATIONS FOR BETTER PATIENT CARE

In 2020, Yishun Health signed Memorandums of Understanding (MOU) with various organisations to improve patient care.

Collaborating with Singapore Airlines (SIA), Yishun Health established a partnership in the areas of service quality training and delivery; and the development of safer and improved working practices through the learning of SIA's crew resource management training. SIA commenced customer service training for KTPH's new Patient Care Officers (PCO) [see page 53], a role inspired by the Care Ambassadors programme that KTPH and SIA jointly launched in April 2020. The PCO



works closely with doctors, nurses and allied health staff to provide quality care service, caregiving and end-to-end care coordination for patients in the ward.

Yishun Health also embarked on a move towards digitalisation as a smarter and more efficient way of caring for our patients. An MOU was signed with National University of Singapore's Institute of



Then-CEO Mrs Chew Kwee Tiang (left) and SIA CEO Mr Goh Choon Phong at the MOU Signing Ceremony



(L-R) Then-CEO Mrs Chew Kwee Tiang, GCEO Prof Philip Choo, NUS-ISS Management Board Chairman Ms Janet Ang, and NUS-ISS CEO Mr Choong Chan Meng



Systems Science (NUS-ISS) in September 2020. NUS-ISS is widely recognised as a champion of digitalisation in areas such as data science, smart health, and digital innovation. It is no surprise that, under this partnership, Yishun Health's next phase will include digitally transforming its care delivery ecosystem, as well as equip staff with relevant skills.

The four main initiatives under this MOU are:

- A Data-Driven Smart Health Programme
- Addressing and Supporting National Challenges
- Pilot Projects, such as Artificial Intelligence in Customer Relationships Management
- A Living Learning Laboratory

PROFESSIONAL DEVELOPMENT

If anything, the pandemic has shown us the importance of agility, knowledge sharing, and continual learning. To keep ahead in the dynamic healthcare landscape, we carried on in our pursuit of capability development and professional training.

AN ENHANCED E-LEARN: A BETTER LEARNING EXPERIENCE

Two major systems in courseware and training automations took place in FY2020/2021 to boost our capabilities to deliver e-learning.

In June 2020, the cluster-wide eLEARN system was upgraded to include more enhanced features, with 58 trainers and 83 courses. Since then, this has increased to 109 trainers and close to 150 courses and quizzes. To further enhance learning effectiveness, Human Resource Development (HRD) partnered with Nursing Education, Data Protection Office, and the Office of Clinical Governance (OCG) to develop and roll out in-house interactive e-learning courseware, such as the Annual PDPA Refresher 2020 series and OCG's Patient Safety Simulation. These courses were all designed, developed and produced by HRD to include videos, gamification elements, and meaningful interactions.

The annual Learning Needs Analysis (LNA) process that takes place every September to October was also fully automated in FY2020/2021. It was made available on a LNA Web Portal on the Yishun Health Intranet and comprised two sections:

- **LNA submission:** Featuring extensive colour-rich programme brochures and catalogues
- **Training records:** Featuring a Visualisation Dashboard that shows training records for the past 10 years for ease of review and approval

The portal achieved 94% organisation-wide submission rate and garnered positive comments from HODs and leaders.

LEARNING ON-DEMAND TAKES OFF

To ensure that core competency training continued without disruption, HRD developed more online-based professional programmes. These on-demand learning courses (such as *e-Orientation*, *e-Speaking Up for Safety™*, and *7 Habits of Highly Effective People*) were well received and recorded higher enrolments. For instance, 315 staff enrolled in the latter in FY2020/2021, 46% more than in FY2019/2020. Significantly, all these courses recorded high evaluation scores of 4.0 to 4.7 out of 5.

EMBRACING LEARNING ON THE GO

HRD invited Dr Vaikunthan Rajaratnam, Senior Consultant, Orthopaedic Surgery, KTPH, and NHG Education Faculty member, to conduct a course in Smart Mobile Learning using e-learning software *Articulate Rise 360*. The goal was to develop mobile learning competencies among staff facilitators, educators, trainers, and course developers. Some 29 staff, including two HODs, attended the half-day workshop. In addition to this course, Zoom-based refresher sessions were also conducted by HRD for another 49 educators and trainers.

VACCINATION PORTAL

Digitalisation also came in handy to support our campus-wide vaccination efforts. HRD partnered colleagues in Operation Administration and the Staff Clinic to develop a dedicated portal to streamline the staff vaccination process. The online portal comprised features such as:

- Declaration form to indicate interest
- Booking function for the selection of dates and times and to enforce the 21-day interval



Patient Care Officers had to undergo role play training to learn how to respond in different scenarios

- Verification of staff vaccination data – injection site, lot number, and time stamp – as well as the issuance of a Vaccination Card; the data is extracted and uploaded for reporting to MOH

The portal was used across both Yishun Health and Woodlands Health Campus vaccination centres. A total of 10,968 injections were administered during this exercise.

MORE MEANINGFUL LEARNING JOURNEYS

FY2020/2021 saw the introduction of competency-based managerial programmes for supervisors, executives and managers. About 300 staff attended targeted managerial skill modules based on their LNA needs, including courses such as *Driving Change*, *Coaching for Peak Performance*, and *Communicating with Impact*.

Apart from these, six customised Managerial Learning Journeys – four and two, respectively – were deployed for 120 emerging and promising managers from Nursing and Allied Health. A post-course behavioural impact survey revealed that participants and

their supervisors reported high scores (against global norms) on reported team productivity and participant engagement with the organisation. Scores on intra-unit relationship improvement and achievement of goals also saw between 27% and 33% improvement after the training.

DEVELOPING CONVERSATIONS THAT MATTER

Building upon the success of department conversations for the Employee Climate Survey, HRD saw an emerging need to develop facilitation skills. Facilitation is a distinct discipline that equips managers with the ability to enhance collaborations within teams and across functional groups.

A new and customised facilitation programme was introduced in FY2020/2021. Apart from learning about brainstorming, resolving issues, prioritisation, and decision-making, participants went through a curated experiential learning to understand the roles and responsibilities in facilitation, designing and planning conversations, and employing the relevant facilitation tools and methods based on outcomes of the session.



CONTINUING OUR EDUCATIONAL PURSUITS

Despite disruptions caused by the pandemic, Yishun Health continued to sponsor staff for higher education, executive education, and leadership development. Although overseas Health Manpower Development Plan Fellowships were suspended, a total of 99 in-service formal education scholarship and sponsorships were awarded.

Nurses who embarked on the Specialist Diploma and Advanced Diploma in Nursing with Nanyang Polytechnic in late 2019 managed to successfully complete their programme. Two KTPH nurses were awarded scholarships under the Mavis Khoo Nursing Leaders Scholarship, while two YCH nurses received the newly launched Community Care Nursing Leadership Programme Sponsorship. In addition to these awards, a Yishun Health Senior Management staff graduated from Harvard Business School's rigorous Advanced Management Program (AMP).

PIVOTING TO IMPROVE CARE

New positions were created in FY2020/2021 to raise the ability to care for patients and to meet the rise in manpower needs brought on by the pandemic. One of these was that of Patient Care Officer (PCO), aimed at giving job seekers going

through mid-career switch a chance to work in healthcare. A 20-day training PCO curriculum was designed by HRD, Nursing and Operation Administration to equip trainees with skills in basic functional caregiving and service. This included a collaboration between Yishun Health and SIA on service quality training and delivery. Called *Service Delivery From The Heart*, the three-day service training used role play and coaching by senior staff from Yishun Health and SIA to illustrate how to meet patients' needs.

