

ADDING YEARS OF HEALTHY LIFE





Happiness lies,
first of all, in health.”



“We need to stop just pulling people out of the river.
We need to go upstream and find out why they’re falling in.”



“We receive very good support from our Yishun Health partners through the iCommunity@North (CARITAS) network. When we have issues concerning our clients with dementia, they actively work with us to come up with individualised plans to best support the patients and their families. Through this partnership, we share experiences in serving people with dementia and learn from each other’s model of care.”

St Luke’s Eldercare

The NHG Kampung Spirit

“I’m truly grateful to NHG-Central Health for initiating the Bishan-Toa Payoh Networking group, buoyed by key community partners. It is an excellent means to foster unity and knowledge sharing among the various social service agencies and healthcare agencies in the community. Well done!”

Mr Gordon Pinto

General Manager, Caritas Singapore



“At Yishun Health, we believe that our role is not just about bringing health to patients within our hospital, but to serve the greater community. Instead of treating disease in an episodic way, we are moving upstream to help prevent diseases and complications, and embracing wellness alongside illness care.”

Mrs Chew Kwee Tiang

CEO, Khoo Teck Puat Hospital & Yishun Health



“The CARITAS network allows us to connect efficiently with our Yishun Health partners. They are empathetic and understanding, especially during challenging circumstances where they help us expedite urgent cases for referral. This relationship enables our clients with dementia to receive the most appropriate care in a timely manner.”

SWAMI

“Woodlands Health Campus will be designed with a vision of ‘One-ness’. We will be built as a single, integrated Campus serving patients with care needs ranging from urgent to recovery to end-of-life. This concept of “One-ness” will extend beyond the hospital into the community, and even into the homes of our patients.”

Dr Jason Cheah

Deputy Group CEO (Transformation), NHG
& CEO, Woodlands Health Campus



“Christchurch Secondary School partners Woodlands Health Campus (WHC) on its Applied Learning Programme (ALP) curriculum and the Community of HOPE (CHOPE) programme. WHC creates opportunities for our students to learn, and nurture empathy for the community. By interacting with the elderly and healthcare professionals, they develop a deeper understanding of the health and social needs of the community. These initiatives open up to our students future careers in healthcare.”

Christchurch Secondary School



“Fei Yue is happy to work with community partners and organisations to reach out to those who need our services. Our mission is to effect life transformation and we can better do so when we work with various partners.”

Ms Lynn Lim
Director, Fei Yue Community Services

“The collaborative efforts between social and healthcare sectors in the Hougang community have enhanced exchange of expertise, knowledge and resources, which in turn yields better outcomes in meeting the needs of individual clients and the community.”

Mrs Sara Tan
Executive Director,
Hougang Sheng Hong Family Service Centre



“We are thankful for the strong friendship and trust built with strategic community partners like Central Health. This is a good example of how we can leverage on our strengths to pull together resources to upskill residents, improve access to health and social services, and strengthen support networks. Our residents tell us they are happier and healthier as they step out of their homes to connect with, keep fit and learn from their fellow neighbours.”

Mr Kavin Seow
Senior Director (Elderly Group),
TOUCH Community Services

“The future hospital is neither one that waits for patients to fall ill and come to its doors, nor one that discharges patients and leaves them without support in the community. Healthcare must evolve from a facility-centric to person-centric model.”

Professor Eugene Fidelis Soh
CEO, Tan Tock Seng Hospital & Central Health



Adding years of healthy life

WE ARE NHG

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 (RHS) 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 Singaporeans.

OUR VISION

ADDING YEARS OF HEALTHY LIFE

OUR CORE VALUES

PEOPLE-CENTREDNESS

We value diversity, respect each other and encourage joy in work.

INTEGRITY

We commit ourselves to the highest standards of ethical conduct.

COMPASSION

We care with love, humility and empathy.

STEWARDSHIP

We are responsible for the care of our people, patients and population.



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[@nhgig](https://www.instagram.com/nhgig)

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NHG's care transformation journey seeks to improve *population health* based on our "River of Life" (ROL) framework. We stratify our population according to its needs and risks, providing integrated, evidence-based and value-driven services across the Five Segments of Care – *Living Well, Living with Illness, Crisis and Complex Care, Living with Frailty, and Leaving Well.*

46. CLINICAL CARE

As Singapore's healthcare needs become more complex with changing demographics, our hospitals and polyclinics are, in tandem, evolving their practices through growing partnerships with the community to provide holistic and seamless health and social care. We are also enhancing crisis care through research and technological advancements.

64. EDUCATION

Education remains the cornerstone of a robust and sustainable healthcare system, and NHG is committed to building a strong pipeline of future healthcare professionals, boosting professional development, and raising capabilities to manage new models of care including population health strategies.

82. RESEARCH, INNOVATION AND TECHNOLOGY

Research, Innovation and Technology remain key drivers in our on-going care transformation journey to improve the health of our population. We use evidence-based research in the design and implementation of more targeted interventions. We leverage innovation and technology to deliver value-based care and to achieve sustainable health outcomes.

104. OUR PEOPLE

NHG is committed to looking after the well-being and growth of our employees as we firmly believe that Better People lead to Better Care. We are cognizant of the fact that delivering quality and safe care can be challenging and stressful, and we need Joy In Work.

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ABOUT THE COVER

The cover depicts how we strive to be healthy and happy at every stage of our lives, from young to old. NHG is moving upstream, encouraging parents, our patients and population to take charge of their health to improve physical, psychosocial and spiritual well-being.

Cover image: Marina Barrage, photo by NHG;
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NHG BOARD & SENIOR MANAGEMENT

04



Coming together is a beginning,
staying together is progress,
and working together is success.”



CHAIRMAN'S MESSAGE

2019 is a landmark year as it marks 200 years since Sir Stamford Raffles founded modern Singapore. The *Singapore Bicentennial* has shown how we have progressed from a fishing port to a thriving metropolis. NHG is privileged to be a part of this milestone. One of four statues, erected along the Singapore River to represent great men who have contributed to Singapore's growth, is that of Mr Tan Tock Seng, the philanthropist and founder of Tan Tock Seng Hospital (TTSH). To commemorate this special year, NHG also participated in the *National Day Parade*, held on 9 August, with a contingent representing our people from across the NHG Family, including clinicians, nurses, therapists, technicians, and administration.



MADAM KAY KUOK
CHAIRMAN
National Healthcare Group



NHG has come a long way in our young history. As the Regional Health System (RHS) for Central Singapore, we care for over two million people, of all ages and walks of life. We have moved beyond hospital walls and clinics to the community to deliver integrated, person-centred care for the population. The NHG Family – comprising three Integrated Care Organisations for our geographic zones: Central Health, Yishun Health, and Woodlands Health, our Primary Care ecosystem helmed by National Healthcare Group Polyclinics (NHGP), our specialty centres, the Institute of Mental Health (IMH), the National Skin Centre (NSC), and the National Centre for Infectious Diseases (NCID), together with our business units, National Healthcare Group Pharmacy (NHGPh) and National Healthcare Group Diagnostics (NHGD) – has also gone beyond illness to wellness care with the holistic management of our population in all dimensions of health – physical, psychological, social, and spiritual. Collectively, we have embarked on a fundamental journey from being a care *provider* to also be a care *partner* in the pursuit of affordable, accessible, reliable, and sustainable long-term outcomes.

In May 2019, NHG took an important step in its on-going care transformation journey with the publication and launch of *River of Life: NHG's Perspectives on Population Health* – an anthology of our efforts to-date on population health. This book is our serious attempt to document the complex evolution of our population health odyssey. It outlines our blueprint to help the population live well within the Five Segments of Care – *Living Well, Living with Illness, Crisis and Complex Care, Living with Frailty, and Leaving Well*. The book was launched at a press briefing attended by all major local print, online, and broadcast media, effective channels to reach our most critical stakeholder – the public. The sharing of this publication with other partners in the community will help spread best practices



to achieve better health for Singaporeans and satisfaction for our staff and partners.

This ethos of transcending organisational boundaries in the pursuit of population health was reinforced at the '*Singapore Population Health Conversation and Workshop*', organised by SingHealth, and supported by NHG and the National University Health System (NUHS). Held in April 2019, the three healthcare clusters discussed effective strategies to tackle the complex needs of the Singapore population including upskilling healthcare professionals, building capacity and capability in the community, influencing Singaporeans' lifestyle behaviours, and addressing the social determinants of health as One Public Healthcare Family.

Besides cross-cluster collaborations, our internal corporate culture needed strengthening. For the first time in 18 years since its inception in 2000, NHG launched a new set of core values which was adopted by HQ and all its Institutions. PICS – People-Centredness, Integrity, Compassion, and Stewardship – was unveiled at the





NHG Culture Symposium in November 2018, helmed by NHG Group CEO, Professor Philip Choo, and Senior Management with the support of staff. Another initiative to complement PICS is *Joy in Work* (JIW), which encourages our people to reinforce the purpose and meaning of what they do. JIW operates on the principle that fulfilled staff will provide better care for patients, where collective leadership takes accountability and responsibility, and fosters wellness and satisfaction in the workplace.

Entrenching Population Health In The Central Region

As the Accountable Care Organisation (ACO) for the Central Region, NHG stratifies our population according to their needs and risks, and provides integrated, evidence-based, and value-driven services to help Singaporeans live well and independently in the community for as long as possible. We believe that technology is an enabler of our population health efforts. We are in the user-testing stage of an NHG-mobile App platform – *HealthApps* – which houses a suite of applications targeted at wellness, disease management, and patient education. *HealthApps* seeks to manage health through the tracking of food intake, exercise, medication, and vital signs.

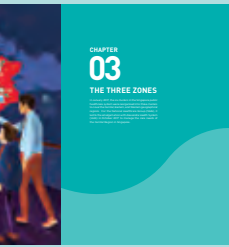
NHG has also made health screenings more accessible in the community. We conduct screenings in the Central Region to identify age-related decline in function, such as vision, hearing, and oral health as part of the national Project Silver Screen, launched as a joint collaboration between the Ministry of Health (MOH) and Temasek Foundation (TF) Cares.

In our outreach to the heartlands, our *Community Nursing* network in the Central Region has nurses strategically deployed across Primary Care, Community Hospitals, Day Care Centres, residential homes, and hospices, where they partner community care providers to facilitate a broad spectrum of services. Efforts are

channelled towards building an extensive provider network and robust support structure, and bolstering 'people' resources such as neighbours, interest groups, and health ambassadors. As of December 2018, NHG has some 86 community nurses serving over 60,000 patients in the Central Region. Through Sensing, Strengthening, Care, and Coordination (2S +2C), these community nurses provide invaluable place-based management of the health and well-being of our patients and population.

NHGPh's 24-hour locker service allows eligible NHGP patients with chronic conditions to collect their packed medication from over 30 convenience stores across Singapore, a welcome convenience for patients and their caregivers. Our Home Phlebotomy initiative by NHGD has phlebotomists visit patients' homes to perform blood tests, making it easy and comfortable for those who are non-ambulatory.

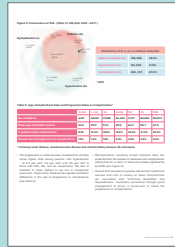
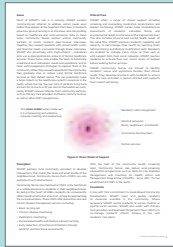




CHAPTER 03
THE THREE ZONES



CHAPTER 06
THOUGHTS ON THE FUTURE STATE



Read the *River of Life: NHG's Perspectives on Population Health* online at <http://bit.ly/ROLNHG>



The media launch of *River of Life: NHG's Perspectives on Population Health*. This publication is produced by Group Corporate Communications with Professor Philip Choo, Dr Wong Kirk Chuan, Dr Heng Bee Hoon and Dr Audrey Tan as advisors.

In our care transformation journey, NHG is exploring value-based Funding Models, such as *Bundled Payments* and *Capitation Funding* to incentivise preventive care and better care coordination across various settings, to give better value to patients and the population in the long run. Pilots to test the feasibility of these Funding Models across our zones have gathered robust data and insights into challenges involved with the eventual shift.

Research continues to foster a culture of continuous learning, improvement, and innovation. NHG has adopted the *Thematic Collaboration Strategy* for our research endeavours, leveraging strategically on the expertise and resources of Health Services and Outcomes Research (HSOR), our academic and industry partners, such as the Lee Kong Chian School of Medicine (LKCMedicine) and Nanyang Technological University (NTU) to advance healthcare. NHG has established joint seed funding to forge research in six areas: *Ageing/Rehabilitation, Dermatology, Infectious Diseases, Mental Health, Metabolic-Vascular Diseases, and Population Health*.

Conversations With Our Population

'Conversations' with our constituents at regular intervals are essential to building trust and relationships. This underpins NHG's public outreach efforts. Last year, IMH organised the inaugural Mental Health Festival (MHF) at its campus to promote awareness of mental health and wellness with its partners: the Agency for Integrated Care (AIC), Silver Ribbon Singapore and Singapore Association for Mental Health.

TTSH held a series of talks on Advance Care Planning (ACP) in May 2019 for patients, visitors, and staff in collaboration with community partners such as Ren Ci Nursing Home and Lim Ah Pin Church of Christ. Nursing home residents, caregivers, and other participants gained an understanding of the challenges in surrogate decision-making, the importance of making End-of-Life (EOL) care preferences known early, as well as the differences between ACP and other EOL-related documents such as the Advance Medical Directive. Complementing the talks was



the screening of a new ACP educational video produced by NHG Group Corporate Communications in partnership with TTSH clinicians.

Celebrating Watershed Moments

As part of its 175th anniversary, TTSH organised a Charity Heritage Walk, attended by some 2,000 people, including Deputy Prime Minister and Minister for Finance, Mr Heng Swee Keat; Member of Parliament for MacPherson, Ms Tin Pei Ling; TTSH Senior Management and staff; and members of the Central Singapore Community Development Council. The 8-km walk, titled “Tan Tock Seng’s Journey”, covered key landmarks relevant to the legacy and contributions of the hospital’s founder to help the “sick poor of all nations”.

In May 2019, the Ng Teng Fong Centre for Healthcare Innovation (CHI) officially opened. CHI aims to foster innovation across public healthcare by serving as a platform that brings together diverse professionals who can turn fledgling ideas into real-world solutions. In September 2019, the National Centre for Infectious Diseases (NCID) was also officially launched. The 14-storey, 330-bed purpose-built facility is the nation’s dedicated resource for the seamless and synergistic integration of clinical services, public health capabilities, and academic excellence in infectious disease management and outbreak readiness. Both CHI and NCID are connected to TTSH through the HealthCity Link, which marks an important step in the development of HealthCity Novena (HCN). When fully completed in 2030, HCN will be an integrated hub of healthcare, medical education, and translational research for Singaporeans.

Outstanding Contributions To Public Healthcare

At the National Day Awards 2019, NHG Group CEO, Professor Philip Choo, received the Public Administration Medal (Gold) in recognition of a long and illustrious career in healthcare and for his contributions to population health. Also bestowed the same honour was NHG Board Member, Mr Ng How Yue. Other NHG Family members recognised at the awards include Mr Soh Gim Teik, NHG Board Member; Ms K. Thanalethimi, President, Healthcare Services Employees’ Union (HSEU); Professor Lim Tock Han, Deputy Group CEO (Education and Research), NHG; and Associate Professor Thomas Lew, Group Chief Data and Strategy Officer, NHG.

I would like to congratulate Associate Professor Wong Hon Tym, Medical Director, NHG Eye Institute (NHGEI); and Associate Professor Colin Tan Siang Hui, Senior Consultant, NHGEI, on winning the National Clinical Excellence Team Award at the National Medical Excellence Awards (NMEA) 2019. Together with Assistant Professor Gavin Tan Siew Wei and Ms Haslina Binte Hamzah from the Singapore National Eye Centre (SNEC),



they successfully set up the Singapore Integrated Diabetic Retinopathy Programme (SiDRP). SiDRP utilises a tele-platform to assess Diabetic Retinopathy via photographs in “real time”, enabling shorter turnaround time and early detection of eye diseases.

Teams from our Institutions were acknowledged for their advancement of healthcare in Singapore. Yishun Health’s Population Health and Community Transformation, and the Woodlands Health Campus Community Transformation Office teams clinched one Excellence and four Gold awards at the Asian Elderly Care Awards (AECA) 2019, which laud



NCID officially opened in September 2019.

best practices and significant projects that contribute to the well-being of the elderly population.

NHG continues to contribute to advancing the standards and practices of the medical profession with the appointment of Professor Chee Yam Cheng, Senior Advisor, NHG and Emeritus Consultant, TTSH as the President of the Singapore Medical Council (SMC) with effect from August 2019.

We celebrate the graduation of the second cohort of LKCMedicine students who have joined the Singapore healthcare family. As the primary clinical training partner for LKCMedicine, NHG plays a key role in ensuring a reliable pipeline of healthcare professionals capable of operating effectively in a fast-changing landscape. Under the guidance of NHG educators, students gain more than clinical knowledge – they learn how to be ethical, empathetic, and efficient partners to our population in their health journey.

The NHG Family also clinched six awards at APEX 2019, the annual US-based competition which recognises excellence in publication. Our winning publications were selected from a pool of over 1,200 entries, and commended for their content and contribution to public education.



We Are One Family

The NHG Family has achieved more successes in our population health journey. It is a testament of our collective efforts in which our Board, management and staff, with our partners have played a part.

I would like to express my heartfelt appreciation to Mrs Lim Joke Mui for her invaluable counsel and contributions during her tenure on the NHG Board, and to warmly welcome on-board Mr Tan Tee How as Deputy Chairman, NHG.

Let us remain unswerving and committed to our vision to serve our patients, population, and nation by “Adding Years of Healthy Life”.



NHG is the primary clinical training partner for LKCMedicine.





GROUP CEO'S MESSAGE

In FY2018, the NHG Family made many positive strides in transforming care for Singapore's Central Region. The three Integrated Care Organisations (ICOs) – Central Health, Yishun Health and Woodlands Health – anchored by their respective hospitals – Tan Tock Seng Hospital (TTSH), Khoo Teck Puat Hospital (KTPH) and Woodlands Health Campus (WHC) – continued to partner the sub-populations in their geographic zones to provide place-based care. Their efforts have been supported by the Institute of Mental Health (IMH), National Skin Centre (NSC), a strong Primary Care Ecosystem helmed by National Healthcare Group Polyclinics (NHGP), as well as National Healthcare Group Diagnostics (NHGD), National Healthcare Group Pharmacy (NHGPh), and our community partners. Together, we remain steadfast in our mission to build purposeful relationships with the patients and population so that we can encourage them to take greater ownership of health and wellness, while championing the need to *“Rebuild our Kampung Spirit”*.

We have come a long way since our early days of episodic hospital-centric care. Today, NHG and our Institutions strive to meaningfully engage our community and build its capacity and capability, strengthen Primary Care as the first line of defence against illness, and integrate health and social care so that we can address the needs of Singaporeans holistically. Our on-going care transformation journey has begun with the implementation of the **River of Life** Framework in our three zones – Central Zone, Yishun Zone and Woodlands Zone.

Moving From Care Provider To Care Partner – The River Of Life

Singapore's life expectancy is one of the highest in the world at 84.8 years. A child born in Singapore in 2017 can

expect to live to that age, 8.7 years more than one born in 1990. However, in the same period, healthy life expectancy (the average number of years you can expect to live *in full health*) only rose by 7.2 years to 74.2 years.¹ Thus, the years gained in quantity are likely to be poor in quality, often spent coping with health problems and disability. NHG endeavours to narrow this gap between life expectancy and healthy life expectancy with the *River of Life*.

This Framework is a shift from fragmented, facility-based care to integrated, person-centred, and relationship-based care. It focuses on targeted,

Note
1 2017 Global Burden of Diseases, Injuries, and Risk Factors Study



evidence-based, and timely interventions, based on the stratification of risks and needs from 'birth to End-of-Life'. To achieve our objective of a healthy population, we are strengthening partnerships with both health and social care agencies in the community and providing value-driven services across the *Five Segments of Care – Living Well, Living with Illness, Crisis and Complex Care, Living with Frailty, and Leaving Well*. This will help us address and care for all aspects of health – physical, psychological, social, and spiritual – of our population. In FY2018, NHG and our Institutions launched and expanded several initiatives that served the diverse needs of our patients and the population.

Living Well

Living Well focuses on optimal wellness regardless of one's health state and adopts a two-dimensional model, in which:

- Healthy persons enjoy a longer duration of being disease-free
- Persons who are ill, frail, or at the end of life can continue to experience optimal wellness by managing their conditions



The aim is to create a *culture of health*, where people remain independent and enjoy good quality of life for as long as possible. A programme that aptly illustrates this aim is NHGP's *Tiered-Risk Interventions for Managing Weight (TRIM)*. Launched at Ang Mo Kio Polyclinic in June 2018 and at Woodlands Polyclinic in April 2019, TRIM initiates conversations with polyclinic patients identified as being at risk of chronic illness, and motivates them to take charge of their health. As of June 2019, about 4,500 patients have been identified, and about 40 per cent of them have had conversations on weight management.

NHGD launched its second Mammobus and second Mobile Bone Mineral Densitometry Service during SHBC 2019.



PROFESSOR PHILIP CHOO
GROUP CHIEF EXECUTIVE OFFICER
National Healthcare Group





Photo Courtesy of Write Editions®

Health and functional screening is another key element of our strategy to help our population live well, and NHG has made it more accessible in the community. For example, the *Community Mammobus Programme (CMP)* jointly launched by NHGD, Breast Cancer Foundation (BCF), and Singapore Cancer Society (SCS) in January 2018 brings breast cancer screening closer to homes and workplaces. CMP enabled a 68 per cent increase in the number of women screened for breast cancer in just the first year following its launch.

Living With Illness

When our Primary Care professionals build trust-based relationships with patients, they can help them manage their chronic conditions more effectively, thereby avoiding unnecessary hospitalisation. Through such a proactive, relationship-centred approach, horizontal integration with private General Practitioners (GPs), and vertical integration with acute and Community Care providers, NHGP has continued to improve the health outcomes of its patients, in a cost-efficient manner. This model of care can be illustrated by the *LighterLife* programme launched in October 2018, which helps patients with chronic conditions, such as diabetes and hypertension, lose weight in a healthy way. *LighterLife* equips patients with the skills to self-manage their conditions through strong peer and community support, complemented by coaching sessions with our multidisciplinary Primary Care teams on exercise, food habits, and lifestyle changes. It was first rolled out in Ang Mo Kio Polyclinic, and has since expanded to Woodlands and Toa Payoh Polyclinics.

Another example of this push for 'living well with illness' is the collaboration between NHGP and the

MOH Office for Healthcare Transformation (MOHT) on a tele-health pilot that encourages self-care by patients with hypertension. Patients measure their blood pressure at home using a monitoring device, which automatically transmits the readings to care teams in our Polyclinics. Should their blood pressure levels rise, patients receive additional tele-consultation advice from their nurse, thus saving them clinic visits. Early results of the pilot programme have been positive – within the first six months of implementation, we have seen an improvement in patients' mean blood pressure levels.

NHG is also striving for stronger integration between Primary Care and specialist care with initiatives such as *GPNext*, a partnership between TTSH and GPs in the Central Zone. Launched in October 2018, *GPNext* facilitates the smooth discharge of stable, ambulatory patients from the Emergency Department (ED) to Primary Care. To-date, 176 patients have been referred to GPs for continuity of care in the community.



Crisis And Complex Care

Given Singapore's ageing population, our acute hospitals are evolving to provide complex care for the frail elderly in addition to managing medical crises. This involves streamlining work processes and tightening protocols within the hospitals, as well as building more effective partnerships in the community with Community Hospitals, Voluntary Welfare Organisations (VWOs) and Social Care Agencies to address the complex needs of our patients more holistically. Initiatives under this Care Stream span emergency, inpatient, and outpatient settings, for example:

- > **Emergency Department Interventions for the Frail Elderly (EDIFY)** – TTSH's EDIFY ensures that the principles of geriatric care are delivered right from the point of patients' arrival at the ED. It provides early geriatric review to reduce potentially avoidable admissions among older persons.
- > **Care@Bedside Model** – WHC is redesigning inpatient bed spaces across its acute wards for more person-centred intuitive bed-space. It involves empowering patients with greater access to information through built-in technology. Components include a Patient Bedside Terminal that enables future patients to make more informed choices, leading to faster recovery and rehabilitation.
- > **One Care Plan** – Yishun Health's Diabetes Centre has co-developed this with NHGP to keep patients with co-morbid chronic conditions well in the community. Healthcare professionals across Acute, Specialist and Primary Care work together on a shared framework of care to enable our patients to live independently for as long as possible.

Integral to this evolution of 'Crisis and Complex Care' is the redesigning of medication management for our patients. The number and complexity of medications in the treatment of chronic illness is growing rapidly. We need to ensure that a patient's different medications are periodically reviewed and reconciled appropriately, to prevent adverse drug-related events, particularly as they transition across multiple care settings.

This *Pharmacy Transformation* strategy is championed by NHGPh with initiatives such as the inclusion of the *Patient's Medication List (PML)* as the *Single Source of Truth (SSOT)* in a patient's care plan to achieve safe, reliable, and coordinated care. Once this effort is scaled up, it will provide greater clarity on follow-up care for providers, patients, and caregivers. Besides the PML, we are stepping up efforts to bring Collaborative Prescribing Pharmacists, who are trained to optimise pharmacotherapy, into the multidisciplinary care teams for the effective management of complex patients, such as



those with HIV/AIDS, cancer, metabolic diseases, chronic pain, and mental illness. This will result in better health outcomes and greater value-based care.

Living With Frailty

We have seen a steady increase in the frail and pre-frail population – and concomitantly, in their healthcare utilisation because frail adults are often vulnerable to disability. This is significant for NHG as our population in the Central Region tends to be older than the national average (17 per cent of our residents are aged 65 and over, compared with 13 per cent nationally). Tackling frailty is thus a priority, and we are pursuing it on two fronts:

- Preventing and/or delaying the onset of frailty
- Managing our frail residents outside hospitals and appropriately in the community

Our measures to combat frailty take into account the physical, cognitive, psychological, and social dimensions. Individuals who are physically and cognitively frail have been found to be at higher risk of functional disability, poor quality of life, and mortality, as compared to those without cognitive impairment. Loneliness and social isolation exacerbate physical and functional disability in frail patients.





A well-rounded approach to managing frailty is thus necessary, and is embodied by our *Framework for a Dementia Friendly Community*, which includes targeting evidence-based interventions at different stages of dementia (early to advanced) and involves reaching out to multiple stakeholders such as caregivers, first responders and the general public. Last year, Yishun Polyclinic became the first NHG Polyclinic to provide dementia care for patients, covering regular assessments, counselling services and coordinated access to community-based dementia services.

This complements IMH's *Aged Psychiatry Community Assessment and Treatment Service (APCATS)*, a community-oriented psycho-geriatric outreach service, which supports seniors with mental health issues to age-in-place. In FY2018, APCATS conducted 63 first visits and 1,000 repeat visits to provide assessments and treatments to this populace. These home visits help seniors better manage their condition and prevent unnecessary inpatient admissions to IMH. More than 200 sessions have been held to train community partners and nursing homes to manage the psychosocial needs of the elderly, and to raise awareness and facilitate early detection of mental disorders.

Leaving Well

NHG believes that everyone seeks to live with dignity and peace of mind from cradle to grave. *Leaving Well* thus operationalises this ethos by advocating patient-centred End-of-Life (EOL) care that focuses on the quality of life, encompassing the physical, psychological, social, and spiritual aspects. This care segment aims to destigmatise EOL care, as well as expand access to it, through a two-pronged strategy:

- Raise the profile of and increase access to Advance Care Planning (ACP) so that the values and preferences of more people are made known
- Provide EOL care consistent with these preferences across NHG Institutions and in the community

One of the most common preferences expressed by our patients at the end of life is to spend time with loved ones and remain at home. Initiatives such as *Programme IMPACT (Integrated Management and Palliative Care for Terminally Ill patients)* and *Programme Dignity* cater to this need by providing home palliative care services for patients in close coordination with hospital specialists. In addition to fulfilling the wishes of patients, such home-based services are expected to be cost-effective in the long run. In FY2018, a retrospective cohort study on Programme Dignity patients by NHG's Health Services and Outcomes Research (HSOR) Department found that they had lower rates of healthcare utilisation (fewer ED visits, hospital admissions, and shorter cumulative Lengths of Stay) when compared to the control group, which can translate to more sustainable EOL care for both patient and provider.

An Evolving Model Of Care

NHG's *River of Life* approach has progressively shown positive results, especially in the management of diabetes. We have been able to 'bend the curve' of diabetes patients in the Central Region – the year-on-year (YOY) growth in the number of diabetes patients shrank from six per cent in 2013 to 4.2 per cent in 2017. The YOY growth of diabetes patients with at least one complication also fell from 7.6 per cent in 2013 to 4.2 per cent in 2017. We achieved these 'bent curves' despite our population getting older, and they bear testament to our strategic emphasis on relationship-based care, greater health-social integration, and strong partnerships in the community.

To sustain these successes and continue on our path to population health improvement, we plan to expand our efforts further upstream, and engage our patients even before they develop Type II diabetes. This is critical to realising our *Quadruple Aims – Optimal Patient Experience and Outcomes at the Lowest Possible Cost per Capita, with High Staff Satisfaction*.

Managing Metabolic Syndrome Early

Cardiovascular disease is the single biggest contributor to Singapore's burden of early death and disability, measured in Disability-Adjusted Life Years (DALYs). While our national "War on Diabetes" contributes to lowering this burden by tackling a well-established risk factor, it is but the first step. Our data show that about two-thirds of newly diagnosed diabetes patients in the Central Region have DysLipidaemia (L) or Hypertension (H) before or at the time of their diagnosis. We have also found that patients with L and/or H have a greater lifetime risk of cardiovascular complications – and in over 60 per cent of cases, this is true even without the presence of diabetes.

These findings necessitate a broadening of our focus – from diabetes to *Metabolic Syndrome*, which denotes a group of five risk factors (*abdominal obesity, high triglyceride levels, low HDL cholesterol, high blood*

pressure, and high fasting blood sugar) that leads to cardiovascular disease. It is diagnosed when three or more of these risk factors are present. To tackle Metabolic Syndrome and advance our fight against cardiovascular disease, NHG plans to create *Metabolic Clinics* to manage these conditions holistically, rather than in silos. In addition to Metabolic Clinics, we are stepping up efforts to prevent Metabolic Syndrome – and this begins with combatting obesity.

Our data reveal that the trajectory of chronic disease and cardiovascular complications is akin to a *travellator*. Once a person gets on it (when he or she becomes obese), he or she continues on an almost inevitable path to developing high cholesterol, high blood pressure, diabetes, chronic kidney disease, cardiovascular disease, disability, and finally, death. This is most urgent in view of the rising obesity rates in Singapore – the prevalence of obesity in the population climbed from six per cent to 8.7 per cent between 1998 and 2017.² If we stand idle, the obesity rate will hit 15 per cent by 2024 – bringing with it a tsunami of downstream complications and ill health.

To effectively counter this trend with early interventions, NHG has started tracking obesity, particularly abdominal obesity (measured by the waist-to-hip ratio), during patient consultations across our Institutions. In tandem, we are investing in upstream action, targeting schools, workplaces, and neighbourhoods to address the fundamental causes of obesity and Metabolic Syndrome: *unhealthy daily choices*.

Modifying Daily Choices To Improve Population Health

As Singapore has grown in affluence, we have seen a steady rise in lifestyle-related illnesses – primarily due to obesity, poor diets, smoking, and physical inactivity. For instance, the number of DALYs caused by obesity and being overweight has risen by 141 per cent between 1990 and 2017. To curb these trends, we have to help people make healthy daily choices – which, over a lifetime,



Note

2 Singapore National Health Survey



Moving upstream: NHG is partnering schools to inculcate healthy lifestyle habits from a young age.

will accumulate as positive effects on their well-being. Cultivating good food habits can be a starting point. We know that a nutritionally balanced plate comprises 50 per cent fruits and vegetables, 25 per cent protein-rich foods such as fish or chicken, and 25 per cent whole grains. However, many typical meals of Singaporeans tend to be almost exclusively refined carbohydrates. If we are able to encourage and educate our population to make small, simple changes to their food habits, such as adopting the “bento box” concept of a balanced meal, we can dramatically reduce our disease burden.

Similarly, 36.5 per cent of Singaporean adults are physically inactive – higher than the global average of 27.5 per cent. Activating people to move more, such as clocking the recommended 10,000 steps a day, can improve population health. Driven by this impetus to help our population make small, sustainable changes in their daily habits, NHG is “moving” into spaces like schools and workplaces to influence behaviours for effective and long-lasting impact.

Promoting Health In Our Schools

National data tells us that one in 10 five-year olds is overweight. Also, 70 per cent of seven-year old children who are overweight remain so as adults. Early intervention is therefore imperative. NHG has partnered the Ministry of Education (MOE) to engage schools (*pre-school through 12 years*) to create a culture of health early and help shape social norms. This involves assimilating behavioural interventions, through formal and informal curricula, to empower students, teachers and parents to embrace healthy lifestyle habits. School Health Assessments will be conducted to identify and address challenges more systematically. NHG is also working with school canteens to redesign student meals to be more nutritious and balanced in their portions.

A good example of our growing partnership with schools is the on-going transmedia campaign, launched in



January 2019, in collaboration with Paya Lebar Methodist Girls' School (Secondary) (PLMGS(S)). Targeted at 2,500 students, staff and parents, the campaign adopts different ways to raise awareness on sugar consumption, and has shown promising results with more students reportedly switching to bottled water and less sweet drinks.

Enabling Workplace Health

In Singapore, about 68 per cent of our population is in the labour force, and they spend more than half their day at work. This underpins NHG's plans to leverage the workplace and foster healthy living. The "3E5P" Framework guides the planning of our programmes for workplaces – Education ('I know/I know how to'), Engagement ('I want to') and Empowerment ('I can/I am able to') to drive improvements through the five aspects of Place (environmental nudges), Process (choice architecture), People (role modelling), Policy (social norms), and Promotion (health awareness). We have begun this journey within NHG. In FY2018, 808 NHG Trainers, Influencers and Practitioners (TIPpers) were trained in health management to champion initiatives that can help foster physical, mental, and social health in our workplace.

Building Healthier Communities

We know that 20 per cent of poor daily choices, such as unhealthy diets and lack of exercise, can lead to



80 per cent of health issues. Empowering people to take greater ownership of their health, through consistent and sustained practice of positive behaviours, is critical to creating healthy, happy, and resilient communities. An initiative that exemplifies this approach is Skills for Life! @ Community (SFLC) by Yishun Health. Community nurses, community dietitians, sports trainers, and programme executives work together to equip participants with the skills and knowledge to make small, sustainable changes in their daily habits. Participants engage in experiential learning that ranges from reading food labels to cooking healthy meals with friends and family. As of March 2019, SFLC has engaged about 200 residents. Yishun Health has also partnered WHC to launch "Food for Life!" and "Cook for Life", two pilot programmes which help residents take charge of their diet and fitness. Participants work closely with a team of dietitians and fitness coaches to improve their lifestyle through weekly group exercises and cooking demonstrations.

Activating Parents As Allies Of Population Health

Parents are the primary gatekeepers of children's health – they determine children's access to healthcare, the food they eat, the amount of physical activity they engage





in, and the amount of emotional support they receive. In addition, the *behaviour* of parents, and in particular mothers, has health implications for children; for example, the children of mothers with healthy diets are more likely to have high healthy food intake and to indulge less in junk food. When we couple this with the fact that health in the earliest years (0 – 6 years) has long-term effects on well-being, we recognise that our strategy to improve population health must include pre-natal and maternal health status and behaviour modification. NHG aims to activate mothers and prospective mothers to lay the foundations for a healthy population. To put this into effect, we will tap onto our Polyclinics’ existing maternal health services and childhood vaccination programmes as part of our health promotion and disease-prevention strategies.

Adopting A ‘Whole-of-Nation’ Approach To Health

Healthcare utilisation varies across the population. Based on our estimates, about five per cent of our population uses 60 per cent of healthcare resources. Our patient data indicate that 20 per cent of the population are responsible for 85 per cent of healthcare costs. This disparity in the health of our population can be explained by recognising that health is primarily determined by “the conditions in which people are born, grow, live, work, and age”, that is, the *Social Determinants of Health*.³

Social and economic conditions such as access to housing and transportation, education, social networks and social support, income, work conditions, job security, are pivotal to health and wellness. Several studies bear out this claim; there is a clear correlation between low



socio-economic status (SES) and higher risk behaviours (such as smoking, poor diets, and low physical activity), higher prevalence of chronic illness, and lower take-up rates of health screenings.

NHG’s Population Health Index (PHI) generated by HSOR has found that lower income and educational attainment are associated with higher rates of depression, social isolation and malnutrition. As such, attempts to tackle the health inequities and improve population health must include actions that address the social determinants. It will mean upgrading our facilities and infrastructure, evolving policies and regulations, and developing interventions to shape the environmental context of communities so that healthy options become a way of life. This requires multi-agency and inter-sectoral efforts, and joining hands with our patients and population. It will take a “Whole-of-Government” and “Whole-of-Nation” approach to help the people of Singapore fulfil their highest health potential. With our values of People-centredness, Integrity, Compassion and Stewardship, NHG will play our part and strive collectively towards our vision of “*Adding Years of Healthy Life*”.

Note

3 World Health Organization



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Our appreciation to former NHG Board Member Mrs Lim Joke Mui for completing her tenure as of April 2019.



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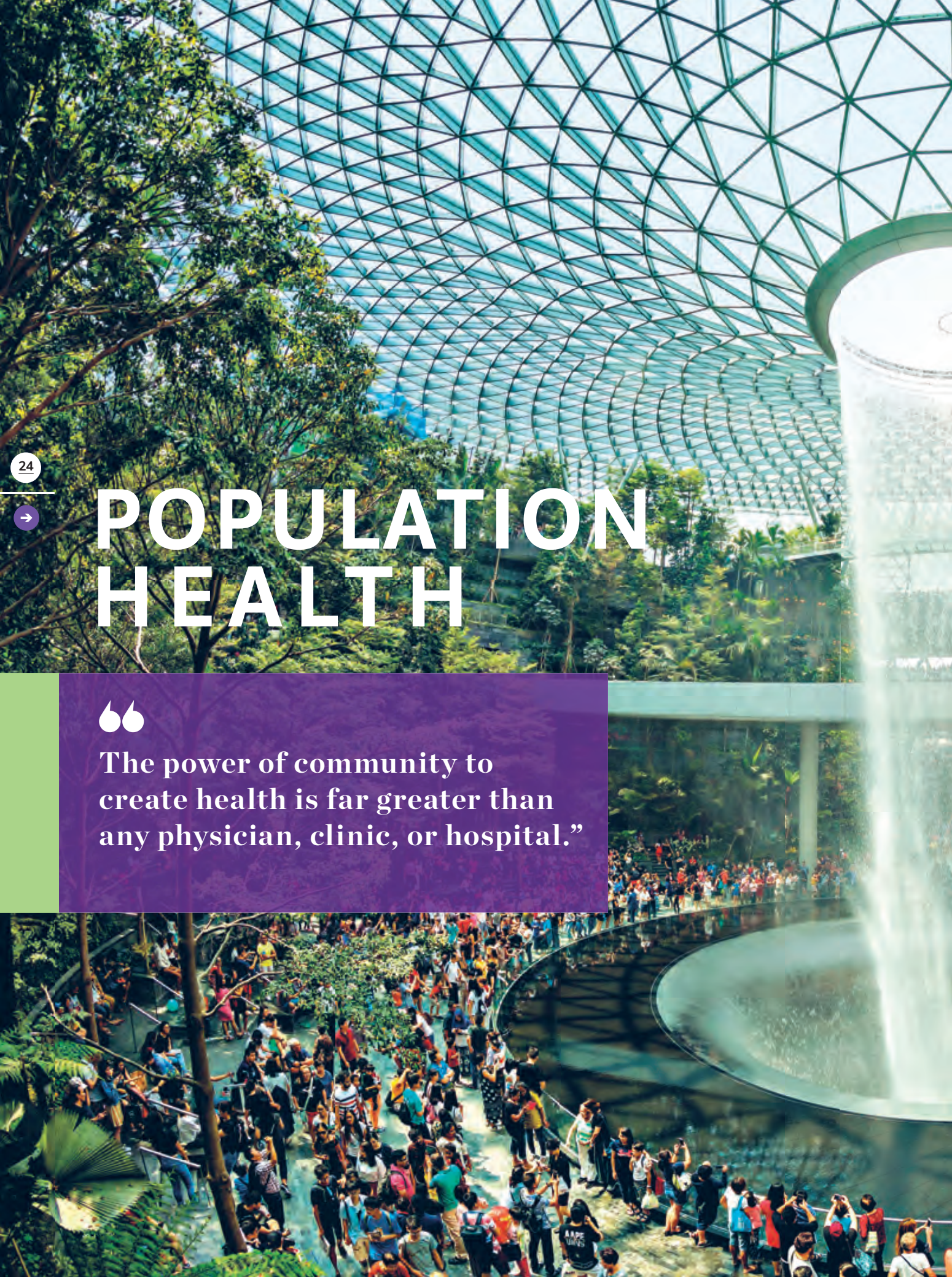




POPULATION HEALTH



The power of community to create health is far greater than any physician, clinic, or hospital.”





POPULATION HEALTH

Singapore’s healthcare system faces the three inter-connected challenges of rising frailty, growing chronic disease burden, and an increased prevalence of unhealthy lifestyle behaviours, typical of developed societies. These new realities have driven NHG to transform its approach to care – from a predominantly facility-centric, doctor-based, and illness-focused model to one that is person-centred, relationship-based, and wellness-focused.



As the Accountable Care Organisation (ACO) for the Central Region, NHG’s care transformation journey seeks to improve *population health* based on our “**River of Life**” (ROL) framework. We aim to *help everyone live well, at every stage of life*. This is enabled by stratifying our population according to its needs and risks, and providing integrated, evidence-based and value-driven services across the **Five Segments of Care** – *Living Well, Living with Illness, Crisis and Complex Care, Living with Frailty, and Leaving Well*. This model is operationalised by the Integrated Care Organisations (ICOs) – Central Health, Yishun Health, and Woodlands Health – in our three geographic zones to tailor care to the unique requirements of the distinctive sub-populations within each zone.

This useful and much needed start to our population health objective requires a multi-faceted, multi-pronged, and holistic approach to health. Hence, NHG continues to build partnerships with health and social care organisations in the community to serve our population effectively and efficiently. We are progressively moving upstream to activate and empower our sub-populations to take ownership of health to live well.





NHG collaborates with PLMGS(S) to promote healthy lifestyle habits.

MOVING UPSTREAM TO ACTIVATE OUR POPULATION EARLY

Promoting Health In Our Schools

NHG has partnered the Ministry of Education (MOE) to engage schools and to activate, educate, and empower students, parents, and teachers to embrace healthy lifestyle habits. Besides incorporating behavioural health interventions into the school's curriculum, NHG engages parents through social media. NHG has trained over 1,500 teachers in managing food portions and applying 'Motivational Interviewing' in the health coaching of students, thereby creating a multiplier effect of health outreach.

A noteworthy example of NHG's collaboration with schools was the launch of a joint campaign with Paya Lebar Methodist Girls' School (Secondary) (PLMGS(S)) in January 2019, targeting 2,500 students, teachers, and parents. The on-going campaign adopts different approaches to raise awareness on sugar consumption, including circulating educational cartoons and training students to be "Health Ambassadors". It has shown some positive early results. The school reported that more students are switching to drinks with low sugar content and bottled water.





Collectively, we seek to foster meaningful relationships between our population and our healthcare system, and to activate our community to take greater ownership of health and care for each other in the “Kampung Spirit”.

Professor Philip Choo
Group CEO, NHG

Enabling Workplace Health

Healthy and happy employees are more engaged, productive, and better able to support an organisation's goals and objectives. To this end, NHG promotes the “3Es” – Educate, Engage, and Empower – to create a culture of health within our cluster. In FY2018, 808 NHG Trainers, Influencers, and Practitioners (TIPpers) were trained in health management to champion initiatives that foster physical, mental, and social health in the workplace.

Central Health Launches ‘Neighbourhood Conversations’

The ‘Neighbourhood Conversations’ is a series of dialogues and engagement efforts with key health, social, and community partners and stakeholders in neighbourhoods in the Central Zone. The conversations are part of the Division for Central Health’s (DCH) efforts

to go upstream to understand the health needs of the community, build a stronger ‘alliance of providers’, and improve population health outcomes through the creation of a network of like-minded partners. ‘Neighbourhood Conversations’ focuses on the co-creation of a common vision and shared goals to deliver integrated care to the population. To-date, four neighbourhoods have held the conversations, and identified collaborative projects:

- Block Mapping in Ang Mo Kio and Toa Payoh to identify at-risk households for targeted interventions
- Flagging of partners’ clients when they visit Tan Tock Seng Hospital’s (TTSH) Emergency Department (ED) or are admitted to/discharged from TTSH through the Health Intelligence (HI) system to facilitate the continuity of care
- Expanding the Dementia-Friendly Community initiative
- Community Engagement Programme to serve as a case-finder platform

Central Health Action And Learning Kampung (CHALK)

Central Health Action and Learning Kampung (CHALK) was launched in November 2018 as an annual platform for DCH’s partners and other providers in Central Zone to network, share best practices, and co-learn with the aim to foster a sense of shared responsibility and build relationships between the hospital and the community. The inaugural event was attended by 100 participants from 15 health and social care partner agencies.



Yishun Health engages community seniors to ‘own their health’.

**COACHING
FOR HEALTH
ACTION AND
MANAGEMENT
PROGRAMME**



Walk-with-Me Social Movement Launch

In June 2018, TTSH and its HealthCity Novena partners, in collaboration with the Public Transport Council's Heart Zone Initiative, launched the Walk-with-Me social movement at Novena MRT Station. The launch was graced by Dr Lam Pin Min, Senior Minister of State for Transport and Health. The movement encourages people living and working in Novena to become a personal befriender and navigator for patients who require assistance finding their way from the MRT Station to buildings within HealthCity Novena. With the on-going developments in HealthCity Novena, over 30,000 people are expected around this campus daily.



Coaching For Health Action And Management Programme (CHAMP)

Yishun Health's (YH) Coaching for Health Action and Management Programme (CHAMP) began in 2017 to bring nursing, counselling, health coaching, and peer support to the community with a view to enable behavioural change. CHAMP focuses on four simple but powerful health promoting actions:

- Reduce free sugar
- Adopt a Healthy Eating Plate
- Substitute refined carbohydrates with whole grains
- Clock at least 10,000 steps a day

The community intervention programme empowers people who are healthy, as well as those living with chronic illnesses, to take ownership and self-manage their conditions. It also arms the community to make better decisions, find motivation, and set realistic and achievable health goals. To-date, the programme has enrolled 3,505 people – many of whom have adopted healthy habits and made improvements in their chronic disease risk factors. In March 2019, CHAMP also held its first Health Carnival, where participants took part in interactive and educational health promoting activities, health screenings and exercise sessions.

CHAMP advocates healthy lifestyles in the community.





Seniors learn to cook healthy food at SFLC.

Skills for Life! @ Community

Skills for Life! @ Community (SFLC) is a programme that empowers residents in the North to live healthier lifestyles by building their capacity, capabilities, and confidence for a healthier community. It is facilitated by community nurses, community dietitians, sports trainers, and programme executives who work together to equip participants with the skills and knowledge to make small, sustainable changes in their daily habits. Participants engage in experiential learning that ranges from reading food labels to cooking healthy meals with friends and family. As of March 2019, SFLC has engaged 199 residents.

MENTAL HEALTH FESTIVAL



IMH organises the inaugural Singapore Mental Health Festival.

Eat Healthy, Stay Healthy

In FY2018, Woodlands Health Campus (WHC) launched its first fitness and nutrition pilots, in partnership with Yishun Health. The programmes, "Food for Life!" and "Cook for Life", help residents take charge of their diet and fitness by providing them with information and coaching. Participants work closely with a team of dietitians and fitness coaches to improve their lifestyle habits through weekly group exercises and/or cooking demonstrations.

WellCARE

In June 2019, WHC launched (**Wellness, CAre, Resilience and Engagement**), a peer support programme that provides WHC staff with a safe avenue to address their emotional health. Trained peer supporters empower staff to speak up and seek help through various activities such as art jamming and emotional literacy workshops.

ENGAGING OUR POPULATION ON MENTAL HEALTH

Singapore Mental Health Festival

In September 2018, the Institute of Mental Health (IMH) organised the inaugural Singapore Mental Health Festival to promote awareness of mental health and well-being, as well as challenge the social stigma and discrimination faced by people living with mental health conditions. The audience learned about the experiences of IMH patients and caregivers through panel discussions, films, and workshops. More than 1,600 attendees and over 30 industry experts, persons-in-recovery, and caregivers participated in the event.



The Festival was graced by Deputy Prime Minister, Tharman Shanmugaratnam, who launched a five-year public education campaign – *Beyond the Label* – led by the National Council of Social Service (NCSS). The campaign aims to reduce mental health stigma and increase acceptance and inclusion of persons with mental health conditions in society.

Engaging Youths

To promote outreach and awareness of youth mental health issues, IMH's Community Health Assessment Team (CHAT) engages young people through a series of initiatives:

- **Ask Me Anything (AMA) On Reddit**
In March 2019, CHAT conducted an “Ask Me Anything (AMA)” event on Reddit, an online forum, to address young people’s queries and concerns on mental health. A total of 34 questions was posted to CHAT, thus enabling a constructive dialogue.
- **Dialogue Sessions**
CHAT conducted two dialogue sessions in November 2018 and March 2019 to gather insights from young people on the youth mental health landscape. The sessions attracted 34 participants, aged 16 to 30, who discussed their concerns and proposed areas for improvement in mental health services provided to young people, including the type of centres where such services are available.

Improving Awareness On Addiction

IMH's National Addictions Management Service (NAMS) has continued to actively collaborate with community partners, external agencies, and schools to raise awareness and equip our population with knowledge and expertise to manage addiction issues. Through these outreach efforts, NAMS enables early intervention through the provision of information and resources. This changes attitudes and reduces stigma that surrounds addictions.

- > In FY2018, NAMS conducted nine talks on cyber addiction for schools and tertiary institutions to educate students, parents, and teachers on its danger.
- > NAMS ran 79 workshops, training sessions, and roadshows for community partners and other healthcare organisations to help staff and clients understand and identify signs of addiction, and how to help those suffering from it.

“Our vision of transformative care is to provide a seamless journey for patients from hospital to home. We will apply SMART technology solutions in practical ways to deliver medicine that is sustainable and meaningful for patients, their families, staff, and the wider community.”

Dr Jason Cheah

Deputy Group CEO (Transformation), NHG
& CEO, Woodlands Health Campus



IMH's CHAT engages young people on mental health awareness.

TIERED-RISK INTERVENTIONS FOR MANAGING WEIGHT (TRIM)



Recognising that risk stratification is vital to identify the right level of care for specific groups of patients, National Healthcare Group Polyclinics (NHGP) launched the **Tiered-Risk Interventions for Managing Weight (TRIM)** programme at Ang Mo Kio Polyclinic in June 2018 and at Woodlands Polyclinic in April 2019. TRIM enables NHGP's care team to activate patients by systematically identifying those with health risks, and starting conversations with them as part of their care. These patients are then referred to NHGP's health promoters for health coaching and intervention programmes. As of 30 June 2019, almost 4,500 patients have been identified under TRIM, of which close to 40 per cent have been engaged in weight management conversations. Of these engaged, more than 70 per cent either took up the recommended intervention programmes or were coached on healthy lifestyle behaviours.





LighterLife

Launched in October 2018 at Ang Mo Kio Polyclinic, LighterLife is an interactive group programme designed for eligible NHGP patients with chronic conditions such as diabetes and hypertension to achieve weight loss in a healthy way. The programme equips them to self-manage their conditions with strong peer and community support. Over eight sessions spanning six months, patients are tracked and coached on making behavioural changes by a multidisciplinary Primary Care team comprising a Family Physician, nurse, dietitian, physiotherapist, clinical psychologist, and health experts. The coaching is also followed up through tele-communications sessions. The programme is now also available to patients at Woodlands and Toa Payoh Polyclinics.