A second role was also introduced to upgrade the functions of Porters. With Porter Services expected to become highly automated in the near future, Yishun Health's Porters – many of them veterans in the field – took up an upskilling and job re-design programme as part of the hospital's journey towards Industry 4.0. In March 2020, 39 staff officially changed their work designation from Basic Care Assistant (BCA) to Healthcare Chaperone. In December 2020, two BCAs who successfully achieved the WSQ higher certificate in Health Support (Nursing Care) advanced to become Healthcare Assistants. The introduction of BCAs as non-clinical staff to provide basic patient care will allow nurses to be further upskilled to take on more clinical tasks as part of care re-design.



Our BCAs taking a group photo

STAFF WELFARE

The support of colleagues, peers and the public offered well-needed encouragement to many of us at Yishun Health. Beyond our day-to-day commitments, we also continued to mutually bolster each other's spirit through staff welfare schemes.



Members of Nee Soon GRC delivered chocolates and flowers to Yishun Health staff as tokens of appreciation and encouragement

AN OUTPOURING OF SUPPORT

Yishun Health's entire pandemic response within the campus and in the community was possible only through the dedicated work of all our staff. The encouragement and generous support from members of public motivated everyone in this long battle against COVID-19.

Over the course of FY2020/2021, Yishun Health received about 300 queries about gifts and donations. HRD facilitated these, devising and proposing guidelines and procedures for acceptance of items and modes of distribution. In all, HRD

oversaw and distributed 199 goodwill items and arranged 'CEO Thank You' notes to all donors.

TAKING TIME TO CELEBRATE THE LITTLE THINGS

Even as work went on to keep hospital operations going, Yishun Health took the time to safely celebrate festive occasions and other events. The HR Benefits & Wellness Team organised various decentralised and virtual activities as well as department competitions, all of which helped to raise the spirit of staff and prevent burnout.



1 The #SGUnited Buka Puasa was a public initiative and a ground-up effort to provide meals for the breaking of fast during Ramadan (23 April-23 May 2020) and aimed to express gratitude for and solidarity with frontliners. Many Yishun Health staff volunteered to distribute weekly meals to their Muslim colleagues.

2 & 3 For Deepavali, a virtual festival of lights was held. There were festive dish cooking demonstrations, Rangoli scratch art, Bollywood Zumba, as well as good deed and spring-cleaning competitions.

4 Nurses' Day 2020 was a call for nurses to Connect, Commit and Construct. This not only defines the mindset needed to work in the nursing profession, but implores our nurses to strive onward with the conviction of their calling to be more than a nurse. As COVID-19 safe management measures were put in place, various decentralised activities were organised to appreciate and celebrate our nurses. Senior Management delivering handmade bouquets of roses to the nurses, staff gathering to clap along the corridors, and the annual Nurses' Day Awards Ceremony uplifted the joyous occasion in Yishun Health!







World Diabetes Day 2020
Put the Brakes on Diabetes

Home Exercises for the Family
Eat Good, Feel Good
Role of Nurses in Diabetes Management
Debunking the Myths of Diabetes & Kidney Failure
Put the Brakes on Diabetes

THE ROLES OF NURSES IN DIABETES MANAGEMENT
Diabetes Nurse Educators and Community Nurse Team
AdMC & KTPH

5

5 Due to COVID-19 restrictions, educational and engaging events were shifted to Zoom and video recordings! These included the World Diabetes Day webinar, Awareness of Macular Diseases Week 2020, and The Purple Parade.

6 Staff got moo-ving around Yishun to celebrate Chinese New Year in 2021. There was an outdoor CNY Photo Hunt, K-cardio dance workout, air plant design, mosaic cherry blossom craft, and cooking classes. Many departments also participated in the CNY ox-picious decoration contest.

7 The 5th Kaizen Festival was held in August 2020 and recognised the efforts and ingenuity of our colleagues who have demonstrated the Kaizen spirit – an integral part of our Yishun Health culture and DNA. A total of 123 projects were received, 76 were shortlisted, and 23 were awarded. Eight team and individual Kaizen awards were also presented.

8 As part of the National Day festivities, six F-15 fighter jets flew past our campus and other hospitals in tribute to healthcare workers tackling the COVID-19 pandemic. A mobile column also made its way to the North, with armoured personnel saluting our healthcare team.







Staff were able to enjoy a virtual tour at the staff lounge during their lunch breaks



PALS TO LEAN ON

Working on the frontline of a pandemic can take its toll. The stress and worry are compounded with long shifts and many challenges. To reduce staff burnout, steps were taken to support those feeling the strain. One of these was the enhancement of the Peers Around Lending Support (PALS) programme, first launched in 2008. Run by clinical psychologists, PALS draws lessons from SARS to provide ongoing support and counselling for staff. Via varied platforms – such as group meetings, a helpline, email, outreach to those at high risk, and educational materials – the programme offers a safe, conducive space for staff to receive support.

TALKS OF THE TOWN

The Yishun Health tradition of learning talks and other educational general knowledge sessions continued in FY2020/2021. Among these was the monthly Brown Bag Series, a lunch-and-learn virtual session that seeks to inform, educate and inspire colleagues in areas such as personal development, emotional health, and financial resilience during COVID-19.

TRAVEL WITH(IN) YISHUN HEALTH

To impart a sense of adventure and give everyone a feeling of respite despite the curtailing of travel, the HR Benefits & Wellness Team replicated iconic travel destinations in the KTPH staff lounge. From the streets of Hong Kong’s Nathan Road to the breathtaking highlands of Scotland, virtual walks took colleagues on trips of the imagination in the safety of home.

Monthly Brown Bag Series

The Monthly Brown Bag Series is a lunch and learn virtual platform organised by HR Benefits and Wellness Team.

Need something smart to chew on? Look out for our Monthly Brown Bag Series emails for more information on how to register for these free virtual talks!

Financial Talk Series



- Measuring Your Financial Fitness
- Planning On Retirement
- Financial Planning For Couples
- Money Sense For Your Child
- Considerations When Investing
- Understanding Life Insurance
- Assessing Your Insurance
- Major Financial Products

Self Care Talk Series



- Mental wellbeing
- Mindfulness
- Urban farming - How it reduces anxiety, stress and depression.

Mobile Phone Photography Talk Series



- Photography 101 part 1: Does A Picture Speaks A Thousand Words?
- Photography 101 part 2: Capturing Everyday Scenes
- Photography 101 - Camera Angles, DIY Lighting and Filters
- Photography 101 - Taking Better Photos of Food!
- Photography 101 - Taking Better Portraits



Brought to you by HR Benefits & Wellness Team



CHAPTER 4



CELEBRATING OUR ACHIEVEMENTS



CELEBRATING OUR ACHIEVEMENTS

Despite a challenging year, Yishun Health carried on to pursue care improvements and process innovations that build on our mission of person-centred care – and were recognised and rewarded for the efforts.



CELEBRATING OUR NATIONAL DAY AWARDEES

As Yishun Health celebrated Singapore's 55th birthday at the National Day Observance Ceremony, we also gave out the annual National Day Awards to 34 recipients! Comprising two Commendation Medals, 16 Efficiency Medals, and 16 Long Service medals, this was our biggest haul yet.

In her address to Yishun Health, Ms Carrie Tan, Member of Parliament for Nee Soon GRC,

expressed her gratitude to the frontliners, and shared her commitment to work alongside Yishun Health towards a cohesive and bonded community.