Fighting The 'War On Diabetes'

In October and November 2018, NHGP organised a series of roadshows, exhibitions, and talks to raise awareness about the prevention and management of diabetes. Events included:

- > Educating patients and their caregivers on how to read food labels
- > Exercise sessions and talks by nurses, podiatrists and physiotherapists to emphasise the importance of staying physically active to manage diabetes
- > Exhibits and activities on the prevention of diabetic foot ulcers

- > A talk titled "Kiss Insomnia Goodnight" highlighted the relationship between insomnia, stress, and diabetes, to emphasise the importance of good sleep hygiene for chronic disease management
- > A talk on the importance of self-compassion and mental wellness for managing chronic conditions

World AIDS Day 2018 Campaign

The National Centre for Infectious Diseases (NCID) organised a national HIV awareness campaign themed "I Have HIV, Will You Stand By Me?" between January and December 2018 to build a social and cultural environment that fosters awareness and understanding of HIV/AIDS. The campaign included an online series of stories by people living with HIV (PLHIV) and their loved ones debunking common myths about HIV/AIDS, and community and workplace outreach efforts aimed at reducing stigma and discrimination against PLHIV.



BRINGING HEALTH SCREENING INTO THE COMMUNITY

NHG is expanding its screening efforts in line with its emphasis on early detection and upstream intervention for better health outcomes. We join up with community partners to make screening accessible, affordable, and convenient for our population.

Functional Screenings Across NHG Institutions

Recognising the importance of detecting age-related decline in function, such as vision, hearing, and oral health early, the Ministry of Health (MOH) in collaboration with Temasek Foundation (TF) Cares launched Project Silver Screen in 2018 to provide subsidised functional screening for Singaporeans aged 60 and above in the community, and to help seniors stay healthy and age-in-place. NHG participates in this Project across the Central Region:

- > Health Coaches at Central Health's Community Health Posts (CHPs) conduct functional screenings for residents, and identify those who need assistive devices, or follow-up care.
- > Yishun Health conducts similar functional screenings for residents in the North, and works with partners in the community, such as optometrists sited at 115 Wellness Kampungs, National University Health System Mobile Hearing Clinic (NUHS MHC), and NTUC Unity Dental buses, for optimal care.
- > In August 2018, NHG partnered Geylang Methodist Secondary School (GMSS) to organise a functional screening event for seniors living in Geylang. This collaboration with GMSS was the first inter-generational approach to health screening, and taught students about ageing and empathy for the elderly in our community.



We have to instil systems-thinking in our healthcare professionals, have them go beyond 'me and my patient'. We need to train them to work with community services, caregivers, and even companies, so we can come together to build a supportive system for our patients."

Professor Pang Weng Sun

Deputy Group CEO (Population Health), NHG



Functional screenings help the elderly age-in-place.

COMMUNITY MAMMOBUS PROGRAMME



The Community Mammobus Programme (CMP) was launched in January 2018 as a collaboration

between National Healthcare Group Diagnostics (NHGD), Breast Cancer Foundation (BCF), and Singapore Cancer Society (SCS). CMP makes breast cancer screening accessible and affordable for the community, and enables early intervention and better health outcomes for the population. Since the launch, the number of women screened rose by 68 per cent. Encouraged by this success, NHGD, BCF, and SCS have extended their collaboration to January 2020. This extension

allows eligible women, aged 40 to 69, to continue to participate in screenings at subsidised rates, ranging from \$0 to \$35.

To further support the early screening of breast cancer in the community, NHGD officially launched the second Mammobus in October 2019. It is the first Mammobus in Singapore to incorporate a Full-Field Digital Mammography (FFMD) unit, which provides faster and more comfortable screening.



“To produce the maximum impact from our investments in healthcare, we are moving upstream, and working to maintain population health through self-empowerment and self-management initiatives, rather than waiting for people to fall ill and then treating them.”

Professor Chua Hong Choon

Deputy Group CEO (Clinical), NHG
& CEO, Institute of Mental Health

Mobile Bone Mineral Densitometry Service

In March 2019, NHGD launched the second mobile Bone Mineral Densitometry (BMD) Service, thereby boosting its capacity to conduct screenings at more locations in the community. The BMD Service is now available at Ang Mo Kio, Bukit Batok, and Yishun Polyclinics, in addition to existing services at Woodlands, Pioneer, and Geylang Polyclinics, Ang Mo Kio-Thye Hua Kwan Hospital and IMH, providing greater convenience for patients and shorter waiting times. NHGD was the first to bring BMD screening beyond hospitals in 2011, and the expansion is part of its ethos of improving access for early detection, resulting in better health outcomes for the population.

Screening For Mobile Scoliosis In The Community

In March 2018, NHGD introduced scoliosis screening on-board its Mobile X-Ray Site at the HPB Building. This service provides continuity of care for Primary and Secondary School students who visit the HPB Student Health Services and NUH Scoliosis Specialist Clinic located in the HPB Building by saving them a visit to the hospital for screening. Since the launch, more than 7,000 students have been screened at the mobile site.

LKCMedicine Students Partners NHG In Screening Event

In March 2019, students from the Lee Kong Chian School of Medicine (LKCMedicine), with support from NHG, organised a health screening at Ci Yuan Community Club. Attended by over 280 elderly residents, the screening was tailored with different modality tests for different age groups to better meet the needs of the residents. Residents were also referred to Family Service Centres (FSCs) and other healthcare institutions for follow-up treatment. The screening is part of LKCMedicine's on-going outreach efforts to raise awareness about common conditions that affect the elderly, thereby helping them better take charge of their health.

RIGHT-SITING CARE FOR BETTER HEALTH OUTCOMES

The Central-North Primary Care Network (PCN)

In January 2018, NHG launched the first PCN, known as the Central North-PCN (CN-PCN). As of March 2019, 30 GPs have signed on to it. The CN-PCN leverages GPs' existing infrastructure and network to bring together solo and small-sized GP practices, facilitating the right-siting of patients with chronic illnesses. Besides enhancing the GPs' capabilities in chronic disease management, the PCN also allows GP clinics and polyclinics to enjoy economies of scale through shared resources, and to collectively manage population health. NHG further adds value to GPs by providing them with support services and training, managing funds, liaising with MOH, and sharing clinical protocols for chronic disease management.



Community Eye Clinics

In July 2018, the first Community Eye Clinic (CEC) was launched at Hougang Polyclinic. CEC is a nation-wide partnership between National Healthcare Group Eye Institute (NHGEI), Singapore National Eye Centre (SNEC), and National University Hospital (NUH). It steps up eye care in the community, saving patients a trip to the hospitals. Since the launch, CECs have been set up in five additional Primary Care facilities.

TTSH Strengthens Partnerships With Primary Care

In FY2018, TTSH's Primary Care Partners Office (PCPO) developed and enhanced a suite of initiatives in partnership with Primary Care providers, including NHGP, GPs, PCNs, as well as Family Medicine Clinics (FMCs) to increase integration between Specialist and Primary Care, and ensure a seamless transition between settings for patients. These initiatives also facilitate the proactive management of chronic conditions and empower Primary Care partners to co-manage patients in the community, thus enabling right-siting of care.

GPNext

Launched in October 2018, GPNext is a partnership between TTSH and GPs in the Central Zone, which enables the discharge of stable, ambulatory patients from the Emergency Department to Primary Care. Currently, GPNext includes care in five clinical specialties and 14 conditions, such as lower-back pain, asthma, and urinary tract infection. To-date, 150 GPs have come on-board, and 176 patients have been referred to these GPs for continuity of care in the community.

Community Right-Siting Programme (CRISP)

Launched in 2015, the Community Right-Siting Programme (CRISP) continues to manage medically stable patients with certain chronic conditions, such as asthma, diabetes, hypertension, ischaemic heart disease, and stroke in the community. This is achieved through patient education, financial counselling, shared care protocols and arrangements for the specified conditions, and monitoring of patients' progress for 12 months after discharge from Specialist Outpatient Clinics (SOCs) to Primary Care. Besides allowing seamless, patient-centred care, CRISP aims to increase SOC outflow, and make the discharge of patients from SOC to Primary Care hassle-free. The programme has engaged over 150 GP partners, right-sited over 4,000 patients, and reduced 12,000 repeat visits.

CoACT

Started in August 2018, the Coordinating & Advisory Care Team (CoACT) is a platform for continuous interaction between TTSH and Primary Care providers with administration and clinical support from a Tertiary



Care advisory group comprising specialists, right-siting nurses, and right-siting coordinators from all clinical specialties. It facilitates smooth transitions of patients into the community. PCPO plans to strengthen CoACT through telemedicine, which will deepen the relationship with GPs and enhance real-time clinical support to manage patients in the community.

One Patient, One Care Team

Since September 2017, IMH patients have been empanelled by regions for greater continuity of care across various settings, and this helps patients stay well and supported in the community. In FY2018, IMH's empanelment efforts gained more momentum with "teamlets", comprising multidisciplinary team members, working with community partners to co-manage patients more effectively. With the implementation of these initiatives, IMH has begun to see a gradual decrease in readmission rates.

Triaging Of Referrals

In November 2017, IMH began triaging referrals as part of its efforts to right-site persons with mental health issues to appropriate community partners. Based on their mental health needs and risks, patients were matched to the providers best suited to manage their conditions. Besides IMH SOC, they were referred to community partners such as FMCs, GPs, and Voluntary Welfare Organisations (VWOs). As less complex cases are right-sited to community partners, the SOC at IMH have achieved shorter waiting times for patients in need of tertiary-level mental health assessment and management. It has improved the default rate of clinic attendance. To-date, IMH has triaged about 3,000 referrals to the hospital, with about eight per cent of them right-sited in the community.





There is no power for change greater than a community discovering what it cares about.”







NHGP's Teamlet Care Model

NHGP's Teamlet Care Model is now implemented in all NHG Polyclinics. It is anchored by relationship-based care and uses technology to manage about 120,000 patients with chronic conditions. A study conducted in August 2018 to evaluate the health outcomes of the first cohort of patients empanelled in teamlets showed that they had improved significantly in chronic disease management. Those enrolled were more likely to go for preventive health screenings (for example, diabetic eye and foot screenings, pap smears, and mammograms), and to better control their diabetes. Teamlet patients also halved their risks of ED visits for diabetes and hypertension-related problems. Additionally, they were more satisfied with their care, attributing it to person-centred care.

In FY2018, Yishun Polyclinic became the first NHG Polyclinic to provide dementia care for patients enrolled into teamlets. Patients with dementia receive care from a dedicated multidisciplinary team, which regularly assesses, counsels, and coordinates their access to dementia services in the community.

OPTIMISING PROCESSES FOR PERSON-CENTRED CARE

Making The Hospital Elder-Friendly

A significant proportion of older patients in hospitals are both physically and cognitively frail. They are vulnerable to "hospitalisation-associated disability", and could leave the hospital with marked decline in their psychological, cognitive, and functional states.

Yishun Health's Geriatric Dementia team developed the Cognition 6th Vital Sign initiative, a formulation of 10 care standards and a care protocol to make the hospital a more conducive environment for these patients. A care assessment tool was also developed to allow healthcare

professionals to perform self-evaluation in order to identify the gaps in their provision of care. These standards are encapsulated in the acronym "KNOW our VIPS' NEEDS BEST". KNOW entails recognising patients as persons; this includes learning their likes, dislikes, and values. VIPS captures the philosophy of person-centred care, where each patient is valued and cared for as an individual, with staff adopting the perspective of the patient and using social psychology to tailor care to meet their unique needs. NEEDS operationalises person-centred care by making the hospital experience close to normal for patients, enabling and empowering them to have greater agency, and facilitating dignity by attending to older patients at a slower pace. Finally, BEST captures the key medical and nursing needs of the patient that warrant close monitoring.

Pharmacy Transformation For Continuity Of Care

In order to address the medication challenges faced by patients who seek care in multiple settings, Pharmacy Transformation at NHG rolled out two projects – **ACROSS** and **CONNECT**:

Activation, Communication And Rules Of Engagement For Single Source Of Truth (ACROSS)

In October 2018, a Value Stream Mapping workshop was held to mark the start of Project ACROSS. About 30 participants from various NHG Institutions discussed ideas on designing workflows that would address patients' needs and raise medication literacy. Four projects were conceived:

1. Standardise Medication information Update, Retrieval and Flow across NHG (SMURF)

Targeting prescribers across all our Institutions, SMURF enables the standardisation of prescribing guidelines across NHG.

2. Support through COmmunity & Patient Engagement (SCOPE)

SCOPE is aimed at patients discharged from the hospital in transition to the polyclinic and community. It helps assess a patient's risks and needs, and administers relevant assistance prior to discharge and for polyclinic follow-up.

3. Streamline from HOspital to Polyclinics (SHOP)

SHOP focuses on polyclinic patients referred by the hospital for further intervention at NHGP's medication clinics. It streamlines the patient journey and medication clinic work processes, such that patients with potential medication problems can seamlessly move to polyclinic medication clinics for further intervention.

4. Updated medication list for Complex Care patients Across Multiple Institutions (CCAMI)

Designed for complex care patients in SOCs visiting multiple prescribers across NHG Institutions, CCAMI helps to identify and share medication lists for complex care patients, who are concurrently chronic patients of TTSH, Yishun Health, and NHGP.

COnnecting NHG and Nursing homes through rules of Engagement, Communications and single source of Truth (CONNECT)

The CONNECT workgroup seeks to establish and facilitate open communication between nursing homes and NHG Institutions. It ensures a platform and workflow to develop Patient Medication List (PML) creation, documentation, maintenance and flow. Currently, CONNECT involves four nursing homes – Kwong Wai Shiu Hospital, Ling Kwang Home for Senior Citizens, Man Fut Tong Nursing Home and St. Andrew's Nursing Home.

MANAGING FRAILTY IN THE COMMUNITY

TF Cares—CHAMPS Programme

In September 2018, TTSH launched TF Cares – CHAMPS (Centre for Health Activation Mobilises Para-clinical Seniors) to engage and empower senior volunteers, aged 50 and above, in three programmes – Eye Clinic Volunteer Programme, Hospital Elder Life Programme and Inpatient Total Knee Replacement (TKR) Programme. The senior volunteers undergo structured training to equip them with the para-clinical skills, such as documenting medical history, that go beyond simple befriending activities. Senior volunteers are recruited for this programme as they are more aware of elderly issues and are likely to build greater rapport with frail patients. An estimated 13,300 frail elderly are expected to benefit from this programme.



Building Capabilities In The Community

In FY2018, TTSH conducted many training programmes for partners in the community to build their capabilities:

- TTSH's nursing team facilitated intensive-training courses in the management of patients with tracheostomy for 14 nurses from Orange Valley Nursing Home.
- Over 100 nurses from Kwong Wai Shiu Hospital were trained in the management of nephrostomy patients.
- Learning roadmaps, assessment tools, and clinical portfolios were developed and reviewed to train/upskill community nurses.

Expansion Of TriGen

The Tri-Generational HomeCare@North West Project (TriGen) is a student-led initiative that brings together the North West Community Development Council (NWCDC), Yishun Health's community nursing teams, and students to care for seniors by helping to maintain them in the community through social support and health advocacy.

Under this project, students from the National University of Singapore (NUS), Nanyang Technological University (NTU), Singapore Institute of Technology (SIT) and various secondary schools are trained by Yishun Health's Ageing-In-Place Community Care Team (AIP-CCT) and NWCDC in basic healthcare, caregiving and befriending skills.



Seniors receive care in their homes through programmes such as TriGen.





GeriCare trains nurses in geriatric and palliative care.

Working in tandem with AIP-CCT's nurses, doctors, and Allied Health Professionals, TriGen volunteers help to raise the frequency of home care visits to monitor their patients. As of April 2019, it has served over 225 elderly residents in the North and engaged about 1,010 secondary and tertiary students.

In July 2018, the project was enhanced when Yishun Health's Self-Managed Autonomous Regional Teams (SMART) joined TriGen to expand its reach to include residents in the North who may not have been

hospitalised (like the AIP-CCT patients) but who have poorly-managed chronic conditions and require support. Training for TriGen volunteers was boosted to include skills in providing food and nutrition advice.

GeriCare@North

In January 2019, Yishun Health hosted GeriCare@North, an MOH-funded programme aimed at upskilling healthcare workers and building capabilities in nursing homes to minimise ED visits and hospital admissions. The nurses were provided training in geriatric and palliative care. Eight nursing homes took part in the intensive programme, and 56 nurses received GeriCare certificates of completion.



Share a pot® rekindles the kampung spirit.





APCATS is a community-oriented psychogeriatric service by IMH.

WHC Launches Share a Pot® Sites

In April 2018, under the Community of Hope (CHOPE) X School programme, WHC's Community Team supported students from Woodlands Secondary School and Canberra Secondary School to establish two student-led Share a Pot® (SaP®) sites to engage seniors in their respective neighbourhoods. From conducting door-to-door visits to the planning and execution of the programme, students were actively involved in building relationships with their community. They cooked nutritious soup for residents and engaged them in physical and social activities.

WHC Launches Community Nurse Posts

In July 2018, WHC launched a Community Nurse Post (CNP) as part of on-going efforts to build an ecosystem of care in the community. Located at the Sunlove Senior Activity Centre (SAC) in Woodlands, the CNP helps residents improve their health, functional, and social well-being, through chronic disease monitoring, functional screening, health counselling and education, medication monitoring, memory tests, and geriatric assessment. In addition, community nurses also conduct home visits. Since then, WHC has set up six more CNPs in Admiralty, Woodlands and Marsiling precincts.

Helping Seniors With Mental Health Issues Age In The Community

Aged Psychiatry Community Assessment and Treatment Service (APCATS), a community-oriented psycho-geriatric outreach service continues to promote ageing-in-place for seniors with mental health issues. In FY2018, APCATS conducted 63 first visits and 1,000 repeat visits to provide assessments and treatments to elderly with mental health issues, who are frail, or have difficulties accessing mental health services. Through such home visits, the team aims to help seniors better manage their condition and prevent unnecessary admissions to IMH inpatient services. The team also held 45 training sessions for community partners to equip them with skills to meet the psychosocial needs of the elderly and to improve awareness and facilitate early detection of mental disorders.



Our population health approach is to work with our patients and their caregivers to enable them to manage their own health, and to change the role of our healthcare system from 'provider of care' to 'partner in care'."

DR WONG KIRK CHUAN

Chief Operating Officer (Population Health), NHG
& Chief Operating Officer, Woodlands Health Campus





Enhancing Advance Care Planning across the NHG family.

In addition, 136 training sessions were conducted for staff from nursing homes located in the region to equip them with the skills and knowledge to better support residents with dementia, in particular with managing challenging behaviours. The team also provided case conferences where needed. Such efforts help nursing home staff provide better care for their residents.

Expanding Dermatology Care In The Community

The elderly and frail are vulnerable to myriad skin conditions, from mild (itch, scales and dryness) to severe cases (infections and ulcers). The National Skin Centre (NSC) has established partnerships with various Intermediate and Long-Term Care (ILTC) organisations with the aim to enhance standards of dermatological care in nursing homes, thereby reducing the need for patients to visit the Centre. This includes monthly joint assessments of patients, devising skin care plans, classroom training in skin care, as well as practical demonstrations of skin and wound care.

BRINGING DIGNITY TO END-OF-LIFE CARE

Enhancing Advance Care Planning Across NHG Institutions

Advance Care Planning (ACP) involves on-going conversations between individuals, caregivers, and healthcare professionals to better understand medical or personal preferences and decisions for End-of-Life (EOL) care. At NHG, promoting awareness of and increasing accessibility to ACP is an important part of our population health strategy. We aim to expand ACP to more care settings as well as to key chronic disease groups beyond cancer. In FY2018, NHG Institutions moved this mission forward:

- Yishun Health's ACP Office has continued its efforts to advocate the importance of ACP and de-medicalise/destigmatise the conversation within its institutions and among its community partners. By training and supporting more ACP advocates and facilitators in the community, Yishun Health has increased access to information about ACP and EOL care options in its neighbourhoods. By working



with its partner, Both Sides, Now (BSN), it launched “CLOSER”, a public installation and “LAST DANCE”, a participatory performance, to help residents in the North reflect on their values and definition of a ‘meaningful life’, as well as understand the process of grief and bereavement. Through such efforts, ACP conversations are now taking place across the North, beyond the ward and outpatient settings, and in nursing homes, polyclinics, GP practices, *Wellness Kampung* sites and homes.



- > WHC and Yishun Health organised a series of talks, workshops, and exhibitions to spark EOL conversations in public library spaces. Doctors, nurses, counsellors, and volunteers delivered a menu of creative programmes, including film screenings, intimate discussions on how grief and pain are expressed, and art workshops. There was a “Human Library”, where attendees engaged with four individuals who had journeyed through illness, death, and dying with their loved ones.

- > To facilitate ACP conversations upstream, NHGP partnered students from NTU’s Wee Kim Wee School of Communication and Information to raise awareness. In January and February 2019, a roadshow themed “Let’s Talk Care” was held at Ang Mo Kio Polyclinic and Geylang Polyclinic, where students explained the differences between ACP and other EOL tools requiring legal documentation, such as the Advance Medical Directive (AMD), to patients and caregivers.

Yishun Health increases public awareness on Advance Care Planning.



NHGP is training more ACP facilitators.





Programme IMPACT provides home palliative care for terminally ill, non-cancer patients.

Programme IMPACT

The rationale for Programme IMPACT (Integrated Management and Palliative Care for Terminally Ill patients) was the need for a stronger home palliative support system for non-cancer patients with End-Stage Organ Failure (ESOF). Programme IMPACT leverages on close partnerships between hospital specialists and the home care teams in the community, with the aim to improve the quality of life for patients, through symptom relief, psychological, social, and spiritual support. Programme IMPACT also collaborates with Dover Park Hospice to build capabilities in caring for ESOF patients in Central Singapore.

Launched by Central Health in October 2017, the programme has expanded into the North (helmed by Yishun Health's AIP-CCT), and now includes patients with severe frailty and a prognosis of less than one year.

“ I can do things you cannot, you can do things I cannot; together we can do great things.”



CLINICAL CARE

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If happiness is activity in accordance with excellence, it is reasonable that it should be in accordance with the highest excellence.”



CLINICAL CARE

As Singapore's healthcare needs become more complex with changing demographics, our hospitals and polyclinics are, in tandem, evolving their practices through growing partnerships with the community to provide holistic and seamless health and social care. We are also enhancing crisis care through research and technological advancements.



NHG CRISIS AND COMPLEX CARE STRATEGY

NHG's Crisis and Complex Care five-year strategy (2016 to 2020) spells out the following key deliverables:

- To fulfil with excellence, the capacity and complex demands for acute tertiary care in our hospitals in Central Singapore;
- To deliver appropriate treatment within hospitals, with Intermediate and Long-Term Care (ILTC) partners, and in the community; and
- To provide a high level of clinical and patient-centred value, outcomes and satisfaction across the population



In the next three years, the priorities identified for optimisation include:

- **Community Partners and Home Capability Enablement** – To deploy specialist teams to facilitate home care for patients, together with our partner organisations
- **Specialist Outpatient Clinics (SOCs) and Ambulatory Care** – To achieve care excellence by establishing new innovations and best practices that further link specialists with Primary and Community Care clinicians in multi-faceted ways
- **Elderly Care** – To embark on initiatives that cover all aspects of senior care
- **Patient Education Excellence** – To integrate the pedagogical methods of education and engagement for stronger health activation and self-care by patients and family



We believe leadership is crucial in shaping the culture of safety and high quality care in healthcare. We constantly ask ourselves what we have learnt in our daily practice that we can share, experiment and effectively implement in NHG.”

Professor Philip Choo
Group CEO, NHG

Management framework with the Ministry of Health Holdings’ (MOHH) Enterprise Risk Management (ERM) framework. As such, a training programme equipping clinical leaders and managers to effectively identify and manage clinical risks to ensure safe patient outcomes will be launched in January 2020.

CLINICAL GOVERNANCE

NHG Clinical Governance Unit

The NHG Clinical Governance Unit was established in December 2018 under Group Quality Resource Management (GQRM) to drive our efforts towards excellence in clinical services. The Unit supports the NHG Clinical Board in advancing priority clinical areas, and partners other stakeholders on clinical manpower planning and development.

Developing Strategic Clinical Collaborations

Following the amalgamation of NHG as a new cluster in 2017, the NHG Clinical Board reviewed the development of our clinical services – Medical, Nursing and Allied Health – as a cluster. The strategising of these services across NHG Institutions helps instil good clinical governance and consistency in standards of care. Five models of clinical collaboration were identified. The first was the bringing together of the cardiology departments of Tan Tock Seng Hospital (TTSH), Khoo Teck Puat Hospital (KTPH) and Woodlands Health Campus (WHC) to form the NHG Heart Institute in June 2019. Similar initiatives will be implemented progressively for Trauma, Oncology and Geriatric Surgery.

PATIENT SAFETY AND RISK MANAGEMENT

Clinical Risk Management

While 2017 focused on the integration of clinical risk management and patient safety processes across NHG Institutions, 2018 was devoted to aligning the NHG Risk

Building A Culture Of Quality And Patient Safety

A Blueprint For Patient Safety

The NHG Patient Safety Event held in May 2019 celebrated the organisation’s collective efforts on patient safety improvements for the past 20 years with the launch of the book, *Building a Home for Patient Safety: NHG’s Blueprint*. Produced by GQRM, it documents NHG’s vision for patient safety and commitment to quality improvement, and outlines strategic changes and decisions to improve patient care and health outcomes. Themed “Better is Possible”, the event also recognised former NHG Group CEO, Professor Chee Yam Cheng and former NHG Group Chief Quality Officer, Mrs Nellie Yeo for their leadership, support and contributions to patient safety and quality care.



Developing Capability And Capacity In Quality And Patient Safety

The Institute of Healthcare Quality (IHQ) designs training programmes for NHG and its Institutions, as well as our partners to help develop capability and capacity to meet current and future healthcare needs.

- Clinical Practice Improvement Programme (CPIP)**
In FY2018, 101 NHG staff graduated from the CPIP programme, and acquired skills and knowledge in quality improvement to enable delivery of value-based care to patients. Since 2001, the programme has enrolled more than 1,990 participants and initiated some 1,450 improvement projects.
- Open Disclosure and Second Victim Support**
IHQ, together with the Open Disclosure Curriculum Development Committee (ODCDC), developed the NHG Open Disclosure (OD) curriculum, which incorporates support for the second victim. This will help Institutions build capabilities to better respond to unexpected adverse outcomes, and provide appropriate support to affected staff. To scale up capability, the first OD Train-the-Trainer session was piloted in the third quarter of FY2018. It was attended by 22 “first-tier” trainers from NHG Institutions.