NURTURING AND INSPIRING THE NEXT GENERATION

Teachers are an indispensable part of any organisation; they play a crucial role in cultivating a spirit of learning in their students. This is especially so in Yishun Health, where continuous learning and improvement is a hallmark of our DNA.

On Teacher's Day, we recognised and honoured a group of colleagues who have a heart for passing on their wealth of knowledge and experience to the next generation.

At the NHG Teaching Excellence Awards, 46 Yishun Health educators were conferred awards across eight categories. These winners are primarily clinicians, nurses or allied health professionals who have also taken up the mantle of teaching.

The National University of Singapore (NUS) Medicine Appreciation for Clinical Educators Ceremony on 11 November 2020 recognised these contributions by healthcare clinicians to the medical education of NUS students. At this virtual event – hosted by NUS Medicine in conjunction with NHG – KTPH received a total of 10 awards!

PROPS FOR YISHUN HEALTH'S CARE INNOVATOR! 'MED SCIENTIST'

Dr Daniel Chia, Director, Clinical Research Unit (Innovation), received the Exemplary Innovator Award at the Public Sector Transformation Awards on 21 October 2020. Dr Chia has been responsible for collaborating and leading

numerous contributions to Yishun Health that create solutions for better patient care. This accolade is a testament to his ability to realise his vision of smart, digitalised and innovative hospitals through frugal, practical and innovative solutions!

IMPROVING EMERGENCY RESPONSE AND RESUSCITATION EFFICACY

A&E Consultant Dr Desmond Mao's team, comprising A&E Resident Physician Dr Bang Chungli and two others from Tan Tock Seng Hospital and Singapore General Hospital, was awarded the NHG Research Impact Award at the 2020 NHG Research and Innovation Awards.

Their two-year-long study identifying gaps in Termination of Resuscitation (TOR) Protocol training led to the development of a robust framework for Singapore that covers standards of practice, communication skills, and emotional support for paramedics – the first in Asia. This framework addresses the challenging area of pre-hospital TOR



(L-R) Dr Desmond Mao and Dr Bang Chungli were prize winners at the 2020 NHG Research and Innovation Awards



CHAPTER 4: CELEBRATING OUR ACHIEVEMENTS

Protocols, which are used by paramedics and A&E doctors to make timely and accurate judgement calls in time- and resource-limited emergency scenarios.

The protocols help them more accurately predict the success rate of resuscitations. This reduces unnecessary and stressful interventions, better manages limited A&E resources, and lowers the need for potentially hazardous high-speed transport.

It also helps to allow more end-of-life patients to pass away peacefully in their place of residence.

A SHINING EXAMPLE OF LEADERSHIP

A/Prof Sum Chee Fang, Senior Consultant, General Medicine, KTPH, has made lasting impact on diabetes care for over 36 years. In recognition of his dedicated service and contribution, he was conferred the prestigious National Outstanding Clinician Award at the MOH National Medical Excellence Awards on 29 October 2020.

A/Prof Sum is greatly respected for his vast clinical knowledge in diabetes care and research, as well as his pioneering and visionary work in developing and enhancing diabetes care in the public healthcare sector.

Since setting up the Diabetes Centre in Alexandra Hospital in 2001, he has led the push for comprehensive interdisciplinary approach in the management of patients with complex diabetes, with a strong emphasis on patient engagement and education. A/Prof Sum has also been instrumental in advocating for specialist training for nurses, and is credited in co-establishing the Specialist Diploma in Nursing (Diabetes Management and Education) in 2000.

At KTPH, A/Prof Sum has led many improvements in diabetes care through contributing to programmes and training clinicians. He has also chaired the NHG Diabetes Disease Management Committee and the MOH Diabetes Strategy Advisory Committee.



A/Prof Sum Chee Fang was recognised for his dedicated service and contribution at the MOH National Medical Excellence Awards



A socially distanced group photo at the CCEA

A 40-AWARD COUP FOR YCH AT THE 2020 COMMUNITY CARE EXCELLENCE AWARDS

YCH received a total of 40 individual and team awards at the 2020 Community Care Excellence Awards (CCEA), organised by the Agency for Integrated Care (AIC). This includes 35 individual awards for its healthcare staff. One of these winners was Senior Nurse Manager Pauline Tan, who won a Gold Award.

Pauline is known for her exemplary service and commitment, having won four Service Champion Awards in 2019. On top of her day-to-day work, she also leads the Nursing Quality Improvement Committee, and contributes to improving service, processes and clinical quality.

Under Team Awards, there were two winning teams. One of these was, 'Cognitive Spark – Opportunistic Screening of Impairment of the Elderly'. The project uses cognitive screening tools and guidelines to provide early intervention of reversible factors for a group of patients with dementia, who were stable but had an abnormal cognitive score. Other positive results included family cost savings and sustainable follow-ups.

Another winner was the 'Ultrasonic-Assisted Wound Debridement' project, which uses low-frequency ultrasonic vibrations to remove wound

tissues to aid healing [turn to page 36 to read about the project].

A CAREER OF COMPASSION AND COMMITMENT

This year's Tan Chin Tuan Nursing Awards recognised Senior Enrolled Nurse Wee Seow Keng among its awardees. The national award represents the pinnacle of distinction for Enrolled Nurses, and honours them for outstanding commitment in advancing the nursing profession.



Senior Enrolled Nurse Wee Seow Keng receiving her Tan Chin Tuan Nursing recognition from Chief Nurse Ms Shirley Heng



Recipients of the Healthcare Humanity Awards were honoured at a decentralised ceremony

Seow Keng, who is part of the Population Health & Community Transformation team, has shown great compassion in her nursing duties. She is known for her efficiency and dedication, as well as her high level of commitment towards her daily tasks, engaging with her residents, and pursuing professional development.

RECOGNISING OUR HEALTHCARE HEROES

Yishun Health received seven awards at the 17th Healthcare Humanity Awards in 2020. The event recognises outstanding healthcare professionals who go out of their way to support, comfort and care for patients, and also celebrate caregivers and volunteers for their care efforts in the community.

A MUCH-NEEDED HELPING HAND FOR VULNERABLE ADULTS

Yishun Health’s Medical Social Services department received the Family Violence Dialogue Group Appreciation Award (Team) at the 2020 National Family Violence Networking System Virtual Conference.

The team, which deals with a wide range of cases, was commended for its sensitivity, awareness and timeliness in supporting victims facing challenging family situations. The members were praised for their empathy, compassion and commitment in delivering client-centric care for vulnerable adults in and beyond the hospital.

Yishun Health winners at the 17th Healthcare Humanity Awards 2020

| | |
|--|--|
| OPEN CATEGORY | Dr Teoh Chin Sim, Clinical Director & Senior Consultant, Sports and Exercise Medicine Centre, KTPH |
| | Dr Wong Kuan Yee, Registrar, Dental Surgery, KTPH |
| | Sharon Claire Ang Chor Kiang, Nurse Manager, Nursing Administration, KTPH |
| INTERMEDIATE AND LONG-TERM CARE CATEGORY | Tham Juncheng, Senior Staff Nurse, Ward D58, YCH |
| CAREGIVER CATEGORY | Ms Pamela Lee |
| | Mr Victor Lim |
| | Mdm Neo Bee Then |



GREEN FOR LIFE



Our guiding principle in medicine to do no harm applies not only to how we deliver healthcare, but in all our organisational actions. Wherever feasible, we take steps to minimise the environmental impact of our daily operations to maintain a safe and healing environment for patients, staff and the community.

A BEE-UTIFUL BALANCE

Maintaining the green and lush landscape in KTPH and YCH is more than about growing and nurturing plants; it is also about finding ways to co-exist with the birds and insects that form our ecosystem. Instead of exterminating bees that make their home in our greenery, the Landscape Team has taken a more humane approach. Rather than engaging pest control companies to tackle beehives, they worked on a *kaizen* project called 'Give Bees a Chance'.

Since September 2020, they have worked with Bee Amazed, a non-profit organisation that has expertise and knowledge in beekeeping, to relocate bees for free. This means less time and money is spent on extermination, which costs \$168 for a roughly two-hour session. Instead, a relocation effort takes only 30 minutes, and does not have any major impact on biological diversity.

- Time saved annually: 7 hours
- Cost savings: \$168 per session
- Number of bees saved: 30,000 bees in an average hive



Some of the solar hydroponic plant systems found on campus

A SYMBIOTIC PLANTING SYSTEM

A Solar Hydroponic Plant System project was first conceptualised by the YCH Facilities Management (FM) department for its rooftop garden. The project uses a solar panel to harness solar energy that works the pump for watering plants. The project enables the use of renewable energy while also saving water for an easy-to-maintain, environmentally friendly, and economical solution.

As part of the activities for Clean & Green Week in 2020, the Green & Sustainability Committee also used this project to encourage staff to assemble their own solar hydroponic planting system at home by providing guidance on technical support and where to buy components.

SOLAR NOVA 4 PROJECT

Yishun Health's Green & Sustainability Committee has always supported the Singapore Government's Green Plan 2030. In FY2020/2021, we stepped up our green commitments by focusing on harnessing renewable energy sources. The goal was to reduce electricity tariffs and carbon emission levels on the Yishun Health campus.

One initiative was to increase the harnessed capacity of solar energy to supplement the electricity intake from the grid. With the support of Senior Management, the FM department participated in the fourth Solar Nova tender in 2019 that called for the design, supply, installation and maintenance of solar photovoltaic

(PV) systems, with no initial capital outlay and maintenance costs from clients. The tender involved six agencies, including Yishun Health.

In October 2019, the Housing & Development Board and Economic Development Board awarded the Solar Nova tender to Sunseap to install solar panels that provide a total of 70,000kWp of electricity to support the running of the premises of multiple government agencies. For Yishun Health, the solar PV system installed on the roofs of Towers A, B, C and D have a generation capacity of 377.4kWp, and will provide an output of 37,895kWh of clean energy yearly – enough to power some 105 four-room HDB flats, and reduce carbon emissions by 252 tonnes a year. This project was completed in April 2021.





OPERATIONAL HIGHLIGHTS

KHOO TECK PUAT HOSPITAL



Average Beds in Service

724

(Increased by 9% from 659)



Bed Occupancy

82%

(Decreased by 6% from 88%)



Total Inpatient Days

214,573

(Increased by 1% from 211,524)



Average Length of Stay

6.4 DAYS

(Increased by 16% from 5.5 days)



Outpatient Attendances

321,708

(Decreased by 12% from 364,161)



A&E Attendances

112,281

(Decreased by 16% from 133,848)



Inpatient Admissions

34,582

(Decreased by 11% from 38,913)



Total Surgeries

44,685

(Decreased by 9% from 49,000)



Day Surgeries

27,618

(Decreased by 13% from 31,838)



Inpatient Surgeries

17,067

(Decreased by 1% from 17,162)

YISHUN COMMUNITY HOSPITAL



Average Beds in Service

154

(Decreased by 35% from 238)



Bed Occupancy

74%

(Decreased by 4% from 78%)



Total Inpatient Days

45,152

(Decreased by 34% from 68,176)



Average Length of Stay

21 DAYS

(Decreased by 16% from 25 days)



Inpatient Admissions

1,958

(Decreased by 27% from 2,692)

ADMIRALTY MEDICAL CENTRE



Outpatient Attendances

27,501

(Decreased by 5% from 29,078)



Day Surgeries

1,847

(Decreased by 5% from 1,947)



Wellness Kampung

3



Community Nurse Post

20



Share a Pot

32

POPULATION HEALTH & COMMUNITY TRANSFORMATION

FAUNA AND FLORA



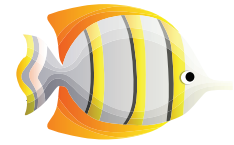
Butterflies
101
SPECIES



Dragonflies & Damselflies
31
SPECIES



Birds
91
SPECIES



Fishes
100
SPECIES



Fruit Trees
50
SPECIES



Medicinal Plants
102
SPECIES



Flowering Plants
52
SPECIES



Vegetables
51
SPECIES

UTILITIES



Electricity
42,709,701 KWH
(increased by 1%
from 42,132,039kWh)



Potable Water Consumption
114,467.90 M³
(decreased by 1%
from 115,718.10m³)



NEWater Consumption
244,805.80 M³
(increased by 8%
from 226,076.30m³)



Gas
557,474 KWH
(decreased by 8% from
602,722kWh)



General Waste
706 TONNES
(increased by 12%
from 633 tonnes)



Recyclable Waste
86 TONNES
(increased by 4%
from 83 tonnes)



AWARDS

JUL 2020

NURSES' MERIT AWARD

- **Chan Zhi Qiang**, Nurse Clinician, Ward B75, KTPH
- **Sharifah Maryam Alhabshee Binte Zen**, Nurse Manager, Ward A62, KTPH
- **Fan See Wai**, Nurse Manager, General Medicine Clinic, KTPH
- **Ong Wei Wei**, Assistant Nurse Clinician, Ageing-in-Place Community Care Team, PHCT
- **Hou Luyin**, Assistant Nurse Clinician, Ward B86, KTPH
- **Faith Tan**, Assistant Nurse Clinician, Ward D78, KTPH
- **Priscilla Chng**, Assistant Nurse Clinician, Nursing Admin, YCH

AUG 2020

NATIONAL DAY AWARDS

The Commendation Medal

- **Liew Phey Bong**, Deputy Director, Information Systems & Technology, KTPH
- **Tan Soo Thian**, Senior Nurse Manager, General Surgery Clinic, KTPH
- **Gladys Wong**, Senior Principal Dietitian, Nutrition & Dietetics, KTPH

The Efficiency Medal

- **Ng Huoy Ling**, Senior Nurse Manager, PHCT
- **Sathiya Veerarhagavan**, Senior Nurse Manager, Ward B76, KTPH
- **Anne Lai**, Nurse Manager, Day Surgery Centre, KTPH
- **Loh Pey Lin**, Nurse Clinician, Acute & Emergency Care Centre, KTPH
- **Bugayong Rachel Villalon**, Senior Staff Nurse, Ward B85, KTPH
- **Jane Sim**, Principal Occupational Therapist, Rehabilitation Services, KTPH
- **Sharon Pek**, Principal Research Officer, Clinical Research Unit, KTPH
- **George Toh**, Principal Dietitian, Nutrition & Dietetics, KTPH
- **Alageswary D/O Kunnasegaran**, Senior Medical Social Worker, Medical Social Services, KTPH
- **Anita Hu**, Senior Pharmacist, Pharmacy, KTPH
- **Ganagam @ Nithiya D/O Manickaswami**, Assistant Manager, Inpatient Services, KTPH
- **Wu Huimei**, Senior Manager, Finance, KTPH
- **Josephine Loh**, Manager, Human Resource, KTPH
- **Kong Lee Wei**, Assistant Manager, Environmental Services, KTPH