Digital Badge System For Healthcare Professionals

To enhance patient safety, eLEARN, an e-portal for learning, introduced the ‘Digital Badge’ system in January 2019. It allows healthcare professionals including junior doctors across NHG Institutions to earn ‘badges’ for accomplished clinical procedures and digitally record their competencies on the eLEARN mobile app. This helps identify individuals who are accredited to perform specific clinical procedures. “Jugular central venous catheter (CVC)” is the first procedure to be assigned a digital badge in TTSH.



Digital Badge System



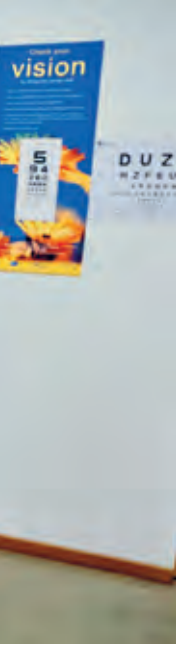
BRIDGING HOSPITAL CARE AND COMMUNITY CARE

Besides expanding care services into the community, our acute hospitals in Central, Yishun, and Woodlands zones will build on established foundations of clinical excellence to deliver standardised, evidence-based treatments at low cost, and to achieve value-driven outcomes.

Beyond Hospital To Community

Central Health aims to strengthen the physical, mental, and social wellness of our patients and population. To enhance the value of care delivered and improve the health of the community, it is focusing on healthcare delivery that is:

- Joined-up** through a network of care providers
- Needs-based** through a thorough understanding of the local needs of our community
- Neighbourhood-based** to make care easily accessible in the community
- Relationship-based** by creating a Community of Carers supported by Community Health Teams



“Patients want to be truthfully informed. They want the healthcare team to be accountable and to journey forward with them.”

Associate Professor Tai Hwei Yee
Group Chief Quality Officer, NHG

The Central Health model has six care streams – Preventive Care, Primary Care, Hospital Care, Intermediate Care, Transitional and Community Care, and End-of-Life and Long-Term Care.

For Hospital Care, evidence-based care pathways are provided to ensure patients’ timely access to quality and cost-effective care. TTSH also works closely with community partners so that patients return to optimal health and independent living. It is gearing towards being more senior-friendly to better support our older and frail population. Some of the key objectives in this care stream include:

- > To provide safe and coordinated care
- > To ensure care remains accessible for our patients and population
- > To provide the best value to our patients and population

Initiatives under this care stream span the emergency, inpatient, and outpatient settings. They include:

- **Emergency Department Interventions for the Frail Elderly (EDIFY)** – To meet the needs of older and/or frail patients at the Emergency Department (ED), and improve outcomes experienced by older patients, EDIFY ensures that the principles of geriatric care are delivered from the point of patients’ arrival at the ED. It provides early geriatric review with the primary aim of reducing potential avoidable admissions among older persons.

- **Geriatric Comprehensive Assessment and Rehabilitation for Elders (GeriCARE)** – This is an important hospital effort to introduce geriatric principles in the inpatient setting across disciplines under the **Framework for Integrated Care for the Frail Elderly (FIFE)**. It seeks to implement an integrated process of systematic and comprehensive geriatric care services for frail elderly inpatients regardless of the discipline they are admitted for. The GeriCARE team is a mobile geriatric assessment team comprising geriatricians, Advanced Practice Nurses (APN), and an administration coordinator. It works closely with the inpatient team to conduct Comprehensive Geriatric Assessments (CGAs), formulate personalised geriatric care plans and recommendations for early diagnosis of new geriatric syndromes, and provide support in geriatric care delivery.

Seamless Care Transition Across All Settings

Yishun Health has developed the Unified Person-Centric Clinical Care Model (UCM), which organises and integrates care around a person’s emotional, psychological, social and functional needs, beyond just the medical. UCM aspires to co-create with all staff and communities the highest form of integrated care that is person- and community-centred, built upon collective strengths and shared goals, trust and relationships. In this model, all patients come under a “one care plan” that supports them in living a fit, independent and healthy life.



This approach moves away from episodic ad hoc care, and emphasises hassle-free access to dignified, safe and value-driven care by collaborative teams and networks. Under the UCM framework, Yishun Health's Crisis and Complex Care aims to deliver care that is efficient, of value and appropriate for patients. This is best reflected in the following four areas:

1. Managing and Stratifying Patients at the Emergency Department

Patients who arrive at the ED are right-sited from the point of arrival. This eliminates unnecessary delays and time spent planning the patient's care journey. The Extended Diagnostic and Treatment Unit (EDTU) will observe patients for up to 24 hours and conduct intensified therapy and extended diagnostic testing. This reduces the need to admit patients to the hospital, yet ensures they receive the care they need. Thereafter, these patients are either discharged home or given an outpatient specialist review.

2. Ensuring Hassle-free Campus Flow

Every patient receives appropriate and seamless care when they transit across Yishun Health. They will be cared for by a physician-led team, using a single, person-centric care plan regardless of their physical locations across the campus. Today, referrals from KTPH to Yishun Community Hospital (YCH) are expedited through process redesign to reduce the waiting time from referral to admission. As of March 2019, patients take 1.17 days to be transferred, down from three to five days previously.

An artist impression of the aerial view of WHC.



3. Providing Relationship-based Healthcare to Patients with Complex Conditions

To keep patients living with multiple chronic conditions stable in the community, they are each assigned to a primary physician who will coordinate and plan their care with the General Practitioners (GPs), polyclinics, specialists and social care providers. Yishun Health's Diabetes Centre has co-developed a One Care Plan with the National Healthcare Group Polyclinics' (NHGP) Woodlands and Yishun Polyclinics. This helps reduce the progression of diabetes and hospital admissions so that patients can continue to be cared for in the community. There is also a structured framework between all partners to ensure that patient referrals to specialist care are appropriate, and that a single care plan follows patients across different care platforms.

4. Developing Service Lines

Patients who arrive at the ED or through the streamlined campus will be assigned an appropriate service line. Since 2015, the Hip Fracture Service (HFS) has served over 1,200 patients and evolved into a service line, with clinicians taking the lead in various areas to focus on specific issues of patient care. There is a dedicated team at each stage of the patient's care journey, including ED stage, Pre-Operative stage, and Discharge and Sub-Acute stage. In 2018, HFS achieved zero surgical site infections (SSI) by eliminating excessive wound dressing manipulations.

Developing Care For The Future

As a mission-driven organisation, Woodlands Health Campus (WHC) is guided by the statement: *"Everything we do is about caring for and improving the lives of our patients, community and healthcare family."* When WHC opens in phases from 2022, the projected population in the North will be 550,000. The people will be younger, with about 50 per cent of the population under 50 years old. WHC will need to transform and integrate care to provide a seamless journey for patients from hospital to home. To achieve this, WHC is looking into how care should be delivered through Care Transformation, Community Empowerment and People Experience.



With an expanding pool of community partners, we will also have to build a safety culture, enhance patient safety practice and break down silos of individual service providers, so as to ensure safe, efficient and effective care for our patients. It will take time, but it is crucial to work together to achieve it.”

Dr Tan Kok Leong

Head, Continuing and Community Care,
Tan Tock Seng Hospital

People experience can be enhanced with the practice of realistic medicine as well as delivering safe, integrated and seamless care to patients across different care settings. When patients move beyond the hospital, they should return to a self-sustaining community where they are able to care for themselves and each other. This forms the basis of Community Empowerment. Through credible alternatives to hospital care, by providing right tools, information and access to professional help and resources, care delivery will be transformed.

With New Care Models, care will be designed to be person-centred and holistic, instead of a one-size-fits-all approach. WHC is taking deliberate steps to break down individuality and integrate care across the entire spectrum, which will be known as the One Care Plan. The One Care Plan process involves the co-creation and active sharing of real-time information about our patients' personalised care goals and treatment plans, among caregivers and multidisciplinary clinicians from hospitals and community sectors, on a single platform. Bottlenecks in the system would be actively addressed so that patients can be discharged quickly.



To improve the flow of patients through the system and to facilitate quicker transitions, WHC has set an aspirational clinical goal of 4/7/18. These numbers represent the Average Length of Stay (ALOS) in days for inpatients in the acute, sub-acute and rehabilitative care settings, respectively. To achieve this, WHC is working on initiatives to facilitate more efficient discharge as well as to reduce unnecessary admissions.

With the benefit of building the campus from scratch, WHC is able to develop and conduct feasibility studies on Smart Processes and adopt Smart Initiatives, such as Artificial Intelligence (AI), Chatbots, Virtual Reality way-finding, etc. Such a move will potentially improve productivity and enable staff to concentrate on providing direct patient care.

IMPROVING INPATIENT CLINICAL EXCELLENCE

TTSH Subacute Geriatric Monitoring Unit

TTSH is the first hospital in Singapore to have a subacute geriatric monitoring unit (GMU). Set up in November 2017, the six-bed GMU provides care to patients with delirium or behavioural issues due to dementia. There are 30 specially trained nurses with intervention techniques to manage issues such as wandering, aggressive behaviour and refusal to take food or medication. The Namaste programme, an innovative form of therapy conducted at GMU, helps patients with advanced dementia by evoking comfort and enjoyment through sensory stimulation, particularly through the use of touch. Patients respond better to people and things around them. To-date, the GMU has more than 80 female patients. A similar unit for male patients is being planned.



KTPH Lean Cataract Surgery Care Path

The Ophthalmology & Visual Sciences (OVS) and Anaesthesia departments as well as the Day Surgery Centre (DSC) and Nursing team at KTPH have collaboratively transformed the cataract surgery process. After analysing the workflow of the care path for Cataract Surgery Under Regional Anaesthesia (CSURA), the team studied the workflow of the pre-operative assessment and peri-operative care paths. As a result, four changes were implemented to improve the patient care experience:

- **Doing away with the need for fasting before surgery**
 - Traditionally, CSURA requires a six- to eight-hour fast before surgery in cases where sedation is required. If patients forget to do so, the procedure may be cancelled or delayed. However, as a majority of CSURA patients do not require sedation, patients are no longer required to fast if they fulfil the inclusion criteria.
- **Doing away with non-critical pre-operative investigations**
 - “Stand-by” tests such as an electrocardiogram and blood tests are usually conducted as part of the pre-operative process. Evidence has shown that these tests are unnecessary and patients do not need to do them now. This helps save cost for patients.
- **Using a kimono wrap instead of the full Operating Theatre attire**
 - The full Operating Theatre attire takes time to put on. A kimono wrap is sufficient to meet infection control requirements, saving time and cost for the patients.

- **Applying a more efficient, cost-effective eye drop**

- The multi-step Eye Drop Instillation (EDI) regime has been streamlined with the new Combo-R eye drop. This reduces the number of times that eye drops need to be administered, reducing time and cost.

STOP CAUTI (Catheter-Associated Urinary Tract Infection) At KTPH

In 2016, Yishun Health embarked on several initiatives to improve quality and safety of care by reducing the incidence of Catheter-Associated Urinary Tract Infections (CAUTI). An indwelling urinary catheter (IDC) is a tube inserted through the urethra into the bladder that is frequently used for patients with severe retention of urine. CAUTI is an infection associated with the use of an IDC.

The project, “STOP CAUTI”, focused on behavioural change among staff and advocated the adoption of new practices to deliver more effective and sustainable care. It involved implementing CAUTI Bundle, a systematic guide to the process of insertion, daily maintenance and review of the need for an IDC. Each step was carried out with the Plan-Do-Study-Act (PDSA) method with the help of infection control nurses to measure compliance and CAUTI rates. CAUTI Bundle was piloted in two wards and progressively rolled out to the rest of the hospital. KTPH’s Medical Intensive Care Unit was CAUTI-free for 17 months, between December 2016 and April 2018. At YCH, CAUTI rates fell by more than 50 per cent as of December 2018.



REORGANISING CARE AT SPECIALIST OUTPATIENT CLINICS

GPNext

GPNext is a collaboration between TTSH and Primary Care partners in Central Health, focused on discharging stable and ambulatory patients from the hospital's ED to GPs. It was officially launched in October 2018. Patients with chronic but stable conditions, and whose care can be managed by GPs in the community, are referred to a GP, Family Medicine Clinic (FMC) or polyclinic located near them after their ED admissions. GPNext currently covers 14 medical conditions across five clinical specialties (urology, general surgery, orthopaedics, General Medicine, and respiratory and critical care medicine), such as lower back pain, asthma, and urinary tract infection.

Besides GPNext, TTSH also set up the Coordinating Advisory Care Team (CoACT), made up of specialists, nurses and right-siting coordinators who serve as dedicated links between GP partners and the hospital. GPs can speak to the specialists directly and update them about the patients' conditions. Should their conditions deteriorate, the CoACT can help coordinate and expedite specialist appointments at the hospital for patients. This brings greater convenience and cost savings to patients. There is more effective optimisation of resources for TTSH.

Diabetes Centre

The KTPH Diabetes Centre moved to Admiralty Medical Centre (AdMC) in July 2017, bringing together multiple facets of care through a transdisciplinary team of doctors, nurses and Allied Health Professionals (AHPs). Apart from developing integrated care plans, they work with patients to equip them with the knowledge and skills to sustain good diabetes care in their daily lives. This approach helps to ensure that patients can live well with



illness, slow down the progression of the disease and reduce the risk of complications.

The multidisciplinary team focuses on treating a spectrum of diabetes cases, including those with end-organ complications and/or frailty. Under the One Care Plan in partnership with NHGP, patients receive customised care plans targeted at their unique needs. This ensures seamless and consistent care as a patient's medical history, prescriptions and treatments can be accessed by all medical providers, where necessary, regardless of the patient's physical location. Where possible, patients are referred back to their GP or the polyclinic to continue treatment, but those with more complex issues are either co-managed or fully managed by the AdMC Diabetes team. Patients are educated on self-care to manage their condition.

The Diabetes Centre sees about 5,000 patients a year. About 800 new referrals (mostly complex cases and complications) are directed to the Centre annually, with half of these originating from KTPH's inpatient wards or Specialist Outpatient Clinics (SOCs). About 16 per cent of these new referrals come from Woodlands and Yishun Polyclinics.



GPNext is a collaboration between TTSH and Primary Care partners to better manage patients with chronic conditions in the community.







Excellence
is not a skill.
It is an attitude.”



BETTER COMMUNICATION FOR BETTER CARE

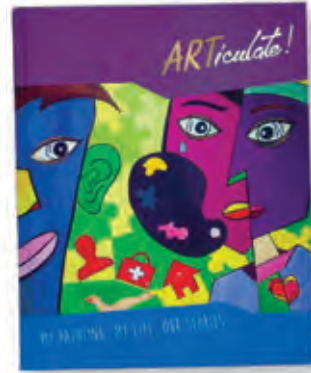
Raising Awareness Of Advance Care Planning (ACP)

TTSH adopts a three-pronged approach to increase the take-up rate of Advance Care Planning (ACP) among its patients. It consists of spreading public awareness of ACP, training General Medicine doctors to be skilled in ACP, and advising patients with more serious conditions to consider making such plans. In 2018, 1,279 patients signed up for ACP, up from 415 in 2013. The number of TTSH staff trained in leading ACP discussions also increased from 142 in 2013 to 594 in 2018. The success of the initiative is attributed to factors such as opportunistic screening during hospital admission, greater access to ACP, and good rapport between patients, their families and the medical team.

NTU And TTSH Team Up To Improve Doctor-Patient Communication

To improve patient experience and to deliver better care, TTSH clinicians collaborated with researchers at the Nanyang Technological University (NTU) to examine communication between doctors and patients. The study compiled and analysed video recordings of 150 first-visit consultations at TTSH's urology clinic. They were made between mid-2016 and mid-2018, with consent from patients. Both verbal and non-verbal interactions were studied to determine the dynamics between patient and doctor. The researchers identified recurring scenarios, and common feelings and misunderstandings expressed correspondingly by patients. Also highlighted were specific

ART FOR BETTER HEALTH



In September 2018, TTSH Care and Counselling Department published *ARTiculate*, which features a collection of paintings by patients. This is part of ARTiculate!, an art programme of the same name initiated by the department to offer patients a more holistic healing experience by encouraging them to express their feelings and emotions through creative works. The book talks about the inner struggles of these individuals and seeks to inspire others in similar circumstances. All sale proceeds of the book are donated to the TTSH Community Fund.

areas in which doctors can improve their communication with patients, and their families and caregivers. This study gave doctors more insights on what makes patients more receptive to medical procedures, and how to engage in more meaningful conversations.



When I see my patients in the clinic, I would think, 'Do I talk to them about the eventualities and how we can make them easier? Is there anything I can do for the other person when his or her partner leaves them?' Sometimes, there are things you can learn only from your patients."

Professor Pang Weng Sun
Deputy Group CEO (Population Health), NHG

CREATING NEW CARE MODELS FOR MENTAL HEALTH

As part of on-going efforts to provide person-centred care, IMH has empanelled patients into regions since September 2017. Founded on relationships and teams, this care model affords greater continuity of care across various settings and helps patients stay well and supported in the community. IMH's empanelment efforts gained momentum in 2018 with "teamlets" comprising multidisciplinary team members, implemented by precincts in each region. Patients receive integrated, holistic care, while networks with community partners are strengthened to co-manage patients more effectively. As a result, patients are more regular with their outpatient appointments. The 180-day readmission rate declined from 29 per cent to 24 per cent.



Enhancing Care Models

In March 2018, the Ministry of Health (MOH) approved funding for the refurbishment of IMH to enhance its inpatient care services and infrastructure to be carried out from 2018 to 2022. Five types of inpatient units will undergo care model enhancements. This includes creating a new short-stay unit for patients who require less than 72-hour inpatient stay and two rehabilitative care wards to accommodate a wide range of psychosocial, vocational, and recreational activities aimed at restoring inpatients' independence. Six acute wards, one addiction medicine and one child and adolescent wards will also be upgraded. The refurbishment will support and empower patient and staff to work towards better recovery and discharge.

Step-down Care And Support For Offenders With Mental Disorders

Now in its ninth year, the Psychiatric Housing Unit (PHU) is a joint initiative between IMH and Singapore

Prison Service (SPS) to provide holistic rehabilitation to offenders with mental disorders (OMDs). This prepares them for reintegration into mainstream prisons, or into the community after completing their sentence.

In FY2018, PHU introduced the use of the Risk and Needs Assessment (RANA) for all OMDs. RANA is a decision-making tool to help doctors ascertain patients' risk of violence and self-harm, clinical needs and required intensity of management. It allows more informed planning following the OMDs' release from prison and refines the quality of referrals to Forensic Psychiatry Community Service (FPCS).

PHU was further reinforced when a new step-down care unit was set up in July 2018. One of its programmes is HOME (Hope for Meaningful Experience), where IMH occupational therapists and psychologists work with soon-to-be-released OMDs to equip them with community living and self-care skills. HOME enables these individuals to manage their condition for a smoother transition when they reintegrate into society. In the same month, a recovery programme was launched to support OMDs who require long-term care. Activities such as creative and expressive arts, music, games, and group therapy sessions foster self-confidence, self-esteem and hope among the participants.

Improving Triage At Emergency Services

In an effort to enhance decision-making and work efficiency, changes were made to the workflow of the IMH Emergency Services (ES) in FY2018. This included an enhanced Patient Triage System (PTS),



which was implemented in July 2018 to right-site care. With this, nurses conducted triaging duties and a brief interview with patients in emotional distress before their consultation with the doctor. In addition to allowing patients time and space to calm down, it facilitated assessment by the physicians and reduced unnecessary hospital admissions.

Since 2018, IMH ES has incorporated the Columbia-Suicide Severity Rating Scale (C-SSRS) as part of its triage process. Using the tool, suicide-risk screening is performed for every patient seen, regardless of diagnoses or reasons for presentation. It has helped ES to stratify patients into different risk levels, and better coordinate corresponding management plans. For instance, patients assessed to be at higher risk are given priority to be seen by the doctors. Nurses also exercise greater vigilance for cases assessed to be at higher risk of self-harm.

Since May 2019, IMH ES has partnered the KTPH Accident & Emergency Department in a pilot project to implement C-SSRS for patients presenting to the general hospital with behavioural and emotional problems. This is to prevent unnecessary transfers of patients to IMH, thus improving right-siting of care and reducing overall cost to the system.

EMPOWERING SELF-CARE FOR PATIENTS WITH CHRONIC CONDITIONS

NHGP And MOHT Launch Primary Tech-Enhanced Care Initiatives

The MOH Office for Healthcare Transformation (MOHT) and NHGP are collaborating on a series of Primary Tech-Enhanced Care (PTEC) initiatives that provide care support and simple-to-use technologies that enable patients with chronic diseases to self-manage their condition and health. A hypertension management tele-health pilot was initiated at Ang Mo Kio Polyclinic in FY2018 with the following functions:

- **Remote Monitoring**

Patients measure their blood pressure (BP) weekly at home using a BP monitoring device which automatically transmits the readings to their polyclinic care team. With this, patients can save at least one clinic visit in a year by monitoring and managing their condition from home. The team provides advice through tele-consultation if the patients' BP levels are not well-controlled.





“NHGP is committed to improving the way we deliver care and empowering patients to take charge of their own health. Remote monitoring and tele-consultation can potentially substitute some clinic visits, save time and provide convenience to patients while ensuring quality care.”

Associate Professor Chong Phui-Nah
CEO, National Healthcare Group Polyclinics & Primary Care

○ SMS Chatbot

The chatbot provides more timely and interactive advice for patients, and prompts those who have missed checking their weekly BP readings. It also guides patients towards appropriate self-care, by providing advice on how to keep their BP under control. All information is based on Singapore’s clinical practice guidelines for hypertension. The chatbot, currently available in English and Chinese, will eventually include Malay and Tamil.

Early results showed improvements in the BP levels of patients on the pilot who finished their first six months of treatment. A formal evaluation of the pilot would be conducted end 2019.

NHGP Chronic Care Plan

Designed to empower and incentivise patients with chronic conditions to manage their conditions, NHGP’s Chronic Care Plan (CCP) was piloted in Yishun Polyclinic in April 2017. In January 2019, the programme was extended to Ang Mo Kio Polyclinic.

The CCP offers patients with chronic diseases listed under the Chronic Disease Management Programme (CDMP) an annual treatment plan and a one-time payment option for a year’s worth of consultation, screenings, treatments and medications. This includes consultations with doctors, nurses and AHPs, laboratory tests, diabetic foot screenings as well as diabetic retinopathy screenings.

Patients who meet care plan targets are rewarded with rebates, which can be used to offset the cost of the following year’s plan. The care plan targets include optimal blood sugar control, good management of blood pressure or cholesterol levels, and completing annual diabetic foot and retinopathy screenings. As of

MICRONEEDLE PATCH FOR KELOID SCARS

Keloid scars can be unsightly, painful and itchy. The conventional treatment involves regular triamcinolone injections to reduce the size of the scars, which is painful and deters some patients from receiving them.

To address this issue, researchers from the National Skin Centre (NSC) developed a dissolving microneedle patch to administer triamcinolone onto these scars without pain as an alternative method. The first of its kind in the world, the triamcinolone-embedded dissolving microneedle patch can be self-administered by patients at home. This gives greater convenience and time and cost savings to patients.



March 2019, 90 per cent of CCP patients at Yishun Polyclinic received rebates for meeting their targets.

Harnessing Technology To Help Smokers Quit

The number of participants attending smoking cessation programmes at NHG Institutions has more than doubled in the past five years. TTSH saw an increase from 95 participants in 2013, to 215 in 2018. At NHGP’s six polyclinics, the number of participants jumped from 117 to 387 during the same period. The smoking cessation clinics at the polyclinics are run by National Healthcare Group Pharmacy (NHGP).

In addition to traditional treatments, NHG has been using apps to track health information and progress of their smoking cessation participants in 2018. KTPH has started introducing relevant apps to smokers during their counselling sessions, and TTSH is collaborating with NTU to create an anti-smoking app.





Photo Courtesy of White Editions®

MANAGING INFECTIOUS DISEASES

Infectious Disease Outbreak Readiness

To ensure preparedness in the event of an outbreak, the National Centre for Infectious Diseases (NCID) regularly organises disease outbreak readiness training for staff. These sessions seek to address three types of outbreak scenarios – localised outbreaks (such as diphtheria, measles), high-consequence pathogen (such as Ebola, Lassa fever) outbreaks requiring high-risk isolation, and respiratory pathogen (such as a new strain of highly virulent coronavirus) outbreaks.

NCID adopts a structured approach to training at three levels. At the individual level, staff hone required skillsets through competency training and drills to competently undertake assigned activities for outbreak management. At the subsystem/department level, staff are equipped to carry out designated tasks as a team/department, and/or across departments and institutions. At the systems level, training for TTSH and NCID includes integration of all functional areas, Command, Control and Coordination at institutional/hospital level, and with cross-institutional support, such as paediatrics management from KK Women's and Children's Hospital (KKH) and National University Hospital (NUH).

National HIV Programme

Human Immunodeficiency Virus (HIV) infection remains a public health concern in Singapore. To this end, the National HIV Programme (NHVP) was established in June 2018 under NCID to coordinate a concerted national response to the on-going epidemic. Guided by the vision of providing holistic, patient-centred,

cost-effective and evidence-based quality care for people living with HIV (PLHIV) in Singapore, NHVP aims to develop a national strategy to achieve the **UNAIDS 90-90-90** targets and beyond. NHVP implements programmes and policies to eradicate HIV in Singapore, and advocates and formulates policies that reduce stigma and discrimination experienced by PLHIV. NHVP drafts local practice guidelines for HIV antiretroviral therapy and HIV pre-exposure prophylaxis (PrEP).

“We will continue to strengthen our readiness to respond to an outbreak by equipping our healthcare workers with more training, and leveraging on technology and innovation.”

Professor Leo Yee Sin

Executive Director, National Centre for Infectious Diseases



UNAIDS 90-90-90:

In December 2013, the UNAIDS Programme Coordinating Board called on UNAIDS to support country- and region-led efforts to establish new targets for HIV treatment scale-up beyond 2015. The targets by 2020 are as follows:

- 90 per cent of all people living with HIV will know their HIV status
- 90 per cent of all people with diagnosed HIV infection will receive sustained antiretroviral therapy
- 90 per cent of all people receiving antiretroviral therapy will have viral suppression

RAISING THE STANDARDS OF DIAGNOSTIC SERVICES

NHGD X-Ray Laboratories Attain ISO15189 Accreditation

National Healthcare Group Diagnostics (NHGD) achieved ISO15189 accreditation for its X-Ray Laboratories in February 2019, the first medical imaging facility to be certified such in Singapore. ISO15189 is an international standard and requirement for quality and competency particular to laboratory management and practices. The accreditation was largely attributed to the introduction of a systemic technical evaluation of radiographic images by the NHGD Quality Assurance Programme team. This involves continuous assessment of radiographers to ensure that diagnostic standards remain consistent, safe and of quality. With ISO certification, work processes have become more streamlined across the satellite diagnostic centres. The consolidation of good practices enhances wider compliance.