- **Shirley Goh**, Senior Executive, Operations Admin, KTPH
- **Zabina Binti Musthafa**, Senior Secretary, Operations Admin, KTPH

The Long Service Medal

- **Audrey Saw**, Deputy Director, Nursing Admin, KTPH
- **Sharon Fun**, Assistant Director, Nursing Admin, KTPH
- **Jenny Ng**, Senior Nurse Manager, Nursing Admin, KTPH
- **Pauline Tan**, Senior Nurse Manager, Ward D107, YCH
- **Nurlina Binte Abdul Manap**, Nurse Clinician, Ward B56, KTPH
- **Pang Ai Cheen**, Nurse Clinician, Acute & Emergency Care Centre, KTPH
- **Yap Suk Foon**, Nurse Clinician, APN & Specialty Nurses, KTPH
- **Norbani Bte Md Yusof**, Senior Staff Nurse, General Surgery Clinic, KTPH
- **Rubathy D/O Nathan**, Senior Staff Nurse, Acute & Emergency Care Centre, KTPH
- **Kartina Binte Ismail**, Principal Assistant Nurse, Acute & Emergency Care Centre, KTPH
- **Aznan Omar**, Chief Medical Technologist, Laboratory Medicine, KTPH
- **Leng Kok Lam**, Senior Medical Technologist, Cardiology Clinic, KTPH
- **Jamilah Bte Hussin**, Executive Secretary, Nursing Admin, KTPH
- **Salina Bte Idris**, Healthcare Chaperone, Portering, KTPH
- **Chan Kok Leong**, Portering Attendant, Portering, KTPH
- **Panditurai S/O Ponnusamy**, Portering Attendant, Portering, KTPH

SEP 2020

NHG TEACHING EXCELLENCE AWARDS

Special Commendation Award

- **Annuradhaa Ravi**, Senior Physiotherapist, Rehabilitation Services, KTPH
- **Belinda Ooi**, Senior Physiotherapist, Rehabilitation Services, KTPH
- **Gladys Wong**, Senior Principal Dietitian, Nutrition & Dietetics, KTPH
- **Joleen Tan**, Senior Physiotherapist, Rehabilitation Services, KTPH
- **Kelly Liang**, Senior Physiotherapist, Rehabilitation Services, KTPH
- **Lam Xin Yi**, Senior Physiotherapist, Rehabilitation Services, KTPH

- **Pearlyn Tan**, Physiotherapist, Rehabilitation Services, KTPH
- **Rachel Cheong**, Senior Occupational Therapist, Rehabilitation Services, KTPH
- **Dr Dexter Chan**, Associate Consultant, General Surgery, KTPH
- **Dr Nimeshi Sanjila Peiris**, Consultant, General Medicine, KTPH
- **A/Prof Toh Hong Chuen**, Head and Senior Consultant, Acute & Emergency Care Centre, KTPH
- **A/Prof Yip Chee Chew**, Head and Senior Consultant, Ophthalmology & Visual Sciences, KTPH
- **Chew Pei Kiang**, Senior Nurse Educator, Nursing Admin, KTPH
- **Norizan Binte Salahudin**, Senior Staff Nurse, Geriatric Medicine, KTPH
- **Siti Nabilah Binte Mohammad Saman**, Senior Staff Nurse, Ward B86, KTPH

Teaching Award for Nursing Preceptors

- **Ang Hui Wah**, Senior Staff Nurse, Ward B66, KTPH
- **Fan Xiaoyuan**, Assistant Nurse Clinician, Ward A71, KTPH
- **Liu Xiangyu**, Senior Staff Nurse, Ward B95, KTPH
- **Liu Yating**, Senior Staff Nurse, Ward B76, KTPH
- **Tan Shi Hui**, Senior Staff Nurse, Ward B105, KTPH
- **Bimeldeep Kaur**, Assistant Nurse Clinician, Ward D98, YCH
- **Joey Lim**, Senior Staff Nurse, Ward D97, YCH
- **Karyn Tan**, Staff Nurse, Ward D98, YCH
- **Menisha Patel Naginlal**, Senior Staff Nurse, Ward D108, YCH
- **Ummu Kharr Unais Binte Abdul Rahman**, Senior Staff Nurse, Ward D48, YCH

Outstanding Nurse Teachers Award

- **Buvanewary D/O Danabalan**, Assistant Nurse Clinician, Ward A62, KTPH
- **Christina Wong**, Senior Staff Nurse, Ward A71, KTPH
- **Singh Delvinder**, Senior Staff Nurse, Ward B95, KTPH
- **Nurul Atikanatasha Binte Ashura**, Senior Staff Nurse, Ward B56, KTPH
- **Tan Yi Xue**, Senior Staff Nurse, Ward D48, YCH

Teaching Award for Allied Health Senior Educators

- **Cher Siong Kie**, Senior Physiotherapist, Rehabilitation Services, YCH

Teaching Award for Allied Health Educators

- **Nur Ashikin Binte Idris**, Senior Radiographer, Diagnostic Radiology, KTPH
- **Chua Si Qi**, Senior Optometrist, Ophthalmology & Visual Sciences, KTPH
- **Rodhiah Bt Mohamed Said**, Senior Radiographer, Diagnostic Radiology, KTPH
- **Syaiful Hakimnudin Bin Sa'adon**, Senior Radiographer, Diagnostic Radiography, KTPH
- **Yang Lijun**, Senior Optometrist, Ophthalmology & Visual Sciences, KTPH

Teaching Award for Junior Doctors

- **Dr Lee Yao Zong**, Associate Consultant, General Surgery, KTPH

Teaching Award for Pharmacy Preceptors

- **Tawechai Patun**, Senior Clinical Pharmacist, Pharmacy, KTPH
- **Wong Hong Yun**, Pharmacist, Pharmacy, KTPH

Teaching Award for Senior Doctors

- **Dr Anoop Thomas**, Principal Staff Physician, Ophthalmology & Visual Sciences, KTPH
- **Dr Jason Lee**, Consultant, Ophthalmology & Visual Sciences, KTPH
- **Dr Philemon Huang**, Consultant, Ophthalmology & Visual Sciences, KTPH
- **Dr Su Su**, Consultant, Geriatric Medicine, KTPH
- **Dr War War Win Tun**, Senior Consultant, Geriatric Medicine, KTPH
- **Dr Adriel Rao**, Consultant, Acute & Emergency Care Centre, KTPH
- **Dr Ang Swee Hui**, Senior Consultant, Acute & Emergency Care Centre, KTPH
- **Dr Desmond Ooi**, Consultant, General Surgery, KTPH

OCT 2020

PUBLIC SECTOR TRANSFORMATION AWARDS Exemplary Innovator Award

- **Dr Daniel Chia**, Director (Innovation), Clinical Research Unit, KTPH

NATIONAL MEDICAL EXCELLENCE AWARDS

- **A/Prof Sum Chee Fang**, Senior Consultant, General Medicine, KTPH

COMMUNITY CARE EXCELLENCE AWARDS

Individual Awards (Gold)

- **Pauline Tan**, Senior Nurse Manager, Ward D107, YCH

Individual Awards (Silver)

- **Dr Aye Khine Thwin**, Senior Staff Physician, Medical Services, YCH
- **Dr Brillantes Salvador Solano**, Clinical Associate, Medical Services, YCH
- **Dr Dianne Salumbides Doctor**, Resident Physician, Medical Services, YCH
- **Dr Gunatilake Mapa Mudiyansele Nishadhi Apsara**, Resident Physician, Medical Services, YCH
- **Dr Lim Huey Wen**, Senior Staff Physician, Medical Services, YCH
- **Dr Mohamed Ubaidulla Mohamed Irshad Ahamed**, Resident Physician, Medical Services, YCH
- **Tan Rodchell Sari Miguel**, Senior Staff Nurse, Ward D67, YCH
- **Bano Jasmine Duran**, Healthcare Assistant, Ward D107, YCH
- **Chai Pei San**, Staff Nurse, Ward D67, YCH
- **Chong Siew Khin**, Senior Staff Nurse, Ward D67, YCH
- **Clavecillas Madeliene Ebalde**, Staff Nurse, Ward D107, YCH
- **Emata Jennifer Deroca**, Staff Nurse, Ward D107, YCH
- **Encarnacion Rachelle Perez**, Staff Nurse, Ward D107, YCH
- **Han Shengli**, Staff Nurse, Ward D48, YCH
- **Jarabejo Nanette Paelma**, Healthcare Assistant, Ward D107, YCH
- **Joseph Annamma**, Staff Nurse, Ward D107, YCH
- **Julia Lau Leh King**, Staff Nurse, Ward D48, YCH
- **Kavithstra Rajandran**, Staff Nurse, Ward D48, YCH
- **Kim Ahreum**, Senior Staff Nurse, Ward D107, YCH
- **Lim Siao Ee**, Senior Medical Social Worker, Medical Social Service, YCH
- **Lim Wei Yin**, Senior Staff Nurse, Ward D107, YCH
- **Lim Xiao Wen**, Staff Nurse, Nursing Admin, YCH
- **Mabilangan Pauline Carla Villanueva**, Staff Nurse, Ward D67, YCH
- **Neethu Jose**, Staff Nurse, Ward D107, YCH
- **Nurhazliyana Binte Sumamo**, Staff Nurse, Nursing Admin, YCH
- **Pacunla Rachel Monique Albores**, Assistant Nurse, Ward D107, YCH
- **Resplandor Sheryl Dimapasoc**, Staff Nurse, Ward D107, YCH

- **San Jose Louela Pabustan**, Healthcare Assistant, Ward D107, YCH
- **Siow Jia Yee**, Senior Staff Nurse, Ward D97, YCH
- **Sobredo Desiree Ann Simpao**, Staff Nurse, Ward D48, YCH
- **Tan Poh Yin**, Senior Staff Nurse, Ward D107, YCH
- **Yap Kah Kei**, Senior Staff Nurse, Ward D107, YCH

Team Award

(Clinical Quality Improvement)

(Winner) "Cognitive Spark" Opportunistic Screening of Cognitive Impairment of the Elderly

(Merit) Reduction of Unwarranted Blood Glucose Monitoring

Team Award (Client Experience Improvement)

(Merit) Evaluating the Effectiveness of the Stroke Survivor Support Group Pilot Programme

Team Award

(Productivity Improvement)

(Winner) To achieve 30% man-hours saving using Ultrasonic Assisted Wound Debridement

(Merit) Robotic Therapy

NOV 2020

NHG RESEARCH AND INNOVATION AWARDS NHG Research Impact Awards

- **Dr Desmond Mao**, Consultant, Acute & Emergency Care Centre, KTPH
- **Dr Bang Chungli**, Resident Physician, Acute & Emergency Care Centre, KTPH

TAN CHIN TUAN AWARDS

- **Wee Seow Keng**, Senior Enrolled Nurse, PHCT

DEC 2020

HEALTHCARE HUMANITY AWARDS

Open Category

- **Dr Teoh Chin Sim**, Clinical Director and Senior Consultant, Sports and Exercise Medicine Centre, KTPH
 - **Dr Wong Kuan Yee**, Registrar, Dental Surgery, KTPH
 - **Sharon Claire Ang Chor Kiang**, Nurse Manager, Nursing Admin, KTPH
- ##### Intermediate Long-Term Care Category
- **Tham Juncheng**, Senior Staff Nurse, Ward D58, YCH

COMMUNITY CHEST AWARDS

Charity Gold Award

Yishun Health



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| Acute and Emergency Care | Desmond Mao Renhao | Simplified Instructional Phrasing in Dispatcher-Assisted Cardiopulmonary Resuscitation- When 'Less Is More' | Singapore Medical Journal | 0 | 0 |
| Acute and Emergency Care | Desmond Mao Renhao | National Paramedic Termination of Resuscitation Studies 1 & 2 | NHG e-Catalyst | 0 | 18 |
| Acute and Emergency Care | Desmond Mao Renhao | Psychological Comfort of Paramedics with Field Death Pronouncement: A National Asian Study to Prepare Paramedics for Field Termination of Resuscitation | Prehospital Emergency Care | 22 (2) | 260-265 |
| Acute and Emergency Care | Desmond Mao Renhao | Impact of Bystander-Focused Public Health Interventions on Cardiopulmonary Resuscitation and Survival: A Cohort Study | Lancet Public Health | 5 (8) | 428-436 |
| Acute and Emergency Care | Desmond Mao Renhao | Continuing Professional Development for Emergency Medicine | Academy of Medicine CPD Bulletin | 29 | 3-8 |
| Acute and Emergency Care | Desmond Mao Renhao | Is Your Unconscious Patient in Cardiac Arrest? A New Protocol for Telephonic Diagnosis by Emergency Medical Call-Takers: A National Study | Resuscitation | 155 | 199-206 |
| Acute and Emergency Care | Desmond Mao Renhao | Implementation of a National 5-Year Plan for Prehospital Emergency Care in Singapore and Impact on Out-of-Hospital Cardiac Arrest Outcomes From 2011 to 2016 | Journal of American Heart Association | 9 (21) | 1-11 |
| Acute and Emergency Care | Desmond Mao Renhao | Improved Out-of-Hospital Cardiac Arrest Survival with a Comprehensive Dispatcher-Assisted CPR Program in a Developing Emergency Care System | Prehospital Emergency Care | 0 | 0 |
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| Acute and Emergency Care | Desmond Mao Renhao | Nation-Wide Observational Study of Cardiac Arrests Occurring in Nursing Homes and Nursing Facilities in Singapore | Annals of Academy of Medicine Singapore | 49 (5) | 285-293 |
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| Acute and Emergency Care | Ranjeev Kumar | End-of-Life Management Protocol Offered Within Emergency Room (EMPOWER): Study Protocol for a Multicentre Study | BMJ Open | 10 (4) | 0 |
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| Anaesthesia | Chandra Mohan Kumar | Sub-Tenon's Anaesthesia for Modern Eye Surgery—Clinicians' Perspective, 30 Years After Re-Introduction | Eye | 35 | 1295-1304 |
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| Anaesthesia | Chandra Mohan Kumar | Anaesthesia for Ophthalmic Procedures in Patients With Thyroid Eye Disease | Anaesthesia and Intensive Care | 48 (6) | 430-438 |
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| Anaesthesia | Chandra Mohan Kumar, Edwin Seet Chuen Ping | Association of Obstructive Sleep Apnea With Difficult Intubation: Prospective Multicenter Observational Cohort Study | Anesthesia & Analgesia | 133 (1) | 196-204 |
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| Anaesthesia | Sudeep Saxena, Chandra Mohan Kumar | Anaesthetic Management of Patients With COVID-19: Infection Prevention and Control Measures in the Operating Theatre | British Journal of Anaesthesia | 125 | 239-241 |
| Anaesthesia | Edwin Seet Chuen Ping | The Neglected Perioperative Population of Undiagnosed Diabetics - a Retrospective Cohort Study | BMC Surgery | 20 | 1-7 |
| Anaesthesia | Edwin Seet Chuen Ping | A New Approach for Detecting Sleep Apnea Using a Contactless Bed Sensor: Comparison Study | Journal of Medical Internet Research | 22 (9) | 1-25 |
| Anaesthesia | Edwin Seet Chuen Ping | Diagnostic Performance of the STOP-Bang Questionnaire as a Screening Tool for Obstructive Sleep Apnea in Different Ethnic Groups | Journal of Clinical Sleep Medicine | 17 (3) | 0 |
| Anaesthesia | Bin Wern Hsien, Ashutosh Joshi | Epidural Steroid Injections | Interventional Radiology in Palliative Care | 0 | 93-104 |
| Anaesthesia | Naville Chia Chi Hock | Persistence of Intracranial Blood Flow on Cerebral Angiography in Brain Death | British Journal of Anaesthesia | 125 (5) | 404-406 |
| Anaesthesia | Wong Ming Hiu | Minimum Effective Volume of 0.5% Ropivacaine for Ultrasound-Guided Costoclavicular Brachial Plexus Block+b9: A Dose Finding Study | European Journal Anaesthesiology | 37 (9) | 780-786 |
| Anaesthesia | Liaw Chen Mei | Towards a National Perioperative Clinical Quality Registry: The Diagnostic Accuracy of Administrative Data in Identifying Major Postoperative Complications | Anaesthesia and Intensive Care | 48 (3) | 203-212 |
| Anaesthesia | Lim Ying Ching | An Audit of Post-Operative Sorethroat Using Different Laryngeal Mask Airways | Indian Journal of Anaesthesia | 64 (6) | 513-516 |
| Anaesthesia | Venkatesan Kumaresh | Successful Resuscitation of Bone Cement Implantation Syndrome in a Patient with Pre-Existing Pulmonary Hypertension: A Case Report | Open Journal of Anesthesiology | 10 (8) | 293-297 |
| Anaesthesia | Venkatesan Kumaresh | Serum Lactate Is a Poor Marker of Bowel Ischemia Following Angioembolization for Lower Gastrointestinal Bleeding | Digestive Medicine Research | 47 | 777-780 |
| APN and Specialty Nurses | Mok Wen Qi | Effectiveness of Virtual Reality Training in Improving Knowledge Among Nursing Students: A Systematic Review, Meta-Analysis and Meta-Regression | Nurse Education Today | 98 | 0 |
| Cardiology | Dinna Soon Kar Nee | Heart Failure With Preserved EF Diagnosis Scores in an Asian Population | European Journal of Heart Failure | 22 (9) | 1737-1739 |
| Cardiology | Dinna Soon Kar Nee | Ethnic Differences in Quality of Life and Its Association With Survival in Patients With Heart Failure | Clinical Cardiology | 43 (9) | 976-985 |
| Clinical Research Unit | Angela Moh Mei Chung | Long-Term Observation of a Man With Severe Obesity and Undiagnosed Monogenic Diabetes Serendipitously Treated With Metabolic Surgery | Journal of Investigative Medicine High Impact Case Reports | 8 | 0 |