Insource Immunoassay Tests For Better Patient Management

Since August 2019, NHGD has started conducting immunoassay tests for polyclinics at its referral laboratory located in Buangkok Green Medical Park. This insourcing of service allows the tests to be performed using the same equipment, with uniform methodology and reference ranges. Clinicians are now able to better analyse and compare patient results across the polyclinics.

Automation Of Urine Pregnancy Test For Faster Turnaround Time

The automation of urine pregnancy test facilitates real-time transmission of results from the analyser



Our screenings in the community support the Ministry of Health's (MOH) objective of placing more emphasis on health instead of just healthcare."

Ms Lim Soh Har

Executive Director, National Healthcare Group Diagnostics



to NHGD's Laboratory Information System (LIS). This removes bias from manual reading, reduces transcription errors and eliminates the need for second-person verification of results. All these factors contribute to a faster turnaround time for patients.

New HbA1c Variant Point-of-Care-Testing

With the HbA1c variant Point-of-Care-Testing (POCT), care is made more convenient as patients at NHGP take their tests and receive results within the hour on the day of consultation. This saves time and transportation cost as patients do not have to visit the laboratory to conduct the tests one week prior to their consultation.





EDUCATION



Happiness is the art of learning
how to get joy from your substance.”



EDUCATION

Education remains the cornerstone of a robust and sustainable healthcare system, and NHG is committed to building a strong pipeline of future healthcare professionals, boosting professional development, and raising capabilities to manage new models of care including population health strategies.

BUILDING A PIPELINE OF FUTURE HEALTHCARE PROFESSIONALS

LKCMedicine White Coat Ceremony 2019

In August 2019, the Nanyang Technological University's (NTU) Lee Kong Chian School of Medicine (LKCMedicine) inducted its seventh and largest cohort of 150 students at its traditional White Coat Ceremony, which symbolises the beginning of their medical journey. The ceremony was presided over by Mr Lim Chuan Poh, Chairman of LKCMedicine's Governing Board and also former executive Chairman of the Agency of Science Technology & Research (A*Star). Professor James Best, Dean of LKCMedicine, presented each student with a white coat and the promise that the students will be immersed in clinical settings from the onset of their medical education. They also received a copy of *Blood and Cuts: A Short History of Medicine* by British historian, Roy Porter.

Prof James Best,
 Dean of LKCMedicine,
 with the school's
 seventh and largest
 cohort of students.



COMMUNITY OUTREACH

BRINGING FESTIVE CHEER TO THE ELDERLY

In February 2019, over 40 staff and students from NHG, LKCMedicine and the National University of Singapore's (NUS) Yong Loo Lin School of Medicine (YYLSOM) brought cheer to patients of our community partners in the Central Region through "Oranges With Love" (OWL).



Over two afternoons, our staff and medical students distributed festive goodies to senior residents in the Society for the Aged Sick (SAS) and Ren Ci Community Hospital. They also put up performances, which the residents enjoyed. OWL is an annual Corporate Social Responsibility (CSR) initiative by NHG and the medical schools.



Our mission is to train a new generation of doctors who know how and when to use the latest technology, while never losing sight of what matters the most – the patient, who is at the heart of their care.”

Professor James Best
Dean, Lee Kong Chian School of Medicine





Key faculty members from NHG Institutions attended the five-day Education Expert Programme (EEP) in November 2018, where invited speaker Professor Neo Boon Siong, Canon Chair Professor of Business from the Nanyang Business School at Nanyang Technological University, shared on required frameworks and capabilities needed to train a future-ready healthcare workforce.

New Graduate Diploma In Sports Medicine

In July 2018, LKCMedicine and Changi General Hospital (CGH) launched a new Graduate Diploma in Sports Medicine (GDSM), the first of its kind in Singapore and Asia. A collaboration between the School and the hospital's Sports Medicine Centre, the part-time one-year programme enables participants to prevent and treat the growing number of musculoskeletal and sports-related injuries and ailments in our rapidly ageing population. The programme is tailored for Primary Care doctors and specialists looking to enhance their knowledge in sports nutrition, biomechanics and physiology, in addition to injury management and prevention.

Medical Students Gain International Clinical Experience

In August 2018, Year 5 students from LKCMedicine participated in overseas electives to gain experience and insights on healthcare systems and practices beyond Singapore. The students had the opportunity to encounter medical conditions rarely seen locally

and to provide hands-on patient care. They visited 14 countries including the United Kingdom, Taiwan and India, and ventured to new destinations such as Micronesia, Solomon Islands and Zambia.

PROFESSOR LIONEL LEE RETIRES



Professor Lionel Lee, former Executive Vice-Dean of LKCMedicine, retired in March 2019. He joined the School as Chief Operating Officer in 2011 and was instrumental

in guiding the faculty, staff and students during his tenure. Prof Lee contributed significantly to academic programmes and student welfare, establishing and administering LKCMedicine's MBBS, research and PhD programmes. As the School's primary clinical training partner, NHG has collaborated with Prof Lee to drive initiatives that benefitted both institutions, our patients and the population.

▶ LEADERSHIP CHANGES AT NHG COLLEGE



Assoc Prof Wong Teck Yee (left) and Dr Faith Chia (right).

In FY2018, NHG College appointed Associate Professor Wong Teck Yee as Academic Director for NHG College, and Dr Faith Chia as Designated Institutional Official (DIO) in May and July 2018 respectively.

In his new role, A/Prof Wong, a Family Physician and Senior Consultant with Continuing and Community Care at TTSH, will be responsible for setting the strategic direction for faculty development. A/Prof Wong, who is the Assistant Dean (Year 4) for LKCMedicine, was also appointed Cluster Education Director for NHG Pre-Professional Education earlier in 2018, succeeding Associate Professor Nicholas Chew. Dr Faith Chia, Senior Consultant (Rheumatology, Clinical Immunology & Allergy), TTSH, succeeded A/Prof Chew as DIO to oversee Postgraduate Year One (PGY1) and Residency training in NHG. Dr Chia, who was previously the Programme Director of the NHG Internal Medicine Residency Programme, advocates actively for the mental well-being of junior doctors, and has published several studies on burnout among healthcare professionals.

Inaugural NHG PGY1 Retreat

The inaugural NHG Postgraduate Year 1 (PGY1) retreat was held in June 2018 for key faculty members from Tan Tock Seng Hospital (TTSH) and Khoo Teck Puat Hospital (KTPH). This facilitates knowledge exchange and fosters strategic collaboration, in areas such as expertise and resources, so as to design an effective, well-rounded training programme for the fresh medical graduates in NHG.

“We need to continually foster a culture that encourages curiosity, eagerness to learn, an openness to change, and most importantly, compassion for the patient.”

Professor Lim Tock Han

Deputy Group CEO (Education and Research), NHG



Participants at the NHG PGY1 retreat.





TTSH Student Festival 2019.

Advocating Community Medicine

Together with TTSH's Continuing and Community Care team, NHG Internal Medicine (IM) Residency Programme pioneered an elective, *Medicine in the Community*, which trains junior doctors to serve patients in the community. The first of its kind in Singapore, it introduces trainees to healthcare services available in the community, and teaches them the fundamental skills and knowledge to effectively manage patients in the heartlands. The elective is now offered to all IM residents in NHG.



Training Junior Doctors In Patient Communication

TTSH clinicians and NHG Health Outcomes and Medical Education Research (HOMER) collectively developed a communications training module based on "real-world data" that provides doctors with relevant communication skills that they can apply in their daily practice. Feedback was consolidated from patients between 2013 and 2014, and common challenges in communication faced by junior doctors were identified. Four main themes of communication issues were established, which include verbal and non-verbal communication, quality and quantity of content, and poor attitudes. These findings were published in *Health Professions Education* in June 2018.

Case scenarios were then designed to address specific issues and incorporated into the TTSH Postgraduate Year One (PGY1) training curriculum in April 2016. About 95 per cent of the medical graduates from the first batch of PGY1 who underwent the revised role-play based session found the additional communications training useful. It equipped them with the right tools to manage everyday issues. Subsequent PGY1 batches of graduates also reported being able to communicate more effectively with patients.

Senior Residents at the NSC bonded with faculty and peers over recreational activities.



Dr Janine Kee, Consultant, TTSH Psychological Medicine Clinic, trained the junior doctors in identifying and managing common communication issues between doctor and patient.

Building A Robust Nursing Workforce

To meet the increasing demand for nurses, TTSH convened a workgroup to drive recruitment and outreach efforts for the younger generation. Named “ROBUST” (Recruitment Operation and Business Strategy Team), the team develops job-shadowing programmes and clinical internships for secondary and tertiary school students, giving them first-hand experience in the nursing profession. Students who express interest in pursuing a nursing career are referred to the institution’s undergraduate scholarship programmes. ROBUST’s efforts have seen results. In 2018, there was a 73 per cent yield increase in the number of Ministry of Health (MOH) scholars selecting TTSH as their institution of choice as well as a 281 per cent jump in the take-up rate of the TTSH sponsorship.



NHGP Student Assistantship Programme.

Grooming The Next Generation Of Occupational Therapists

In July 2018, the Institute of Mental Health (IMH) Occupational Therapy Department welcomed its first batch of Occupational Therapy students from the Singapore Institute of Technology (SIT) for their Clinical Practice Education (CPE). During CPE placement, students have the opportunity to translate theory into practice. They work with patients and family members under the guidance of clinical educators, who are IMH occupational therapists. As IMH is one of the few institutions that provides mental health clinical placements, more occupational therapists in IMH are being groomed to become clinical educators in order to support the growing cohort of Occupational Therapy students.

NHGP Student Assistantship Programme

The National Healthcare Group Polyclinics (NHGP) runs comprehensive programmes to develop the next generation of medical professionals who excel not only in clinical competencies, but who also manifest its ethos of holistic, person-centred care. Between February and April 2018, 51 students – in their first, second, fourth and fifth year in Medical School – were posted to Ang Mo Kio, Hougang, Toa Payoh, Woodlands and Yishun Polyclinics where they worked with clinical teams and conducted projects that focused on the various aspects of care delivery. These included patients’ perceptions of their illnesses, and feedback of services to improve patient experiences and clinical care.



The IMH clinical educators (in blue) with the SIT Occupational Therapy students (in white).



BOOSTING OUR PROFESSIONAL CAPABILITIES

Collective Leadership Conversations

Launched In August 2018, the initiative – NHG Collective Leadership Conversations – aims to build common mental models, language, concepts and tools around the practice of strategic Collective Leadership, so as to foster inter-professional engagement and build stronger working relationships. More than 360 senior leaders from across NHG Institutions have participated in 10 runs of the programme. Learnings from the NHG Collective Leadership Conversations will serve as a platform for the design of future leadership training curriculum in NHG.



Leadership Moments 2018



Lead of Google People Services Operations (Asia Pacific), Mr Eugene Ho (left) and NHG Deputy Group CEO (Clinical), Prof Chua Hong Choon, at the bi-annual NHG Leadership Moments, where Mr Ho was invited by NHG College to share Google's perspective on recruitment, office culture and leadership.

NTU/LKCMedicine Partners WHO To Improve Digital Health Globally

In June 2019, the Centre for Population Health Sciences (CePHaS), hosted by LKCMedicine, Nanyang Technological University (NTU), was designated the World Health Organization's (WHO) first Collaborating Centre for Digital Health and Health Education. WHO has 800 Collaborating Centres in over 80 countries worldwide, which support its work locally in diverse fields, including biomedical ethics, nursing, occupational health, chronic diseases, and health technologies. Through this four-year partnership, CePHaS will implement a series of activities developed with WHO to improve digital health competencies and build capacity for the healthcare workforce, including efforts to scale up the use of digital tools such as informatics and telemedicine.

NATIONAL COLLABORATIVE PRESCRIBING PROGRAMME



FIRST COHORT GRADUATES FROM NATIONAL COLLABORATIVE PRESCRIBING PROGRAMME

Nineteen experienced pharmacists and 19 Advanced Practice Nurses (APNs) became the first cohort to graduate from the National Collaborative Prescribing Programme (NCPP) in July 2018. They were from NHG, National University Health System (NUHS) and SingHealth. Held over three months, the NCPP equips participants with skills and competencies in history taking, data interpretation, diagnostic formulation, physical examination, clinical decision making, applied therapeutics, psychosocial aspects of prescribing, collaboration with multidisciplinary teams, effective communication and documentation. Certified as Collaborative Prescribing Practitioners (CPP), these professionals can prescribe medicine and order tests in collaboration with doctors to streamline the care process, save patients' time and increase quality of care.



FACULTY DEVELOPMENT PROGRAMMES

Establishment Of The Curriculum Review And Quality Committee

In June 2018, NHG College established the Curriculum Review and Quality Committee (CQRC) to enable comprehensive oversight of all faculty development programmes in NHG. Comprising seven clinicians appointed from various professional groups, the CQRC regularly reviews programmes to ensure they inculcate strategic growth, and are aligned to the goals of the faculty.

Introduction Of New Programmes

In FY2018, NHG College organised 79 runs of training and continuing professional education programmes for more than 2,600 healthcare professionals. In addition, Group Education and NHG College introduced 10 new faculty development programmes which feature curriculum design and planning, teaching and facilitation, as well as educational management and research. One of the new programmes, created in collaboration with the Accreditation Council for Graduate Medical Education – International (ACGME-I), aims to develop assessment competencies among key faculty leaders in Residency programmes across Singapore. NHG also partnered LKCMedicine to establish three new programmes on innovative teaching methodologies.

Launch Of HaPEE-SG

In April 2018, NHG College's signature faculty development programme, "Health Professions Educators' Essentials" (HaPEE) was phased out after a decade of joint collaboration between NHG and the Harvard Macy Institute (HMI) in Boston, Massachusetts. A total of 235 health professions educators from the three healthcare clusters benefitted from the programme. HaPEE-SG (Singapore) was launched in March 2018 to continually groom and develop NHG's pool of clinician educators.



NHG embraces the idea of 'Collective Leadership' – the notion that there are many leaders in our organisation, with each individual having the agency to go the extra mile for the collective good. It is a mindset and a willingness to apply this to self in order to contribute to the greater Vision."

Associate Professor Nicholas Chew
Group Chief Education Officer, NHG
& Chairman Medical Board,
Woodlands Health Campus



🔥🔥 Education is not the filling of a pail, but the lighting of a fire.”





EMPOWERING OUR WORKFORCE



Advocating Thought Leadership In Nursing

To cultivate thought leadership and enhance best practices in nursing across Asia, TTSH's Centre for Asian Nursing Studies (CANS) was established in 2016. CANS aims to be at the forefront of nursing research, innovation and education initiatives across local and regional healthcare systems, particularly in geriatrics, infectious diseases, and wound management. In 2018, it launched three nurse-led training programmes:

- Wound Expert Initiative (ICW) Programme**
 In October 2018, CANS partnered the Wound Healing Society of Singapore and Zuellig Pharma to roll out a regional initiative promoting excellence in wound care management across Asia. The Wound Expert Initiative (ICW) Programme (Asia) incorporates subjects such as management

of wound infection, coordination of care for patients with chronic wound, and multidisciplinary approaches to wound management. As part of the training, nurses from countries in the region attended a two-day observational clinical attachment to share best practices.

Palliative care professionals at the Basic Qualitative Research in Healthcare course.

- Advancing Perioperative Practice & Safety Programme (APPS)**

Advancing Perioperative Practice & Safety programme (APPS) creates a platform for knowledge exchange in the field of perioperative nursing. Nurses learn effective strategies to manage manpower in the Operating Theatre (OT), explore innovative ways to enhance use of OT, adopt a robust culture of patient safety, and share best practices for patient care.

▶ RAISING AWARENESS OF WORKPLACE MENTAL HEALTH



To help prevent burnout in workplaces, IMH clinical and Allied Health Professionals have been working closely with corporate, community and government agencies to provide training and education on workplace mental health and crisis management. This includes areas such as building mental resilience, responding effectively to adverse events, striving for work-life harmony, effective stress management, and conflict resolution and management. Sixty-four talks, training sessions and workshops were conducted in FY2018 with more than 1,200 professionals trained.



- **Ageing-sensitive Nursing Care For Health System Elders (ANCHOR)**

Ageing-sensitive Nursing Care for Health System Elders (ANCHOR) equips nursing teams with the knowledge and skills in geriatric nursing to ensure ageing-sensitive care is practised appropriately. ANCHOR-trained nurses are empowered to optimise care for older adults through health promotion, comprehensive geriatric assessment, holistic management, and care transition planning and coordination.

Augmenting Mental Healthcare In The Community

Thirteen graduates, comprising doctors from private practice, polyclinics and hospitals, received their diploma at the seventh Graduate Diploma in Mental Health (GDMH) graduation ceremony held in April 2018. This brings the total number of GDMH-trained doctors to 127. Launched in 2010, the GDMH is jointly offered by IMH and the Division of Graduate Medical Studies at NUS to grow a network of GPs who can provide convenient and accessible mental healthcare in the community. The programme trains GPs to assess, identify, and manage psychiatric conditions, enabling patients with stable mental conditions to be treated in Primary Care settings.

EVEREST Training To Manage Emerging Infectious Diseases

As part of national efforts to maintain readiness to manage Ebola virus disease (EVD) and other viral haemorrhagic fevers (VHF), the National Centre for Infectious Diseases (NCID) conducts training under the Emerging Virulent Pathogen Readiness & Simulation Training (EVEREST) programme for healthcare workers in public hospitals.

The training sessions cover hospital policies and protocols to manage and care for patients with EVD/VHR, and management of paediatrics, obstetrics and neonates with highly infectious pathogens. Since commissioning its High Level Isolation Unit (HLIU) in December 2018, NCID has trained 230 healthcare workers comprising doctors, nurses, Allied Health and ancillary staff who manage EVD/VHF adult patients in the HLIU environment.

Upskilling Pharmacists In Specialist Services

The University of South Australia (UniSA) and NHG College continue to offer the Master of Clinical Pharmacy programme in Singapore, enabling our pharmacists to advance their skills in specialist pharmaceutical services. The programme has produced 60 graduate pharmacists who hold leadership roles in health institutions across Singapore.

Boosting Research In Palliative Care

In December 2018, NHG HOMER and The Palliative Care Centre for Excellence in Research and Education (PaC) jointly launched the Basic Qualitative Research in Healthcare Course. Designed for palliative care professionals, the two-day course equipped participants with the basic principles and purposes of qualitative research, and a framework to apply appropriate methods in designing, conducting and reporting qualitative research. Some 26 palliative care professionals from NHG, SingHealth, and various community hospitals, nursing homes and hospices, registered for the inaugural run.

Improved Brain Death Certification Programme

In April 2019, a revised edition of the 'Nuts and Bolts of Brain Death Certification' workshop organised by MOH's National Organ Transplant Unit (NOTU), and supported by NHG College, was held. The programme imparted deeper understanding of the certification process, which in turn enhanced the capabilities of clinicians and transplant coordinators.



IMPROVING HEALTH LITERACY OF THE POPULATION

Students Design Games To Promote Health

The gAmes for heaLth InnoVations centrE (ALIVE), a collaboration between NHG and LKCMedicine, sponsored the Singapore Games Creation Competition (SGCC) 2018 to improve health literacy and encourage the early adoption of healthy lifestyle habits among students. It is organised annually by Nanyang Polytechnic's School of Interactive & Digital Media (NYP SIDM) for secondary school students. The 13th edition of SGCC had a health theme, with participants developing games that emphasised physical well-being, emotional health and smoking cessation. ALIVE will subsequently develop the games that address pressing healthcare needs, and match the respective teams with appropriate clinicians and academics.

Singapore Mental Health Conference 2019

Jointly organised by IMH, the National Council of Social Service (NCSS), Agency for Integrated Care (AIC) and Health Promotion Board (HPB), the fifth edition of the Singapore Mental Health Conference (SMHC), was held in January 2019. The two-day conference brought together more than 500 professionals from the healthcare, social service and community care sectors, community-based workers and consumers of mental health services. Themed "Empowerment for Resilience and Recovery", the event covered topics such as building inclusive communities, empowering service users, public education, peer support services and advances in treatment approaches. Guest-of-Honour President Halimah Yacob launched the President's Challenge 2019 at the opening of the conference.



Panellists sharing their views on what recovery entails and the role each plays at the SMHC 2019 Keynote Dialogue.



Top: Finalists, judges and guests of SGCC 2018.
Left: The champion team from the NUS High School of Mathematics and Science.

Addressing Antimicrobial Resistance In Primary Care

Antimicrobial resistance poses a serious global threat to health. To better equip healthcare professionals and increase public awareness, NCID organised a Primary Care Forum in February 2019 where experts addressed AMR concerns in Primary Care, which included correcting knowledge gaps among Primary Care providers and patients, and effective communication strategies and ways to reduce inappropriate antibiotics use. The event was attended by some 170 General Practitioners (GPs), Family Physicians and healthcare professionals.

Singapore AIDS Conference 20th Anniversary

Jointly organised by Action for AIDS, NCID and TTSH, the 11th edition of the bi-annual Singapore AIDS Conference held in December 2018 was attended by some 400 healthcare professionals, experts and leaders in the field, and industry partners. Themed "The Beginning of the End", the conference emphasised the need to rethink conventional strategies against the Human Immunodeficiency Virus (HIV) and the importance of social sciences and the growing field of biomedical science in combatting HIV. Presented during the conference was a Community-led Blueprint to end HIV in Singapore, the first of its kind in Asia.



When we educate the community, they become a part of the ‘doctoring’ process.”

Associate Professor Wong Hon Tym
Clinical Director,
Centre for Healthcare Innovation

ASEAN Dengue Day

The eighth ASEAN Dengue Day Seminar was held in June 2018. Organised by NCID, it brought together a panel of speakers from MOH, National Environment Agency (NEA), NUS and College of Family Physicians Singapore. Discussed were the latest developments in dengue treatment and vaccines, the role of Primary Care physicians in dengue control and prevention, and survey insights into the Primary Care management of dengue. Attended by some 200 participants, the forum initiated meaningful conversations between operations and clinical management staff about improving integration of dengue control efforts for better patient care.

Enabling Self-Care Of Eczema

The National Skin Centre (NSC) held its annual Eczema Public Forum in October 2018, which saw a turnout of more than 320 members of the public. NSC dermatologists dispelled common misconceptions of the disease and shared effective eczema management strategies. The event also introduced NSC’s new mobile application, the Taggle Eczema App, which enables eczema patients to self-monitor their skin condition, and access medication and advice for treatment.

Patient Empowerment Through Medication List

In October 2018, NHG launched a Cluster-wide Campaign, themed “Know Your Medicines, Get It Right” to create awareness about the use and benefits of a Medication List and to empower patients to have their own.

A Medication List records all the medications and supplements a patient is taking, including dosage and frequency, and helps patients on long-term medications have proper documentation of their prescriptions. During the week-long campaign, pharmacies under NHG Institutions distributed information on the usefulness of having a Medication List. Guidelines on how to create a medication list and a medication list template were also available for the public.



DRIVING GLOBAL KNOWLEDGE EXCHANGE AND COLLABORATION

Singapore And China Healthcare Professionals Collaborate To Improve Palliative Care In Yunnan

TTSH collaborated with the Singapore International Foundation, China's Yunnan New Kun Hua Hospital and the Yunnan Health and Development Research Association to roll out a three-year training programme to help raise the standards of palliative care in Yunnan. The curriculum focuses on pain management, symptom management and psychosocial care. Trainees would be equipped to impart skills on palliative care to their local peers and colleagues. The programme would benefit some 36,000 patients and caregivers in Yunnan by end-2021, and promote cross-cultural learning, mutual understanding and foster closer relationships.

TTSH Trains Sri Lankan Doctors In Trauma Care

In collaboration with Sri Lanka's Ministry of Health, the Temasek Foundation - TTSH Specialist Programme on Emergency Department (ED) was held in April 2018. Forty doctors from nine provinces in Sri Lanka, which would eventually become training hubs for other hospitals in the country, were trained in strategic planning, leadership execution and patient safety in ED. Participants learnt applications of root-cause analysis in their work, and took part in the Clinical Practice Improvement Programme (CPIP) and decontamination drills. Doctors and nurses from TTSH also shared knowledge on training and education, application of Information Technology (IT) and the principles of ED design and operations.



TTSH trains Sri Lankan doctors in trauma care.





International Symposium On Communication In Health Care 2019

The International Symposium on Communication in Health Care 2019 took place in February 2019. Held in Singapore for the first time, it was helmed by NTU's LKCMedicine and School of Humanities. The organising committee included representatives from NTU's Wee Kim Wee School of Communication and Information, and TTSH, with support from Australian National University (ANU), University of Hong Kong (UHK) and Harvard University. Themed "The Human Dimension in Medicine and Health Care", the delegates discussed communication issues that could impact the provision of healthcare and how new technology tools could improve communication between healthcare professionals and patients. The symposium also launched the International Consortium for Communication in Health Care: Research, Education and Practice – a multi-institutional partnership comprising NTU, ANU, HKU and Harvard Medical School.



Sharing Expertise In Residency Programmes

In March 2019, a team of administrators and clinicians from NHG Education helmed a workshop, "Conducting self-study in Residency: an organisational performance model approach", at the ACGME Education Conference held in Orlando, Florida, USA. The workshop targeted leaders involved in Residency programmes, and introduced various organisational approaches and tools appropriate for conducting comprehensive evaluations of Residency programmes.

Singapore and China collaborate to improve skills of palliative care staff in Yunnan.



RESEARCH, INNOVATION AND TECHNOLOGY

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Happiness lies in the joy of achievement and the thrill of creative effort.”



RESEARCH, INNOVATION AND TECHNOLOGY

Research, Innovation and Technology remain key drivers in our on-going care transformation journey to improve the health of our population. We use evidence-based research in the design and implementation of more targeted interventions. We leverage innovation and technology to deliver value-based care and to achieve sustainable health outcomes.