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| Clinical Research Unit | Subramaniam Tavintharan | Fall Risk and Balance Confidence in Patients With Diabetic Peripheral Neuropathy: An Observational Study | Frontiers in Endocrinology | 11 | 573804 |
| Clinical Research Unit / Diabetes Centre | Liu Jianjun, Sharon Pek Li Ting, Sylvia Liu, Keven Ang Kue Loong, Subramaniam Tavintharan, Sum Chee Fang, Lim Su Chi | Association of Plasma Leucine-Rich α -2 Glycoprotein 1, a Modulator of Transforming Growth Factor- β | Diabetes Care | 44 (2) | 571-577 |
| Clinical Research Unit / Diabetes Centre | Serena Low Kiat Mun, Angela Moh Mei Chung, Subramaniam Tavintharan, Keven Ang Kue Loong, Sum Chee Fang, Lim Su Chi | Association Between Vascular Measures and Cognitive Function in Type 2 Diabetes | Journal of Diabetes and Its Complications | 34 | 107724 |
| Clinical Research Unit / Diabetes Centre | Sharon Pek Li Ting, Subramaniam Tavintharan | A Multifunctional Role of Leucine-Rich α -2-Glycoprotein 1 in Cutaneous Wound Healing Under Normal and Diabetic Conditions | Diabetes | 69 (11) | 2467-2480 |
| Clinical Research Unit / Diabetes Centre | Ang Su Fen, Clara Tan Si Hua, Lovynn Chan Wan Ting, Goh Li Xian, Subramaniam Tavintharan, Sum Chee Fang, Lim Su Chi | Clinical Experience From a Regional Monogenic Diabetes Referral Centre in Singapore | Diabetes Research and Clinical Practice | 168 | 0 |
| Clinical Research Unit / Diabetes Centre | Serena Low Kiat Mun, Keven Ang Kue Loong, Subramaniam Tavintharan, Sum Chee Fang, Lim Su Chi | Medical Costs Associated With Severity of of Chronic Kidney Disease in Type 2 Diabetes Mellitus in Singapore | Annals Academy of Medicine Singapore | 49 | 731-741 |
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| Clinical Research Unit / Diabetes Centre | Angela Moh Mei Chung, Serena Low Kiat Mun, Ng Tze Pin, Ang Su Fen, Keven Ang Kue Loong, Sum Chee Fang, Subramaniam Tavintharan, Lim Su Chi | Association Between Depressive Symptoms and Pulse Wave Velocity Is Mediated by Increased Adiposity in Older Adults With Type 2 Diabetes | Journal of Psychiatry & Neuroscience | 46 (1) | 176-183 |
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| Clinical Research Unit / Diabetes Centre | Sharon Pek Li Ting, Lim Su Chi, Keven Ang Kue Loong, Sum Chee Fang, Subramaniam Tavintharan, | Endothelin-1 Predicts Incident Diabetic Peripheral Neuropathy in Type 2 Diabetes: A Cohort Study | European Journal Endocrinology | 182 (4) | 429-438 |
| Clinical Research Unit / Diabetes Centre / General Medicine | Angela Moh Mei Chung, Ester Yeoh Chai Kheng, Yi Lin, Serena Low Kiat Mun, Ooi Say Tat, Tan Seng Kiong | Diabetes Predicts Severity of COVID-19 Infection in a Retrospective Cohort: A Mediator Role of the Inflammatory Biomarker C-Reactive Protein | Journal of Medical Virology | 93 (5) | 3023-3032 |