COLLABORATION AND KNOWLEDGE EXCHANGE

Singapore Health And Biomedical Congress 2018

In October 2018, some 4,000 local and international health and social care professionals convened at the 16th Singapore Health and Biomedical Congress (SHBC) to gain insights, network and discuss topics centred on the theme of “Back to Basics: Adding Years of Healthy Life”. The Congress focused on the fundamentals of developing a future-ready, effective and sustainable model to improve the health of the Singapore population. It also covered topics on how social and healthcare communities work together to address the current challenges of an ageing population, including higher incidence of frailty and increasing prevalence of chronic diseases. New tracks featured were Patient-Centred Care Models, Empowerment & Practice, Preventive Medicine, Population Health, Primary and Community Care.

Guest-of-Honour, Health Minister Mr Gan Kim Yong, witnessed the signing of a Memorandum of Understanding (MOU) on a Joint Programme for Clinician Scientist Development between NHG and the Nanyang Technological University (NTU) to cultivate a

strong pipeline of clinician scientists to help Singapore in its aim of becoming a global hub for biomedical research.

A Memorandum of Agreement (MOA) was also signed to establish the ALIVE-POLY-ITE Student Internship Programme by NHG in partnership with NTU, Nanyang Polytechnic, Ngee Ann Polytechnic, Republic Polytechnic, Temasek Polytechnic, Singapore Polytechnic and Institute of Technical Education (ITE). The programme identifies potential students with relevant diploma studies and expertise in games design/storytelling, graphics design and IT infrastructure to take up internships with the gAmeS for heaLth InnoVations centRE (ALIVE) – a joint collaboration between NHG and NTU.

The SHBC 2018 Scientific Competition received 638 submissions, and 52 awards across 16 categories were given out.

NHG signed an MOU with NTU on a Joint Programme for Clinician Scientist Development.

SHBC
2018





GPs and other participants attending a session on adult vaccinations in the tropics.

Enhancing Care With Artificial Intelligence

NTU, Singapore Management University (SMU) and NHG will collaborate to develop an end-to-end Adaptive Artificial Intelligence (AI)-Assistance 3H Care (A3C) system. The A3C system, integrated with assessment and interventional tools, collectively predicts the risk of contracting hyperglycaemia, hypertension, and/or hyperlipidaemia (3H), tailors personalised interventions for existing 3H patients, and strengthens patient adherence through gamification. The system complements existing Primary Care teams and facilities to slow the progression of 3H and reduce the severity of their associated complications. The project secured its first tranche of funding of \$5 million over two years from the AI Singapore 2019 “AI in Health Grand Challenge”.

Asia Pacific Diabetes In Pregnancy Conference 2019

The second Asia Pacific Diabetes in Pregnancy Conference and the Integrated Platform for Research in Advancing Metabolic Health Outcomes of Women and Children (IPRAMHO) International Meeting was held in January 2019. Themed “Optimal Perinatal Nutrition for Better Metabolic Health”, healthcare professionals attending the Conference shared best practices and exchanged knowledge on improving education and research in gestational diabetes, obesity, and metabolic diseases in pregnancy. A poster presented by Ms Goh Ling Jia, Assistant Nurse Clinician, NHGP, on the dietary assessment for Singaporean children, clinched the top prize in the poster category.

Update In Dermatology And Venereology 2018

The National Skin Centre (NSC) organises the Update in Dermatology and Venereology Conference bi-annually to keep healthcare professionals abreast of new approaches and therapeutics in managing patients with skin conditions. Attended by more than 460 local and international delegates, the 2018 edition was held in October and included Nursing and Pharmacy symposiums. This aligns with the move towards team-based care for chronic skin diseases, especially in the community.

To commemorate NSC’s 30th anniversary, the *Dermatology in Singapore* book was launched at the Conference Banquet and Faculty Dinner, which was graced by Associate Professor Benjamin Ong, Director of Medical Services, Ministry of Health (MOH).



Guest-of-Honour Mr Amrin Amin (centre), Senior Parliamentary Secretary for Health, at the NHGP Primary Care Forum 2018.

Primary Care Forum 2018

The National Healthcare Group Polyclinics (NHGP) held the 11th Primary Care Forum in conjunction with SHBC 2018. Titled ‘Primary Care: Integration & Innovation for the Future’, the Forum focused on innovations and improvements that will transform Primary Care. Incorporated was a General Practitioners (GPs) Symposium, where GPs from various sectors shared how they manage patients in the community.



OPENING OF THE NG TENG FONG CENTRE FOR HEALTHCARE INNOVATION (CHI)

Minister for Health Mr Gan Kim Yong officially opened the Ng Teng Fong Centre for Healthcare Innovation (CHI) in May 2019, a new centre to promote innovation across the public healthcare sector. Housed at HealthCity Novena (HCN), CHI adopts a systems- and technology-based approach to enable processes and care redesign that optimise outcomes and value for patients, and transform our workforce. The event was held in conjunction with the two-day CHI Innovate Conference 2019. Three game-changers to boost care transformation were introduced:

Smart Hospital: Command, Control & Communications (C3) System

The state-of-the-art Command, Control and Communications (C3) system will be the “brain” of the Smart Hospital. Developed by Tan Tock Seng Hospital (TTSH) and the Integrated Health Information Systems (IHIS) and supported by MOH, C3 aims to transform healthcare operations by improving operational efficiency and coordination, as well as facilitating patient flow at the systems-level.

Knowledge Management – CHI Learning & Development (CHILD) System

CHI will host an open knowledge repository of best practices, project stories, problem statements, as well as a platform for Communities Of Practices (COP) in healthcare innovation, improvement and productivity. The portal will be launched in phases, starting end 2019.

Learning & Experimental Enabling Spaces

The CHI Living Lab (CHILL) is a space that connects innovators with resources, facilitating the translation of ideas into prototypes for testing. Another example is CHI Innospace (a co-creation space with video technology, configurable walls and layouts) where improvement events are hosted, and where new products and care solutions can be refined for test-bedding by users in simulated environments.



Photo Courtesy of Write Editions®



Photo Courtesy of Write Editions®



Lounge@CHI is popular for meetings and networking.





CHI aims to be the place for healthcare professionals and partners to bring their thoughts, ideas and passion, and together, turn possibilities into real world solutions.”

Professor Eugene Fidelis Soh

Chairman, CHI Co-Learning Network
& CEO, Tan Tock Seng Hospital & Central Health



The following activities also took place at CHI Innovate 2019:

- The 2019 National Healthcare Innovation and Productivity (NHIP) Medals were presented to initiatives that achieved excellence in Care Redesign, Automation, IT and Robotics Innovation, and Workforce Transformation.
- The Centre for Allied Health and Pharmacy Excellence (CAPE) was launched to propel strategic transformation of the Allied Health and pharmacy professionals through innovation, thought leadership development and training integration with partners across health and community care sectors. CAPE, TTSH's Centre for Asian Nursing Studies (CANS), and the Singapore Institute of Technology (SIT) will co-develop courses to equip community healthcare workers with transdisciplinary clinical skills competencies, to provide holistic care in the community.



HEALTH SERVICES AND OUTCOMES RESEARCH (HSOR)

Health Services and Outcomes Research (HSOR) is a multidisciplinary team that supports NHG's goal to build a healthy population in the Central Region by providing the best available evidence for decision-making, building capacity, and advancing knowledge in health services research. Some of the team's research projects and findings focus on population health management.

Population Health Index (PHI)

As the factors determining social and health care become more intertwined, it is important to study these factors across multiple settings and monitor the health of residents living in different communities for successful population health management. The **NHG Population Health Index (PHI)** seeks to construct a single measure of a person's health, while identifying underlying actionable drivers for interventions. It is a multi-year, prospective and longitudinal study of 3,949 residents in the Central Region which started in 2015. The second phase of the study was completed in 2019, in which 2,004 residents living in Yishun, Sembawang and Woodlands precincts were surveyed.

Two sets of metrics were developed. The first set is the population domain scores and PHI, and it is useful for showing the average health of the population at a regional or national level. It can be used as a health score benchmark and it initiates longitudinal tracking of the health of the population. The second set, known as individual domain scores and **Individual Health Index (IHI)**, is derived by normalising to specific age group, gender and ethnicity. This shows the health at an individual level and allows comparison of the health of an individual relative to similar people in the population (Figure 1). The use of the PHI on representative population cross-sections will be extended to all geographical zones served by NHG in the future. This allows for deficient PHI domains in different geographical sub-zones to be identified, and appropriate interventions planned and delivered in partnership with community health and social care partners.

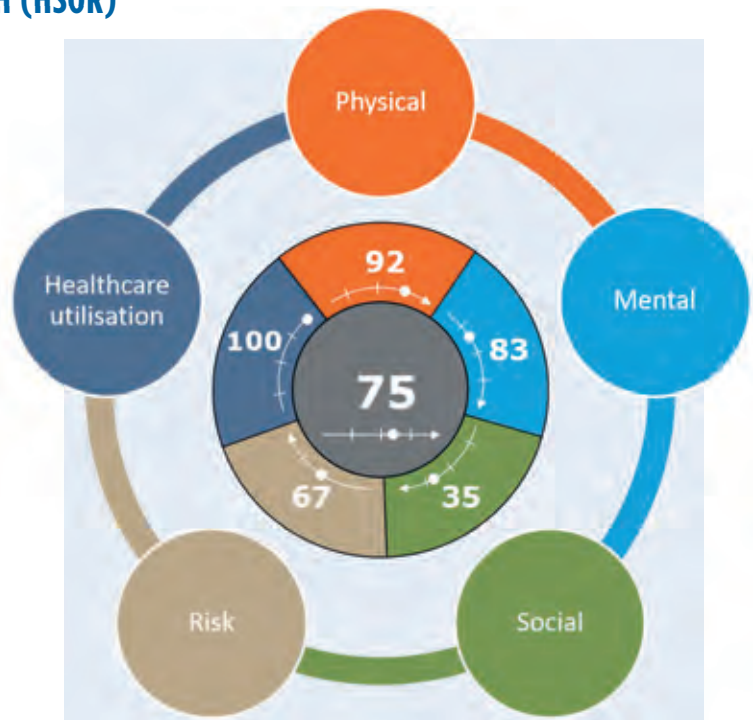


Figure 1: Population Health Index domain scores (of an individual)/Individual Health Index (IHI)

Interpretation

- Numbers represent the percentile of the score for the person's age group, gender and race
 - > This individual has an IHI score of 75, which means that his health is better than 75% of people in the same age group, gender and ethnicity
 - > His physical score is at the 92nd percentile for his age group, gender and ethnicity
- Lines with arrow represent the range of scores for the population, with the arrow representing maximum score and the tick marks representing 25%, 50% and 75% percentile
- The circle on the line represents the population domain scores or PHI
 - > Although this individual's IHI score is 75, this is the 60th percentile compared to the entire population
 - > His physical score is at the 75th percentile of the population

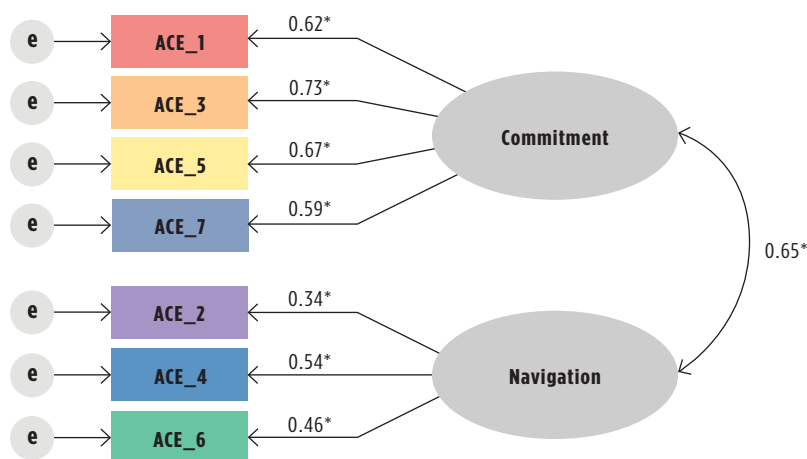
Patient Engagement Measure For Population Health

Patient engagement involves empowering patients to take charge of their health to help improve outcomes, drive better care, and achieve lower costs. A valid and reliable measure is essential to evaluate patient engagement and to assess the impact on population health outcomes. HSOR carried out a study to examine the psychometric properties of a shortened 7-item Altarum Consumer Engagement Measure (ACE-7) to assess patient engagement in 'Commitment' and 'Navigation' dimensions for use in the Singapore population. The construct validity of the ACE-7 was determined using factorial validity via principle component analysis (PCA) and confirmatory factor analysis (CFA), and hypothesis-testing validity of the relationship between ACE-7 scores and the frequency in activity participation and health-related quality of life. The concurrent validity was assessed by examining the relationship between ACE-7 scores and Patient Activation Measure (PAM)-13 score using Pearson correlation¹. The ACE-7 scores were also compared among the four PAM activation levels. The reliability of the ACE-7 was assessed in the form of internal consistency via Cronbach's Alpha².

The PCA result suggested a two-factor structure (Table 1), which was confirmed by the two-factor CFA model with a good model fit (CFI=0.97, TLI=0.96, RMSEA=0.05). The standardised estimates of the two-factor CFA model are provided in Figure 2. Each item was loaded significantly on the respective factors of the correlated two-factor structure ($p < 0.001$).

The ACE-7 had acceptable internal consistency. The ACE-7 subscale and total scores had moderate to strong correlations with PAM score ($r = 0.53 - 0.63$), and was correlated significantly with more frequent activity participation ($r = 0.29 - 0.36$), and better quality of life ($r = 0.13 - 0.30$).

Figure 2: The path diagram for the two-factor CFA model: standardised estimates



* $p < 0.001$

The study provides evidence of validity of the 7-item ACE measure, but further research including local cultural context relevant items to measure the 'Informed Choice' dimension is required for the measure to be more holistic.

Table 1: Factor loadings and Cronbach's Alphas for two-factor structure

Item	Factor loading	
	Commitment	Navigation
ACE_1. Even when life is stressful, I know I can continue to do the things that keep me healthy.	0.73	-
ACE_3. When I work to improve my health, I succeed.	0.82	-
ACE_5. I can stick with plans to exercise and eat a healthy diet.	0.76	-
ACE_7. I handle my health well.	0.74	-
ACE_2. I feel comfortable talking to my doctor about my health.	-	0.55
ACE_4. I have brought my own information about my health to show my doctor.	-	0.84
ACE_6. I have lots of experience using the healthcare system.	-	0.84
%Variance Explained	44.7%	15.5%
Cronbach's Alpha	0.77	0.65

Note

- 1 Pearson correlation is a measure of the linear correlation, or strength of association, between two variables.
- 2 Cronbach's Alpha is a measure of the internal consistency, or reliability of a scale.



“The progression of our population’s health, or ill health, primarily stems from lifestyle choices and the associated risk factors. If poorly managed, these risks lead to chronic diseases, which in turn lead to complications, disabilities, and frailty. There is therefore a need to go upstream, with data collection and targeted interventions, to manage our population’s health so that a majority can avoid this largely preventable trajectory.”

Dr Heng Bee Hoon

Senior Director, Health Services and Outcomes Research, NHG

Impact Of Chronic Diseases On Health-Related Quality Of Life And Self-Rated Health

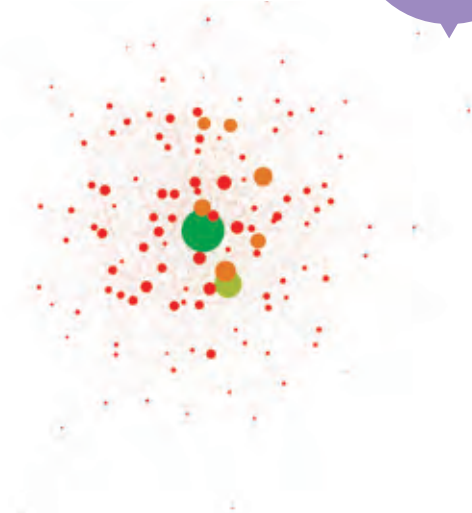
Chronic diseases pose a challenge in building healthier communities, thus it is necessary to have a comprehensive understanding of the extent of their effects across different measures of health. The study investigated the relationships between the number of chronic diseases and health-related quality of life and self-rated health among residents living in the community across different age groups. Health-related quality of life and self-rated health of participants were measured via the EQ-5D index score and the EQ-VAS obtained using the 5-level EuroQoL EQ-5D* (EQ-5D-5L).

Results showed that 27.8% of participants reported a diagnosis of two or more chronic diseases, also termed as multimorbidity. The prevalence of multimorbidity was 4.7% in young adults (21-44 years), 28.2% in middle-aged adults (45-64 years), and 62.4% in older adults (≥ 65 years). As the number of chronic diseases reported increased, participants who reported problems in EQ-5D domains also increased (Table 2). Middle-aged adults had a higher proportion of reporting problems in individual EQ-5D domains than young adults, while older adults had the highest proportion. Older adults also had lower self-rated health than young adults.

Multimorbidity was concluded to be consistently associated with poorer health-related quality of life

MICRO-SIMULATION

Figure 3: One-year disease progression network



Microsimulation was used to model the disease progression of diabetes and its complications. Figure 3 illustrates the one-year disease progression network. Each colour-coded node represents a specific health state ranging from healthy (**Green**: no chronic conditions) to various other health states (**Yellow**: at risk – i.e. BMI 23+, **Orange**: 1 or more of the following chronic conditions – diabetes, hypertension or dyslipidaemia. **Red**: 1 or more of the following complications – Chronic Kidney Disease Stage 3 and above, coronary heart disease, stroke, or heart failure). Links between nodes represent the possible transition from one state to another within a year.

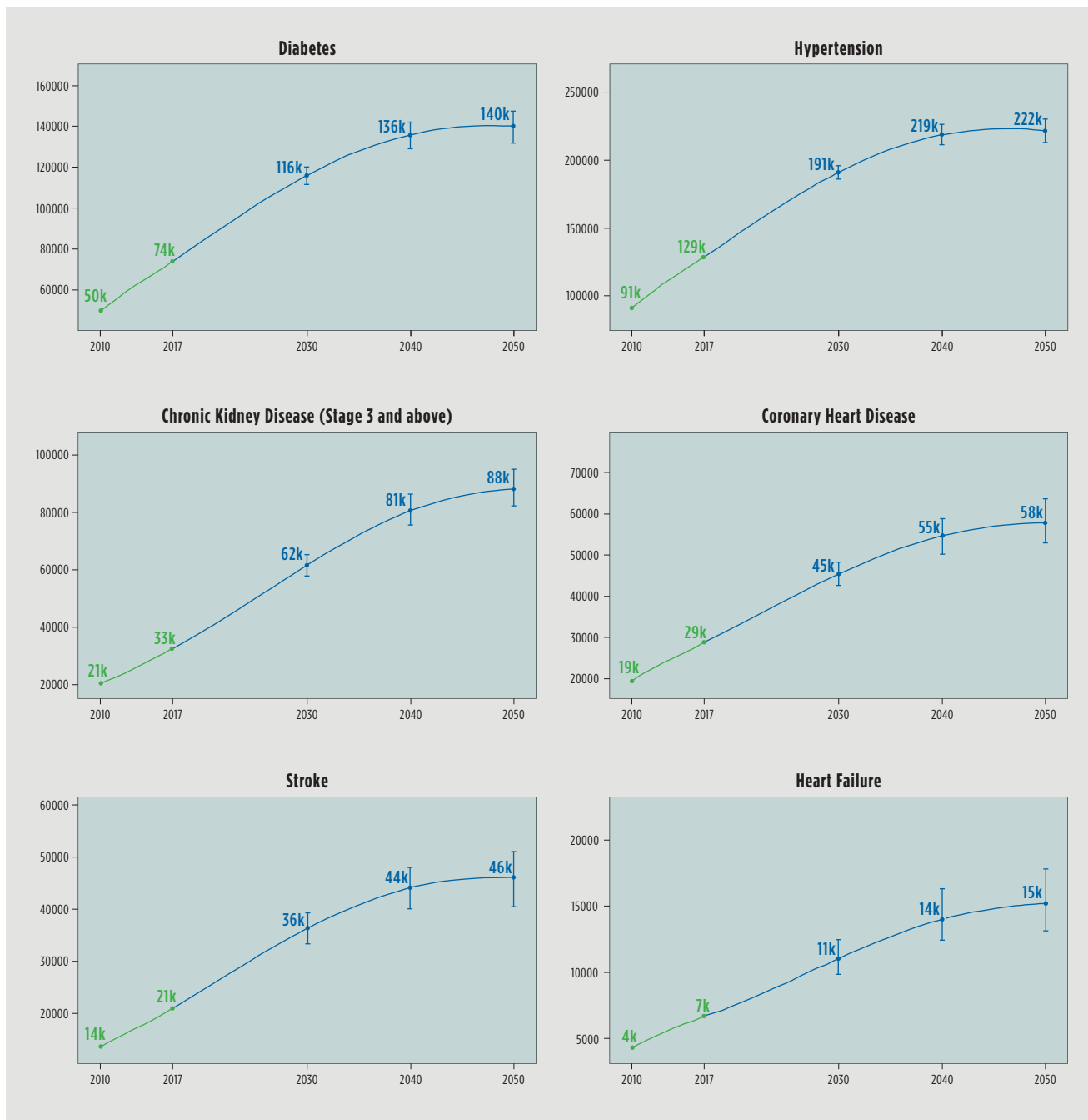
Table 2: Health-related quality of life and self-rated health (SRH) of the participants by age groups and number of chronic diseases

EQ-5D domain	Age group			Number of chronic diseases		
	Young (n=646)	Middle-aged (n=775)	Older (n=511)	0 (n=965)	1 (n=403)	≥ 2 (n=564)
Problems in Mobility, n(weighted %)	5 (0.6)	49 (7.0)	79 (15.2)	12 (1.4)	31 (6.8)	90 (16.2)
Problems in Self-care, n(weighted %)	2 (0.3)	7 (1.1)	36 (6.7)	2 (0.4)	8 (1.5)	35 (5.8)
Problems in Usual activities, n(weighted%)	4 (0.4)	34 (4.4)	71 (14.2)	13 (1.4)	19 (4.0)	77 (13.6)
Pain/discomfort, n(weighted%)	93 (13.8)	161 (21.4)	159 (30.7)	124 (12.6)	91 (24)	198 (33.8)
Anxiety/depression, n(weighted%)	22 (3.2)	37 (4.8)	34 (6.9)	23 (2.2)	21 (5.3)	49 (9.0)
EQ-5D index score, weighted mean \pm SD	0.97 \pm 0.08	0.94 \pm 0.11	0.89 \pm 0.17	0.97 \pm 0.09	0.94 \pm 0.11	0.89 \pm 0.17
SRH, weighted mean \pm SD	79.2 \pm 13.2	78.4 \pm 14.1	76.5 \pm 15.9	80.6 \pm 12.5	76.8 \pm 14.4	74.9 \pm 16.3

Note

* The EQ-5D is a standardised instrument for measuring generic health-related quality of life.

Figure 4: Microsimulation prediction results



and self-rated health across age groups. This suggests that an exploration of the needs of and challenges experienced by individuals with multimorbidity may be necessary to improve personal health measures for better population health.

Disease Progression Modelling Using Microsimulation

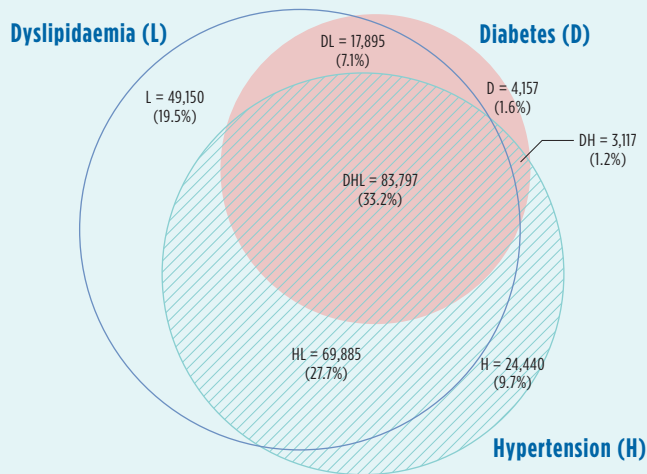
The growing burden related to diabetes and its complications is one of the biggest challenges in ensuring long-term sustainability of our healthcare system. Microsimulation is a type of simulation based on a large number of individuals. As each individual has unique characteristics including demographics,

socioeconomic status, and disease profiling, microsimulation can model how an individual will evolve over time by following certain rules. It is a suitable modelling technique to simulate the progression of multiple chronic diseases longitudinally at an individual level.

In this study, known patients living in the Central Region were simulated, and a one-year disease progression network was generated using data from 2015 to 2016. Microsimulation was then used to predict the burden of different diseases of the simulation cohort from 2017 to 2050 (Figure 4). These results can potentially assist with future healthcare resource and capacity planning.



Figure 5: Distribution of comorbidity



Distribution of D or H or L in NHG (n=252,448)

Diabetes Mellitus	108,966	43.2%
Hypertension	181,239	71.8%
Dyslipidaemia	220,727	87.4%

Ministry of Health National Health Survey (Prevalence in SG)

	1992	2016/17
Diabetes Mellitus	7.3%	8.6%
Hypertension	16.1%	21.5%
Dyslipidaemia	25.2%*	33.6%

* 2010

Hypertension And Cardiovascular Complications Among NHG Patients

Better profiling of sub-populations within NHG's total population pool can help boost preventive and Primary Care, which are key tenets of population health. HSOR did a study that aimed to describe the prevalence of hypertension and cardiovascular complications in the Central Region, as well as determine the annual transition rates of hypertension to related cardiovascular complications.

A total of 252,448 NHG patients was found to have been diagnosed with either diabetes (D), hypertension (H) or dyslipidaemia (L) from 2010 to 2017 (Figure 5). Majority of these patients had two or more conditions, with dyslipidaemia being the most prevalent condition followed by hypertension and diabetes. About one third of patients (33.2%) had all three conditions.

Among patients who were newly diagnosed with hypertension in 2017, 50% were first admitted to an

“Research analyses how the various healthcare determinants weave together, and the gaps of the current system that prevent it from reaching its ultimate potential or goal, which is to cure humanely, to relieve, to care, and to prevent, where possible.”

Professor Lim Tock Han

Deputy Group CEO (Education and Research), NHG

Emergency Department with serious complications such as stroke, ischaemic heart disease and chest pain (Figure 6).