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| Diagnostic Radiology | Trishna Shimpi Ramesh | Tailored Breast Imaging During the First Wave and Preparedness for the Second Wave of COVID-19 Pandemic | European Journal of Radiology Open | 7 | 100265 |
| Diagnostic Radiology / General Surgery | Singh Dinesh Rambachan, Clement Chia Luck Khng | Fish Bone Ingestion Presenting to a Local Institution in Singapore | Singapore Medical Journal | 61 (11) | 578-583 |
| General Medicine / Clinical Research Unit | Dinesh Carl Junis Mahendran, Lim Su Chi | Letter to the Editor: "Prevention of Adrenal Crisis: Cortisol Responses to Major Stress Compared to Stress Dose Hydrocortisone Delivery" | The Journal of Clinical Endocrinology and Metabolism | 106 (1) | 395-396 |
| General Medicine | Ooi Say Tat, Parthasarathy Purnima, Lin Yi, Valliammai D/O Nallakaruppan, Shereen Ng Jia Huey, Tan Teck Choon, Serena Low Kiat Mun, Terence Tang Eng Yeow | Adjunctive Corticosteroids for COVID-19: A Retrospective Cohort Study | medRxiv | 0 | 0 |
| General Medicine / Diabetes Centre | Shereen Ng Jia Huey, Ester Yeoh Chai Kheng | Diabetic Ketoacidosis Precipitated by COVID-19 in a Patient With Newly Diagnosed Diabetes Mellitus | Diabetes Research and Clinical Practice | 164 | 0 |
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| General Medicine / Diabetes Centre | Tan Seng Kiong, Ester Yeoh Chai Kheng | Dissecting the Interaction Between COVID-19 and Diabetes Mellitus | Journal of Diabetes Investigation | 0 | 0 |
| General Surgery / Acute & Emergency Care, Anaesthesia | Marc Ong Wei Jie, Jerry Goo Tiong Thye, Kanak Naidu, Hilda Hu Haoling, Chiong Ling Yvonne Wong | Emergency Laparotomy Outcomes: Higher First-Year Mortality in the Elderly | Academy of Medicine, Singapore | 49 (3) | 166-170 |
| General Surgery | Eugene Yang Wei Ren | Neuromonitoring in Cervical Spine Surgery: When Is a Signal Drop Clinically Significant? | Asian Spine Journal | 15 (3) | 317-323 |
| Geriatric Medicine | James Alvin Low Yiew Hock, Laurence Tan Lean Chin, Angeline Seah Soek Tian | The Nuts and Bolts of Utilizing Telemedicine in Nursing Homes - The GeriCare@North Experience | Journal of the American Medical Directors Association | 21 (8) | 1073-1078 |
| Geriatric Medicine | Philip Yap Lin Kiat | Dyadic Approach to Supervised Community Rehabilitation Participation in an Asian Setting Post-Stroke: Exploring the Role of Caregiver and Patient Characteristics in a Prospective Cohort Study | BMJ Open | 10 (4) | 1-11 |
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| Geriatric Medicine | Philip Yap Lin Kiat | The Longitudinal Effects of Caregiver Grief in Dementia and the Modifying Effects of Social Services: A Prospective Cohort Study | Journal of the American Geriatrics Society | 68 (10) | 2348-2353 |
| Geriatric Medicine | Philip Yap Lin Kiat | Implementation and Effectiveness of a Multidomain Program for Older Adults at Risk of Cognitive Impairment at Neighbourhood Senior Centres | Scientific Reports | 11 | 1-11 |
| Geriatric Medicine | Wong Chek Hooi | Sex Differences in Perceptions Toward Falls Among Older Adults Living in the Community in Singapore | Journal of Aging and Health | 32 (10) | 0 |
| Geriatric Medicine | Philip Yap Lin Kiat, Cheong Chin Yee | A Prospective Longitudinal Study of Caregivers of Community Dwelling Persons with Severe Dementia (PISCES): Study Protocol | Journal of Alzheimer's Disease | 75 (2) | 403-416 |
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| Geriatric Medicine | Cheong Chin Yee, Philip Yap Lin Kiat | Person-Centred Care Transformation in a Nursing Home for Residents With Dementia | Dementia and Geriatric Cognitive Disorders Extra | 11 | 1-9 |
| Geriatric Medicine | Jagadish Ullal Mallya, Philip Yap Lin Kiat | Physiological and Cognitive Determinants of Dual-Task Costs for Gait Parameters: The Yishun Study | Gerontology | 22 | 1-10 |
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| Inpatient Wards / Acute & Emergency Care | Gigi Chow, Javeil Ke En Gan | Effectiveness of Psychosocial Interventions Among Older Adults With Mild Cognitive Impairment: A Systematic Review and Meta-Analysis | Aging & Mental Health | 0 | 0 |
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| Orthopaedic Surgery | Usama Farghaly Abdelhamid Omar, Tong Pei Yein, Rajaratnam Vaikunthan | Managing Hand and Reconstructive Microsurgery Service During COVID-19 Pandemic: Singapore Experience | Postgraduate Medical Journal | 96 (1137) | 1-5 |
| Sports & Exercise Medicine / Orthopaedic Surgery | Shauna Christine Sim Hwei Sian, Kelvin Lor Kah Ho, Ong Joo Haw, Dinesh Sirisena | Ultrasound-Guided Lumbar Spine Injection for Axial and Radicular Pain: A Single Institution Early Experience | Asian Spine Journal | 15 (2) | 216-223 |
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| Ophthalmology & Visual Sciences / Human Resource / Clinical Research Unit | Yip Chee Chew, Yang Lijun, Kenneth Soo Yuheng, Wang Jiexun | Assessing the Use of a Smartphone App to Teach Eye Screening to Opticians | The Clinical Teacher | 18 (3) | 258-263 |
| Ophthalmology & Visual Sciences | Kumari Neelam, Jason Lee Kian Seng | Fructus lycii: A Natural Dietary Supplement for Amelioration of Retinal Diseases | Nutrients | 13 (1) | 246-246 |
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| Ophthalmology & Visual Sciences | Philip Francis Stanley | An Intraocular Eyelash After Uneventful Cataract Surgery | American Journal of Ophthalmology Case Reports | 20 | 0 |
| Ophthalmology & Visual Sciences | Sangtam Tiakumzuk, Anoop Thomas, Philemon Huang Keqin | Phacoemulsification vs Phacoemulsification With Micro-Bypass Stent Implantation in Primary Angle Closure and Primary Angle Closure Glaucoma: A Randomized Single-Masked Clinical Study | Clinical & Experimental Ophthalmology | 48 (4) | 450-461 |
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| Pharmacy | Grace Chang Shu-Wen | Disseminated Adenoviral Disease in Immunocompetent Adults Supported With Extracorporeal Membrane Oxygenation | Journal of Thoracic Disease | 12 (5) | 2812-2819 |
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| Pharmacy | Kim Ji Heon, Doreen Tan Su-Yin | Cost-Effectiveness of CYP2C19-Guided Antiplatelet Therapy for Acute Coronary Syndromes in Singapore | The Pharmacogenomics Journal | 21 | 243-250 |
| Psychological Medicine | Lim Wei Shyan, Soh Keng Chuan, Surej Babykutty John, Goh Kah Hong | Examining the Role of a Psychiatry Department in Singapore Amidst COVID-19 | Asian Journal of Psychiatry | 54 | 0 |
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| Urology | Yeow Siying | Intrathoracic Kidney - A Case Report and Literature Review | Asian Journal of Research and Reports in Urology | 3 (3) | 1-5 |

ADMIRALTY MEDICAL CENTRE

676 Woodlands Drive 71 #03-01
Kampung Admiralty Singapore 730676
www.admiraltymedicalcentre.com.sg

KHOO TECK PUAT HOSPITAL

90 Yishun Central Singapore 768828
www.ktph.com.sg

YISHUN COMMUNITY HOSPITAL

2 Yishun Central 2 Singapore 768024
www.yishuncommunityhospital.com.sg

WELLNESS KAMPUNG

115 Chong Pang
115 Yishun Ring Road #01-495 Singapore 760115
260 Nee Soon East
260 Yishun Street 22 #01-87 Singapore 760260
765 Nee Soon Central
765 Yishun Street 72 #01-366 Singapore 760765