The annual rate of transition to cardiovascular complications was highest among patients with DHL as compared to patients with DH and HL, at 6.3%, 4.6% and 3.6%, respectively (Figure 7).

Figure 6: Medical conditions of patients with newly diagnosed hypertension

	All	Previously unknown patients first encounter at NHG			
		ED		NHGP*	
		No.	%	No.	%
2010	3,837	1,410	36.7%	2,216	57.8%
2011	3,538	1,513	42.8%	1,960	55.4%
2012	3,146	1,446	46.0%	1,638	52.1%
2013	2,868	1,291	45.0%	1,538	53.6%
2014	2,366	1,068	45.1%	1,251	52.9%
2015	2,308	993	43.0%	1,278	55.4%
2016	2,105	942	44.8%	1,122	53.3%
2017	2,189	1,078	49.2%	1,086	49.6%

* HOU, AMK, TPH, WDL, YIS

ED diagnosis	2010 n=1,140	2017 n=1,078
Stroke	14.7%	17.9%
TIA	1.4%	1.6%
Hypertension	11.1%	15.9%
IHD	11.1%	7.7%
Pneumonia	3.4%	4.1%
Head Injury	3.7%	3.0%
Dizziness and Giddiness	3.3%	2.7%
Chest pain	3.6%	2.1%
Hypoglycemia	2.0%	1.7%
Infection*	7.1%	1.6%
Headache	0.8%	0.9%

NHGP diagnosis	2010 n=2,216	2017 n=1,086
Hypertension	58.6%	56.6%
Hyperlipidaemia	10.5%	10.0%
Type II DM	6.3%	7.0%

* Cellulitis, Unspecified infectious and parasitic dis, Cutaneous abscess

Figure 7: Annual transition rates of cardiovascular complications

Hypertension only

Stable Patients	n	Mean Age (y)	% 65+	Complications Annual Transition Rate (%)						
				2011	2012	2013	2014	2015	2016	2017
2010	9,929	57.1	29.9%	2.0%						
2011	9,478	57.6	30.7%		1.8%					
2012	9,764	57.7	31.5%			2.4%				
2013	10,330	58.0	32.2%				2.1%			
2014	10,823	58.5	33.9%					2.3%		
2015	11,657	58.7	34.9%						2.6%	
2016	12,616	58.7	34.8%							2.2%

Hypertension + Lipids

Stable Patients	n	Mean Age (y)	% 65+	Complications Annual Transition Rate (%)						
				2011	2012	2013	2014	2015	2016	2017
2010	28,965	61.2	36.5%	3.4%						
2011	28,911	61.8	38.9%		3.2%					
2012	28,967	62.2	40.9%			3.7%				
2013	28,848	62.7	42.5%				3.3%			
2014	28,669	63.2	45.1%					3.1%		
2015	28,564	63.6	46.8%						3.2%	
2016	28,414	63.9	47.7%							3.6%

Hypertension + Diabetes

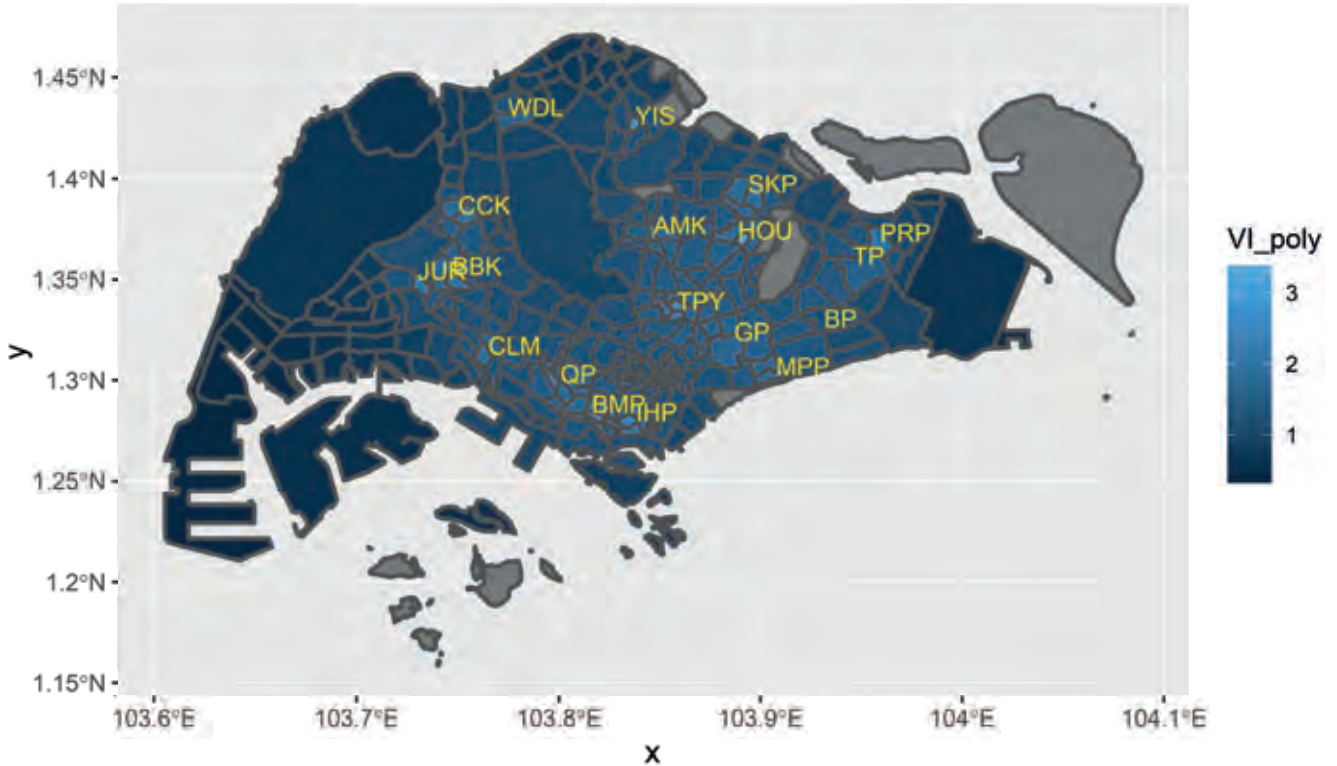
Stable Patients	n	Mean Age (y)	% 65+	Complications Annual Transition Rate (%)						
				2011	2012	2013	2014	2015	2016	2017
2010	955	63.4	47.7%	3.7%						
2011	854	62.8	47.7%		3.3%					
2012	866	63.2	47.6%			4.0%				
2013	857	62.9	47.7%				3.5%			
2014	855	62.6	45.6%					4.5%		
2015	878	62.4	43.6%						4.5%	
2016	900	62.7	45.0%							4.6%

Hypertension + Lipids + Diabetes

Stable Patients	n	Mean Age (y)	% 65+	Complications Annual Transition Rate (%)						
				2011	2012	2013	2014	2015	2016	2017
2010	24,658	61.3	37.0%	5.7%						
2011	24,598	61.8	38.9%		5.4%					
2012	24,558	62.2	40.7%			6.4%				
2013	24,532	62.5	42.2%				6.0%			
2014	24,362	62.9	44.1%					5.8%		
2015	24,227	63.2	45.6%						6.0%	
2016	24,050	63.5	46.7%							6.3%



Figure 8: VI by sub-zone in Singapore



Regional Disparity In ED Utilisation

Understanding the regional disparity in healthcare resource utilisation can help healthcare providers better meet the needs of the population we serve. The study sought to understand if there was a regional disparity in ED utilisation rates across age groups, and to explore if the availability of public primary healthcare resources in a region could explain any disparity.

Supply network analysis was used to analyse the accessibility of public primary healthcare resources, which is represented as Visibility Index (VI). A higher VI score indicates better accessibility.

Visibility to polyclinics by subzone:

$$VI_n = \frac{\sum_{m=1}^M \frac{1}{d_{n,m}}}{(N+M) \times (N \times M)}$$

N : number of sub-zones (DGP areas or postal codes)

M : number of polyclinics

$d_{n,m}$: distance between the sub-zone n to a polyclinic m

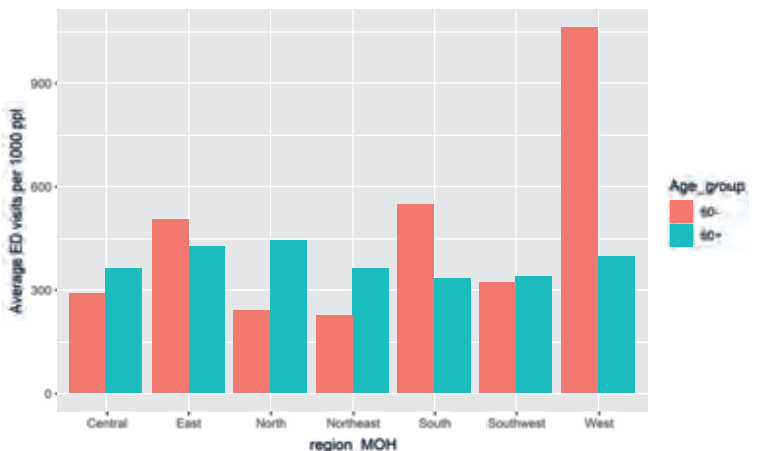
The VI scores across smaller sub-zones in Singapore are depicted in Figure 8, where a higher VI score is represented by a brighter colour in the sub-zone.

ED utilisation rates by different healthcare regions among the young and elderly in Singapore are shown in Figure 9. The average number of ED visits per 1,000 population per year was 454 for younger individuals (age < 60) and 371 for the elderly (age ≥ 60).

There was no association between the accessibility to public Primary Care resources and the ED utilisation

rate among the young, whereas an increase in primary healthcare accessibility increased the ED utilisation rate among the elderly. The elderly living in the Central Region also had a lower ED utilisation rate as compared to those living in the north and west regions. However, statistical analyses suggest that the availability of public primary healthcare resources does not explain the regional disparity for ED utilisation rate among the elderly. Other factors such as the availability of private primary healthcare resources, differing ethnic distribution, and differences in population health status or lifestyle may be possible causes. Further studies are needed to understand the driving factors behind the regional disparity in ED utilisation rates among the elderly in order to better improve their health.

Figure 9: Emergency Department utilisation rates by region



RESEARCH FOR BETTER POPULATION HEALTH

Early Onset Diabetes

Diabetes poses a large and growing burden across the world, Singapore included. As part of the Joint Asia Diabetes Evaluation (JADE) programme, a cross-sectional study of a prospective cohort found that Singapore had about 30% of patients with early-onset Type 2 Diabetes (T2D), which was the highest proportion among the nine countries that participated in the research. These patients with early-onset T2D, defined as those below 40 years old, were less likely to achieve good glycaemic control despite being more intensively treated with insulin. They also had a higher propensity to develop diabetes-associated complications given a longer disease duration and exposure to sub-optimal glycaemic control. Given the higher incidence and growing trend of diabetes in Singapore, Khoo Teck Puat Hospital (KTPH) carried out several research studies on early-onset T2D to aid its prevention, detection, treatment and prognosis.

Identification Of Pax4 R192h Risk Gene

In a previous study on monogenic diabetes in KTPH, the research team found that 21% of those with age of onset below 45 years old had a PAX4 R192H risk gene. This was much higher compared with the reported frequency of 10% in the East Asian population, suggesting the enrichment of this risk gene in our local population with earlier onset of diabetes.

The research team conducted a follow-up study on the PAX4 R192H gene and its association with T2D. It was discovered that the PAX4 R192H gene was significantly associated with earlier onset of T2D after adjusting for gender differences in East Asians. Individuals who had two copies of the PAX4 R192H gene were found to develop T2D up to 4.5 years earlier than their peers who did not have this gene. Identification of PAX4 R192H as a risk factor for early-onset T2D in our local population thus marks a key milestone in uncovering the genetic basis of diabetes. Together with clinical and biomarker data, this genetic marker will help differentiate between the different types of early-onset diabetes, which will in turn improve optimisation of treatments and appropriate interventions towards early detection and prevention.

Higher Risk Of Progressive Chronic Kidney Disease

Accumulating data suggests that patients with early-onset T2D are prone to early development of vascular complications. To analyse the risk of chronic kidney disease (CKD) progression in patients with early-onset T2D, KTPH researchers studied 1,189 patients. Results showed that patients who were diagnosed with early-onset T2D were more obese and had poorer glycaemic control at baseline as compared with their later-onset T2D counterparts. These patients also had a higher incidence of progressive CKD of 24.2% as compared with 15.6% in later-onset patients.





Community nurses conducting health screening for residents at a Community Nurse Post.

Further analysis revealed that patients with early-onset T2D had a 2.63-fold higher risk of progressive CKD after accounting for multiple factors. In addition, the increased risk of progressive CKD mainly occurred in patients who had diabetes for less than 10 years. The study highlighted the need for heightened surveillance of kidney function in patients with early-onset T2D, as well as the prevention of T2D in young people so as to avoid the burden of its associated complications.

Effect Of Weight Gain On Diabetic Kidney Disease

Diabetic kidney disease (DKD) is the leading complication for patients who have poorly controlled diabetes, and has become the main cause of end-stage renal disease in Singapore. While studies have linked weight gain to increased risk of T2D, research on the impact of weight gain on DKD is currently inadequate. In a recent analysis of the prospective Singapore Study of Macroangiopathy and Microvascular Reactivity in Type 2 Diabetes (SMART2D) cohort of 1,014 participants,

KTPH researchers found that an average weight gain of 2.5 kg over three years was associated with a 60% increased risk of rapid decline in kidney function. This weight gain also elevated the risk of albuminuria (excessive protein in urine) deterioration by 60%. Further analysis revealed that poor glycaemic control contributed 40% towards the relationship between weight gain and DKD deterioration. These findings emphasised the importance of effective weight management and glycaemic control in the prevention of DKD.

New Insights On Treating Antibiotic-Resistant Bugs

Antimicrobial resistance is a growing global health concern and poses challenges in the treatment of common infectious diseases. To address the new emerging problem of carbapenem resistance, TTSH, National Centre for Infectious Diseases (NCID), National University Hospital (NUH), University of Queensland, and the Australasian Society for Infectious Diseases Clinical Research Network, collaborated on a new study, the MERINO trial. The study, which was conducted between February 2014 and July 2017, examined the effectiveness of an alternative medication (piperacillin-tazobactam) to the more commonly used antibiotic class of carbapenems for the treatment of two superbugs, ceftriaxone-resistant *Escherichia coli* and *Klebsiella pneumoniae* bacteria. Carbapenem resistance is especially prevalent in South East Asia.



Results of the MERINO trial were published in the *Journal of the American Medical Association (JAMA)* in September 2018, and revealed that piperacillin-tazobactam is an unsuitable replacement for meropenem (a class of carbapenem). This finding has immediate major implications for doctors worldwide as there is scientific evidence that carbapenems should be the preferred antibiotics recommended when treating bacterial infections, and paves the way to explore other alternatives.

Findings Of Singapore Mental Health Study 2016

In December 2018, the Institute of Mental Health (IMH) announced the findings from the second Singapore Mental Health Study (SMHS). The nationwide epidemiological study was spearheaded by IMH in collaboration with MOH and NTU, and funded by MOH and Temasek Foundation Innovates. The study established the prevalence of some common mental disorders in Singapore's resident population aged 18 years and above, along with their associated factors, the delay in seeking treatment, and the period of delay among those who eventually sought treatment. It also provided insights on how the mental health landscape in Singapore has evolved since the first landmark study in 2010.

For FY2018, the IMH research team received grants worth close to \$2.5 million, and embarked on 39 new studies and published 77 research papers.



The IMH research team for SMHS 2016, led by Prof Chong Siow Ann (fifth from left), Vice Chairman, Medical Board (Research), IMH, and Dr Mythily Subramaniam (fourth from right), Director, Research Division, IMH.

“Strong clinical care and a vigorous teaching culture need to be complemented with progressive research. Inter-institutional and inter-disciplinary collaborations are necessary to generate innovative and practical ideas that can be translated into improved clinical and healthcare outcomes for the population.”

Professor Tan Suat Hoon
Director, National Skin Centre

Global Study On Ocular Tuberculosis

An on-going global study by NHG Eye Institute (NHGEI) aims to improve the diagnosis and management of ocular tuberculosis (TB), a lesser known disease. Latent TB can remain dormant in a person, but when the immunity system is activated through several known mechanisms, there can be an inflammatory reaction to the TB antigens which can affect the eyes and result in tubercular uveitis. The study examined over 900 patients from more than 10 countries, including Singapore, India and the United Kingdom, and found that 65% of patients with ocular TB were males aged between 30 and 50. There was significant heterogeneity in the treatment practice and outcome globally. The team standardised the nomenclature related to ocular tuberculosis and also conducted an expert-led consensus survey to define the clinical scenarios requiring antitubercular therapy using modified Delphi technique*.



Note

* Delphi technique is a systematic forecasting method used to gather expert opinions through a series of questionnaires to reach a group consensus.





“Ageing is not lost youth, but a new stage of opportunity and strength.”





The TTSH Interventional Radiology team introduced the “Inside-Out” technique to allow insertion of a dialysis catheter into blocked neck veins.

BREAKTHROUGH INTERVENTIONS FOR BETTER PATIENT CARE

Robotic-Assisted Angioplasty For Patients With Cardiovascular Disease

In December 2018, the TTSH Interventional Cardiology team introduced a new technique – robotic-assisted angioplasty – for patients with blocked or narrowed heart arteries. Narrowed or blocked blood vessels limit the amount of blood supply to the heart, as a result of the build-up of fatty deposits on the inner walls of blood vessels (a condition known as atherosclerosis), often leading to heart attacks and even death. Coronary angioplasty and stenting enable the opening of these blocked arteries, and increase blood supply to the heart.

Robotic-assisted angioplasty uses robotics to help guide wire navigation, thereby enhancing precision in the measurement of the patient's heart anatomy and stent positioning. This potentially reduces the recurrence of arterial narrowing and may lead to better prognosis for patients. In addition, the technique also reduces radiation exposure to heart specialists as they are seated in a shielded workstation, thus providing a safer work environment. Pregnant specialists can now safely perform these procedures too. They also do not need to wear a lead apron for radiation protection while using this technique, which reduces the incidence of back problems and can extend their practising career.

Novel Catheter Insertion Technique For End-Stage Renal Failure Patients

Chronic vein blockage is a common complication for patients with end-stage renal failure undergoing haemodialysis through a central venous catheter (CVC) in the neck. In such cases, the CVC will have to be inserted in an alternate site such as the groin area, which is less ideal due to a higher risk of infection and an associated increase in mortality rate. In July 2018, the TTSH Interventional Radiology team performed the novel “Inside-Out” technique to salvage access to blocked neck veins for reliable and durable CVC access in the neck and the continuation of haemodialysis.

The groundbreaking technique involves inserting a metallic catheter and navigating it into the blocked neck vein under X-ray guidance. A safe path is created using a sharp needle wire to pierce the site of the vein occlusion from “inside” the body “out” of the neck. The wire is then removed and its path is used as a new track to insert a dialysis catheter. This technique allows a safe and fast way to salvage blocked neck veins in dialysis patients, thus improving the quality of life and prognosis for end-stage renal failure patients who are dependent on CVC for haemodialysis.

Early Detection Of Heart Failure At Home

TTSH and NTU jointly developed a home-use, non-invasive device for early detection of congestive heart failure. The prototype device is placed on a patient's chest or back, and uses a sensor to pick up sounds from the lungs. These sounds are then sent via a mobile application to a cloud server that uses an artificial intelligence (AI) algorithm to determine if the patient's lungs are clear or accumulating fluid. Fluid accumulation in the lungs, which causes breathlessness, is a common symptom of congestive heart failure.

Based on a study of 86 TTSH patients from 2012 and 2015, the device has shown to have a 92% accuracy rate in identifying patients with fluid accumulation in their lungs. This is comparable to existing gold-standard diagnosis methods such as X-rays and CT scans, which can be costly and time-consuming. TTSH estimates that the device can help to reduce unnecessary hospital admissions, benefitting an estimated 30% to 40% of about 5,000 patients admitted to hospitals in Singapore for heart failure every year. The research team has filed a patent for the invention and is now conducting a larger-scale study on about 300 TTSH patients.

Painless Method To Test Health Of Blood Vessels

TTSH, in collaboration with Nanyang Polytechnic (NYP), developed a novel non-invasive device to assess the health of blood vessels through magnetic blood pulse measurement at the radial artery. The prototype device



Photo courtesy of Nanyang Technological University, Singapore

takes around 20 minutes to measure the elasticity of blood vessels and changes in blood flow to assess endothelial dysfunction and correlation to cardiovascular risk. Current methods for testing endothelial dysfunction are invasive and often time-consuming.

Deficiencies in the blood vessel system are common in patients with diabetes, where large blood vessel damage is associated with stroke and heart disease, while small blood vessel damage often results in issues with the eyes, kidneys and nerves. The device serves as a prediction tool for patients with diabetes, and segment them based on the severity of their condition. Initial tests on patients with diabetes have revealed abnormal readings, which suggest that their blood vessels are stiffer and less reactive. The research team has filed a patent for the device, and is planning to partner a local industry expert to introduce this device in clinics. It is expected to be ready in 2021.

The prototype device by TTSH and NTU Singapore helps patients monitor their condition at home for early detection of congestive heart failure.

TTSH and NYP developed a device to measure the health of blood vessels in a non-invasive way.



Photo courtesy of Nanyang Polytechnic



WORKFORCE TRANSFORMATION, ORGANISATION DEVELOPMENT, AND INCREASING PRODUCTIVITY

To further support our desired population health outcomes, transformation of our workforce through job redesign, upskilling and value expansion is integral in optimising healthcare resources and sustaining our healthcare system. Efforts are also on-going to improve operational efficiency and productivity through the use of technology and automation.

Job Redesign Of Patient Service Associates

Patient Service Associates (PSAs) at Yishun Health (YH) play important roles in facilitating care for patients and managing all patient-facing administration duties. In FY2018, YH completed two transformation projects to boost productivity and empowerment of PSAs to take on expanded roles:

- Inpatient Ward Redesign**
 Processes such as printing of patient labels, collation and booking of appointment slots, digitalisation of referrals and bills were streamlined across all wards.
- Hassle-Free Financial Counselling**
 PSAs were trained to perform financial counselling, management of Medisave and other insurance claims.

These projects resulted in productivity gains and saved more than \$1.5 million and 31,000 man-hours. These were achieved without increasing staff numbers despite an 11% to 12% growth in workload from 2016 to 2018.

Administration Of Pre-Packed Medication By Enrolled Nurses

As part of on-going efforts in job redesign and upskilling of staff to practise at the top of their licence, IMH expanded the job scope of its Principal Assistant Nurses (PAN) and Senior Assistant Nurses I (SAN) in January 2019 to include the administration of pre-packed medication to long-stay patients under supervision of registered nurses.

To-date, 20 PANs and 10 SANs have undergone the training programme designed by the IMH Nursing Education department to serve pre-packed medications. More enrolled nurses will be progressively trained to take on this expanded role. With the changing model of care, upskilling of enrolled nurses adds value to the healthcare system and helps to improve productivity.



Formation Of Nursing Unit-Based Council

In April 2018, the IMH Nursing Department piloted a Unit-Based Council (UBC) in Emergency Services and various acute and long-stay wards for six months as part of the Nursing Shared Governance model. UBCs provide a platform for nurses and staff in each ward or unit to identify and introduce innovative solutions to issues faced in their day-to-day operations such as clinical practice, staff rostering, professional development, and quality improvement. As of December 2018, UBCs have been rolled out to all inpatient wards and Ambulatory Services.

New Analyser At Geylang Polyclinic For Faster Patient Throughput

National Healthcare Group Diagnostics (NHGD) expanded its laboratory after the Geylang Polyclinic was renovated. It introduced a new HbA1c analyser with higher throughput (D100). The D100 analyser replaces the point-of-care testing analyser (DCA) located at the respective phlebotomy stations, allowing centralised processing of HbA1c in the laboratory itself. This has reduced the processing time by 88%, from six minutes to 45 seconds, and in turn reduced patients' waiting time for a consultation. Phlebotomists are now able to focus on more core tasks such as blood-taking.



Principal Assistant Nurses and Senior Assistant Nurses I at IMH are upskilled to administer pre-packed medication under supervision of Registered Nurses.

New Consolidated System For Seamless Imaging

In February 2019, NHGD's Radiology Information System/Picture Archiving and Communication System (RIS/PACS) and TTSH's RIS/PACS merged as one NHG System to better facilitate seamless imaging for the cluster. This new system lays the foundation for integration with the Next Generation Electronic Medical Record (NGEMR) system, and will form the backbone of a future cost-effective imaging storage solution for NHG.

Upgrade Of Easipos System To Enhance Operational Efficiency

NHGD updated its Enterprise Advanced Systems Intelligence Point of Sales (EASIPOS) system in January 2019 to enhance operational efficiency in its centres at the polyclinics. The system facilitates online registration, payment and billing for community and home services.

Seamless Purchase With Qr Codes

NHG Pharmacy introduced QR codes at NHG retail pharmacy stores in October 2018 to provide patients with a more seamless retail experience. Patients are now able to browse online promotions offered while waiting to collect their medications at the outpatient pharmacy. Patients are also able to purchase items available online immediately by scanning relevant QR codes with their mobile phones.



Every one of us – clinicians, nurses, Allied Health Professionals, quality and value officers, data analysts and administration and finance staff – has a key role to play in helping us drive value.”

Mr Gan Kim Yong
Minister For Health





OUR PEOPLE



Success is liking yourself, liking what you do, and liking how you do it.”





OUR PEOPLE

NHG is committed to looking after the well-being and growth of our employees as we firmly believe that Better People lead to Better Care. We know that delivering quality and safe care can be challenging and stressful, but discovering Joy In Work can make all the difference.

STAFF ENGAGEMENT



PICS was launched at the NHG Culture Symposium 2018. It was graced by Professor Philip Choo, Group CEO, NHG; Professor Chee Yam Cheng, Chairman of the Culture Building Steering Council (CBSC); and Professor Low Cheng Hock, Advisor, CBSC; and attended by some 400 representatives from NHG HQ and Institutions. Management from NHG Institutions championed the new core values with support from our people.

Joy in Work (JIW) helps our staff to stay focused on the purpose and meaning of work, and contributes to care that people value. We encourage JIW on multiple fronts such as staying rooted in our



NHG LAUNCHES NEW CORE VALUES (PICS)

In November 2018, NHG added a milestone in our corporate journey with the adoption of a new set of core values. **PICS** stands for the values of **People-centredness, Integrity, Compassion and Stewardship**, and is cascaded across NHG and our Institutions.





BETTER PEOPLE, BETTER CARE

NHG believes in developing our people holistically. By building a happy, healthy and engaged workforce, we are able to venture beyond, and deliver care and value to our population.

Developing Our People

We seek to raise the competence and capability of our people to offer seamless, integrated care to our patients and population.

Engaging Leadership Programme

NHG has identified Collective Leadership as an enabler of population health. Our Collective Leadership culture is fostered through several programmes – NHG HQ organised two runs of Engaging Leadership Programme (ELP) for NHG Senior Management and their direct reports in 2018. These sessions took place between February and September 2018. Participants learned and gained insights on mental models that equip them to build more meaningful relationships with peers and staff, which would translate to better service.

NHG Pharmacy Strategic Retreat

The NHG Pharmacy Strategic Retreat took place in October 2018, attended by more than 120 pharmacists and executives. The participants discussed strategies to add value to patient care and the healthcare system through community outreach, improving technical competency, and leveraging on technology, innovation and efficiency.

Engaging Our People

We engage and motivate our people through various platforms to build a culture that emphasises purpose, trust and relationship, and healthy harmony.

NHG Employee Climate Survey 2018

The 2018 Employee Climate Survey (ECS) conducted between September and November, achieved a participation rate of 85 per cent. According to our consultant Willis Towers Watson, this rate was higher than the global average of 80 per cent. It reflects NHG's belief in feedback and improvement to serve our people, patients and population.



OUR CORE VALUES

NHG Core Values

National Healthcare Group
Adding years of healthy life

People-Centredness

We value diversity, respect each other and encourage joy in work.

- We build trust with each other as equals, individuals and teams, to achieve common goals.
- We listen and value feedback for improvement.
- We work with purpose to improve each other's well-being.

Compassion

We care with love, humility and empathy.

- We serve with our hearts and minds.
- We seek to understand what matters to each person.
- We respect each other's dignity.

Integrity

We commit ourselves to the highest standards of ethical conduct.

- We do what is right.
- We build trust through fairness and honesty to achieve common goals.
- We pursue quality and safe care for our patients.

Stewardship

We are responsible for the care of our people, patients and population.

- We work together and are collectively accountable for our common goals.
- We deliver appropriate and affordable care to the population we serve.
- We learn and innovate to optimise our resources for better health outcomes.

Produced by NHG Group Corporate Communications

shared values, enabling our staff to achieve their professional aspirations, and striving towards work-life harmony.

IMH Launches Its Employee Value Proposition (EVP)

The Institute of Mental Health (IMH) rolled out its Employee Value Proposition (EVP) initiative in 2018. Based on the overarching idea of "Creating a Brighter Future Together", the IMH EVP consists of four key themes – Meaningful Work, Growth Opportunities, Teamwork & Empowerment and Work-Life Harmony. It informs staff of what they can collectively achieve and look forward to as they pursue its vision and mission.

The ECS results provided important feedback on our employees' sentiments and perceptions of the organisation. They help identify ways to improve and enhance the work environment, leadership, employee performance and well-being, staff engagement through shared values, and job satisfaction.

MOH-NHG Townhall

The Townhall took place at the Tan Tock Seng Hospital (TTSH) Theatre in November 2018. Attended by staff from NHG Institutions, Union and community partners, the Townhall was a useful platform to engage our Minister for Health, Mr Gan Kim Yong, on the future of public healthcare: importance of boosting public-private partnerships the need to integrate health and social sectors further; identifying and addressing the social determinants of health affecting our population; and tapping on Artificial Intelligence (AI) and data science to gain evidence-based behavioural insights. Minister Gan was with a panel comprising Mr Edwin Tong, Senior Minister of State for Law and Health; and Professor Philip Choo, NHG Group CEO, moderated by Professor Chua Hong Choon, Deputy Group CEO (Clinical), NHG.



NHG Bonding Activities

Inter- and intra-institution initiatives such as NHG Bonding Activities (NBA) took place throughout the year. They serve to build camaraderie and foster relationships at the workplace.

NHG HQ Charity Carnival 2019

The NHG HQ Charity Carnival is an annual fund-raising effort by HQ staff to bond, and to give back to society. Held in January 2019, proceeds raised from the Carnival were donated to two charities selected by staff: Care Community Services Society (CCSS) and Society for the Aged Sick (SAS). As part of NHG's on-going Corporate Social Responsibility (CSR) efforts, staff take part in numerous activities to engage these organisations.



NSC Family Day

In September 2018, National Skin Centre (NSC) held a Charity Walk in conjunction with its annual Family Day at Bishan-Ang Mo Kio Park. Staff and their families showed their support for Ang Mo Kio Family Service Centre by pledging donations during the event, which was graced by Guest-of-Honour, Speaker of Parliament, Mr Tan Chuan-Jin.

NSC marked Family Day with a charity walk.



“As long as you can integrate work into your life in a way that makes you happy, that’s what matters.”

Associate Professor Daniel Fung
Chairman Medical Board, Institute of Mental Health

NHG Senior Management and staff celebrated Lunar New Year with a mass “Lohei”.

Building A Healthy Workforce

Through Education, Empowerment and Engagement, NHG takes a multi-dimensional approach – physical, mental, emotional and spiritual – to improve the well-being of our staff. We seek to foster a supportive and positive environment that helps them adopt a healthy lifestyle.

Going “Beyond the Label”

In October 2018, NHG supported *Beyond the Label* – a national campaign to raise awareness on stigma faced by persons with mental health conditions in society. NHG partnered IMH on series of activities, including lunchtime talks and film screenings on topics related to mental health, stress and anxiety. Staff visited the IMH Hydroponics Garden, an example of mental health rehabilitation and recovery.



Walk For Health

In conjunction with the Corporate Steps Challenge 2018, the *Food For Thought* series was launched where NHG HQ staff were encouraged to walk to nearby eateries which offer Healthier Choice menus. It complements HQ’s Department Exercise policy, where each department allocates two working hours a month to engage in physical activities in the vicinity to promote staff wellness.

NHG Family Celebrates Lunar New Year

NHG celebrated “*Chap Goh Mei*” (15th day of the Lunar New Year) in February 2019 with a “Lohei” session. The event was hosted by NHG Group CEO Professor Philip Choo and Senior Management for staff to usher in good health, happiness, growth, and prosperity.

WellCARE

In June 2019, Woodlands Health Campus (WHC) launched **WellCARE** (Wellness, CAre, Resilience and Engagement), a peer support programme that provides staff with a safe avenue to address their emotional health. Trained peer supporters encourage conversations through art jamming and emotional literacy workshops.



RECOGNISING OUR STAFF AND PARTNERS



Prof Pang Weng Sun (right) received the Lee Foundation-NHG Lifetime Achievement Award from Mdm Kay Kuok, Chairman, NHG.

NHG Awards 2019

41 individuals and 13 teams were recognised for their contributions to public healthcare at the annual NHG Awards. Held in May, Guest-of-Honour Mdm Kay Kuok, NHG Chairman, presented awards to winners including Professor Pang Weng Sun, Deputy Group CEO (Population Health), NHG. Professor Pang received top honours with The Lee Foundation - NHG Lifetime Achievement Award. This award acknowledges clinicians who have contributed significantly to elevate

the quality of public healthcare and the lives of Singaporeans. Professor Pang was commended for his pioneering work in Geriatric Medicine and Palliative Care, as well as his strategic leadership at the national level. Other awards presented were the NHG Distinguished Senior Clinician Award, NHG Distinguished Achievement Award, NHG Outstanding Citizenship Award, NHG Young Achiever Award, NHG Education Leaders Award and NHG Team Recognition Award.

NHG Quality Day 2018

NHG Quality Day was held in September 2018 with the theme of "Empowering Staff, Celebrating Joy in Improvement". It showcased the Clinical Practice Improvement Programme, and recognised the achievements made in quality improvement by staff and partners. Awards presented included the NHG Excellence in Action Awards (EIAA), NHG Exemplary Patient & Caregiver Awards (EPCA) and NHG Quality Improvement Awards (QIA). Participants were encouraged to stay involved, engaged and productive in our care transformation journey by keeping well at work.

NHG STAFF DINNER & DANCE 2019

Management and Staff joined in the NHG HQ Dinner & Dance 2019 held at Marina Mandarin Singapore in May. Themed "Healthy Living, Happy Life", staff bonded over a pre-event carnival, dinner and performances. Sixty-seven staff also received their Long Service Awards and Post-Retirement gifts.



NHG management and staff gathered for an evening of bonding.



I feel fortunate that I step into my office each day with a purpose and I leave feeling fulfilled with the work that I do.”

Muhamad Aidil Bin Baharom
Senior Executive, Communications,
Tan Tock Seng Hospital

TTSH Bestowed the SkillsFuture Employer Award

TTSH advocates continuous learning and seeks to build a progressive workplace through job redesign and the Adapt and Grow Professional Conversion Programme. The hospital clinched the SkillsFuture Employer Award in July 2018 for being an exemplary organisation that champions employees’ skills development and creates a culture of lifelong learning in the workplace.

TTSH Lauded For Excellence In Facilities Management

In October 2018, TTSH’s Facilities Management Office received the ‘Singapore Best Facilities Management Building Owner/Facility Occupier of the Year’ Resilience Excellence Award at the Singapore Facilities Management Awards 2018. The award highlights TTSH’s contributions to the knowledge, practical application and sustainable performance of facilities management in Singapore.



Assoc Prof Tham Kum Ying (centre) received the Nanyang Education Award (College).

Nanyang Education Award 2018

Associate Professor Tham Kum Ying, Education Director (TTSH), and Assistant Dean (Year 5), Lee Kong Chian School of Medicine (LKC Medicine), was awarded the Nanyang Education Award (College) at the annual Nanyang Technological University (NTU) Nanyang Awards held in September 2018. She was recognised for her excellence in teaching and mentorship, and for inspiring students and enriching their learning experience.

Yishun Health Holds Quality Convention

Yishun Health organised its Quality Convention in April 2018. Themed “Engaging Community, Engaging Health – The Way We Connect”, the event reiterated the importance of trust in building sustainable relationships with our patients, population and partners. Staff who displayed exemplary service received the Service Champion and Just-Do-It awards.





Work-life harmony is not always about the amount of time spent on work vis-à-vis play. At the end of the day, I gauge it from the quality of my relationships within and beyond the workplace.”

Ms Fiona Foo

Manager, Corporate Communications,
Institute of Mental Health

First Asian President Of IACAPAP

Associate Professor Daniel Fung, Chairman Medical Board, IMH, was elected President of the International Association for Child and Adolescent Psychiatry and Allied Professionals (IACAPAP) in July 2018. Assoc Prof Fung, the first Asian to assume this leadership in the organisation's 80-year history, will serve a four-year term from 2018 to 2022. The IACAPAP advocates the promotion of mental health and development of children and adolescents through policy, practice and research, with emphasis on multidisciplinary collaboration.



Distinguished Psychiatrist Award 2018

Associate Professor Chiam Peak Chiang, Vice Chairman Medical Board (Education) and Chief, Department of Geriatric Psychiatry, IMH, received the 2018 Distinguished Psychiatrist Award (DPA) in April 2018. Presented by the Singapore Psychiatric Association (SPA), it honours local psychiatrists who are distinguished and well-respected in their field, and also known for their clinical work, academic teaching, research, administration and/or invaluable voluntary contribution to the community.

Minister For Health Award 2018

Dr Susan Lim Pui San, Family Physician and Principal Staff, Toa Payoh Polyclinic, National Healthcare Group Polyclinics (NHGP), and a member of the Collaborative Prescribing (CP) Standing Committee, was presented the Minister for Health Award 2018, the highest accolade conferred by the Ministry of Health (MOH). She received the award at the MOH Appreciation and Awards Ceremony in November 2018. Dr Lim's contribution to the Committee has been critical in developing practice standards, competencies, and educational frameworks for CP, which plays a vital role in facilitating care transformation in hospitals and in the community.

Left: Assoc Prof Daniel Fung (1st row, 3rd from right) at IACAPAP 2018 in Prague, Czech Republic.
Below: NSC clinicians and members of the Dermatological Society of Singapore celebrate Singapore being selected to host the 25th World Congress of Dermatology 2023.





NHGP Wins Universal Design Awards 2019

In April 2019, Ang Mo Kio (AMK) Polyclinic and Yishun Polyclinic won the Gold Plus Award and Gold Award, respectively, at the Universal Design Awards 2019. Organised by the Building and Construction Authority (BCA), award winners were recognised for their exemplary demonstration in designing buildings that address the needs of communities and people and in fostering inclusiveness and engagement. AMK Polyclinic, which was redeveloped in June 2018, has special features such as a 'wheelchair tilter' for dental patients, and a community plaza.

NHGD Medical Dispatcher Given First Community Responder Award

Mr Mohamad Rizal Mohamad Zatt, a medical dispatcher with National Healthcare Group Diagnostics (NHGD), was presented the "First Community Responder Award" by the Singapore Civil Defence Force (SCDF) in February 2019 for rendering assistance to a road accident victim. Mr Rizal's courage and empathy stems from his personal experience of being the victim of a traffic accident, and he helps others who suffer similar plights.



Mr Mohamad Rizal Mohamad Zatt, a medical dispatcher with NHGD, was presented the "First Community Responder Award" by the Singapore Civil Defence Force (SCDF).

Healthcare Humanity Awards 2019



The Honourable Mention recipients at Healthcare Humanity Awards 2019.

PUBLIC EDUCATION Lifewise



**NHG Lifewise
WINNER
GRAND AWARD
APEX 2019 (USA)**
www.nhg.com.sg



“ We need to re-focus on the meaning of our work, to see how every minute at work directly contributes to our personal goal of giving care to people in need.”

Professor Chua Hong Choon
Deputy Group CEO (Clinical), NHG
& CEO, Institute of Mental Health





NHG Lunar New Year Media Lunch 2019

NHG hosted a Lunar New Year lunch for its media partners in January. Co-organised by Group Corporate Communications (GCC) and Population Health Office (PHO), some 40 print, broadcast and digital media representatives attended the event held at Royal Plaza at Scotts. News editors, correspondents, and producers joined our Senior Management from NHG to network and deepen



working ties. NHG also introduced its population health framework, *River of Life* (ROL) and its five care segments – Living Well, Living with Illness, Crisis and Complex Care, Living with Frailty, and Leaving Well. A panel discussion with NHG's ROL champions and clinicians followed, during which they highlighted the importance of preventive care, making care accessible, building trust, and the role of community in population health.





Year-end 'Thank You' Community

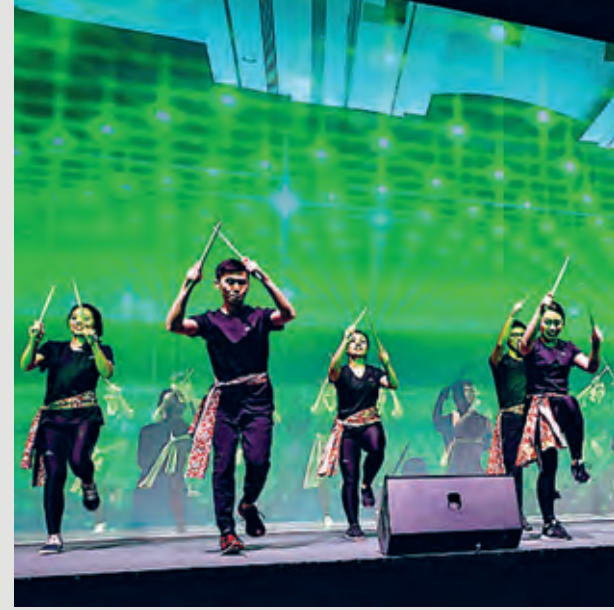
NHG Senior Management, friends and GCC uplifted the spirits of patients, caregivers and healthcare professionals through music performances, and art and craft during our year-end "Thank You" concert at the TTSH Atrium. Held in December 2018, the concert included a song item by *Christmas Angels*, made up of friends of NHG and their families, and a recital by Mr Ng Kok Wee, a "di-zi" (Chinese flute) player and member of The Purple Symphony, Singapore's first inclusive orchestra for musicians with special needs.



Left: Dizi player and member of The Purple Symphony Mr Ng Kok Wee.
Below (left): Patients and caregivers participating in a craft activity.
Below (right): Handing out the NHG Desk Calendar 2019 to visitors.



TAN TOCK SENG HOSPITAL CELEBRATES 175 YEARS OF CARE



In July 2019, Tan Tock Seng Hospital (TTSH) celebrated its 175th anniversary at the TTSH Founder's Day Dinner by announcing a range of initiatives intended to help seniors stay out of hospital and be treated closer to home. These include training healthcare staff at community hospitals, and having more health teams and volunteers to provide more localised care for seniors in their neighbourhoods.



The event was graced by Guest-of-Honour President Mdm Halimah Yacob, Health Minister Mr Gan Kim Yong, Mdm Kay Kuok, Chairman, NHG, and Professor Philip Choo, Group CEO, NHG. TTSH currently works with about 70 partners in Central Singapore, and each of the seven neighbourhoods is served by a multidisciplinary community health team comprising doctors, nurses, health coaches and operations staff.



The work of Tan Tock Seng Hospital and its partners has been very encouraging — bringing community partners together, anchoring its care in the community, contributing to capability building and empowering caregivers and volunteers to build a care ecosystem around the residents.”

Singapore President Mdm Halimah Yacob



The community health teams operate some 80 health posts located within partners' facilities enabling better access and communication, where they run various programmes to educate and improve the fitness of elderly patients. TTSH has also made inroads into the community through the following initiatives:

- TTSH's Centre for Health Activation has launched a programme, *Charge Up!*, with community partners to train volunteer carers in para-clinical skills such as medicine management and gait assessment.
- TTSH and Tsao Foundation's Community for Successful Ageing (*Comsa*) are running a pilot together to identify patients who might need early interventions, and to provide targeted care after they are discharged.
- TTSH will train healthcare staff at Kwong Wai Shiu Hospital (KWSH) to do more complex procedures to man a new Chronic Sick Unit which will be operating end of 2020 – the aim is for KWSH residents to receive appropriate care without being sent to acute hospitals for non-emergency cases.





Hopping On The “Do Good Bus”

As part of TTSH's 175th anniversary celebrations, its staff have been hopping on the “Do Good Bus”, and embarking on volunteering missions to help the less-fortunate. A collaboration with the hospital's community partners, this initiative began in February 2019. The first such mission took place in Ang Mo Kio where participants helped clean and organise the homes, and repack medication for elderly residents under the care of the Ang Mo Kio Family Service Centre COMNET Senior Centre. TTSH & Central Health CEO Professor Eugene Fidelis Soh and, Executive Director, Division of Central Health, Ms Loh Shu Ching, were among the volunteers. Such efforts help create a safer and healthier living environment for our senior residents, more so in Central Singapore where Ang Mo Kio has the highest number of elderly. Many of them are frail and face challenges in their everyday lives.

“We are not only concerned about the healthcare of our patients when they are in the hospital; when they return to the community, they also need good support and social care to keep up on their health and social needs.”

Professor Eugene Fidelis Soh
CEO, Tan Tock Seng Hospital & Central Health





I still enjoy working and learning. I have knowledge and experience which I can impart to my younger colleagues.”

Mr Harbhajan Singh
Emeritus Fellow & Senior Nurse Manager,
Tan Tock Seng Hospital



Mr Singh received the 60 Years Diamond Service Award at the TTSH Founder’s Day Dinner 2019 and was a Finalist for the The Straits Times Singaporean of the Year 2018.



**TTSH Charity Heritage Walk 2019:
Tan Tock Seng’s Journey**

In June 2019, Deputy Prime Minister Mr Heng Swee Keat and some 2,000 people participated in the TTSH Charity Heritage Walk 2019: Tan Tock Seng’s Journey. Organised by the TTSH Community Fund to commemorate the hospital’s 175th anniversary, participants included seniors living in Central Singapore, community partners, patients, staff and family of Mr Tan Tock Seng. The walk flagged off at Pearl’s Hill – the hospital’s original site – and finished at its current location in Novena. \$1.2 million was raised through the event and will be used to help the needy and elderly patients, and fund care programmes in the community.





IMH 90th Anniversary Concert

As part of IMH's year-long 90th anniversary celebrations, a special concert was held at the Esplanade Concert Hall in October 2018 to raise funds for the Woodbridge Hospital Charity Fund (WHCF). Graced by Guest-of-Honour President Mdm Halimah Yacob, *Diva vs Queen: Who Will Win?* featured IMH staff, as well as popular local artistes who pitted their vocal prowess against each other in "Jazz-pop versus Getai" performances. A total of \$1.05 million was raised for WHCF through concert ticket sales, as well as corporate and individual donations. WHCF supports patient rehabilitation and employment, caregiver training, patient welfare, advocacy and education, and mental health innovation and research.





“Talent wins games, but teamwork and intelligence win championships.”



FROM SINGAPORE TO SINGAPOREAN



Celebrating Singapore's Colourful History

2019 marks the 200th anniversary of Sir Stamford Raffles' arrival on our shores. The NHG Family, together with our Patients, Friends and Partners in the community, commemorated the milestone event in our own special way. We also reflected on the selfless contributions of our founding fathers that transformed our island-nation from a fishing village to the successful global city it is today.

Left: IMH organised a National Day party for their patients.

The Bicentennial Experience

Held at Fort Canning Centre, *From Singapore, to Singaporean: The Bicentennial Experience* is a signature event of Singapore's Bicentennial celebrations. The show, which features theatrical and multi-media acts, gives rich insights into Singapore's 700-year history leading up to, and beyond 1819 to present.





NHG celebrating our National Day.



NHG Contingent Marches At NDP 2019

On 9 August, a 44-strong contingent of staff from NHG HQ and Institutions marched in the 2019 National Day Parade (NDP). Comprising clinicians, nurses, Allied Health Professionals, as well as ancillary and administration colleagues, NHG was one of 38 contingents participating in the "Parade and Ceremony" segment comprising social and economic organisations, highlighting their role and contributions to our nation.



AWARDS AND ACCOLADES

INTERNATIONAL AWARDS	
APEX 2019	6
ASIAN ELDERLY CARE AWARDS	5
ASIAN HOSPITAL MANAGEMENT AWARDS	5
ASEAN ENERGY AWARDS	1
o Tropical Building (First Runner-Up)	1
18TH CCAS* INTERNATIONAL CONTACT CENTRE AWARDS	2
o Best In-house Corporate Centre Corporate Award (Bronze)	1
o Individual – Best Customer Service Professional (Bronze)	1
NATIONAL AWARDS	
AIC COMMUNITY CARE EXCELLENCE AWARDS	36
COMMUNITY IN BLOOM AWARDS (Platinum)	1
HEALTHCARE HUMANITY AWARDS 2018	13
HOSPITAL PHARMACIST OF THE YEAR	1
MAY DAY AWARDS 2018	3
NATIONAL DAY AWARDS	130
o The Public Administration Medal (Silver)	1
o The Public Administration Medal (Bronze)	4
o The Commendation Medal	19
o The Efficiency Medal	25
o The Long Service Medal	81
NATIONAL MEDICAL RESEARCH COUNCIL (NMRC) AWARDS	14
o Clinician Scientist Award 2018	5
o Clinician Scientist/Clinician Investigator Salary Support Programme	6
o CS-IRG New Investigator Grant	1
o Research Training Fellowship 2018	2
NATIONAL MEDICAL EXCELLENCE AWARDS	2
o National Outstanding Clinical Quality Champion Award	1
o National Clinical Excellence Team Award	1
NATIONAL HEALTHCARE IMPROVEMENT EXCELLENCE AWARD	1
NATIONAL HEALTH IT EXCELLENCE AWARD	1
NURSES MERIT AWARD	26
OUTSTANDING SOCIAL WORKER AWARD 2018	1
PRESIDENT'S AWARD FOR NURSES 2018	2
PRESIDENT'S VOLUNTEERISM AND PHILANTHROPY AWARD 2018 – Individual	1
PUBLIC SECTOR TRANSFORMATION AWARDS	11
o Best Practice Award	1
o Distinguished EXCEL Innovation Champion	1
o Distinguished Star Service Individual	2
o EXCEL Innovation Project	1
o Exemplary Leader Award	1
o Exemplary SkillsFuture @ Public Service Award	1
o Star Service Team	2
o Star Managers	2
TAN CHIN TUAN NURSING AWARD	3
SINGAPORE ENVIRONMENTAL ACHIEVEMENT AWARD (Public Sector)	1
SINGAPORE FACILITIES MANAGEMENT BUILDING OWNER/FACILITY OCCUPIER OF THE YEAR (Excellence Award)	1
SKILLSFUTURE EMPLOYER AWARDS	1

AWARDS AND ACCOLADES

TERTIARY EDUCATION INSTITUTION AWARDS	
NHG-LEE KONG CHIAN SCHOOL OF MEDICINE	4
○ NHG-LKCMedicine Clinician-Scientist Career Scheme (Junior) 2018	1
○ NHG-LKCMedicine Clinician Scientist Fellowship 2018	3
NUS YONG LOO LIN SCHOOL OF MEDICINE	40
○ 2018 Dean's Award for Teaching Excellence	15
○ Clinical Training Excellence Award	3
○ Clinical Training Merit Award	1
○ Junior Doctor Teaching Award	11
○ Special Recognition Award	10
NHG AWARDS	
NHG DEVELOPMENT AWARDS 2018	55
○ HMDP* (Leadership)	2
○ HMDP (Team-Based)	7
○ HMDP (Medical)	31
○ HMDP (Admin - Advanced Management Programme (AMP))	2
○ HMDP (Admin - Executive Development Programme (EDP))	3
○ HMDP (Allied Health Professionals)	6
○ HMDP (Nursing)	3
○ Postgraduate Self Development Programme (PSDA)	1
NHG RECOGNITION AWARDS 2018	42
○ Lee Foundation – NHG Lifetime Achievement (LA)	1
○ Distinguished Senior Clinician Award (DSCA)	2
○ Distinguished Achievement (DA)	3
○ Outstanding Citizenship (OC)	8
○ Young Achiever (YA)	15
○ Team Recognition Award (TRA)	13
NHG TEACHING EXCELLENCE AWARDS 2018	205
○ NHG Education Leaders Award	6
○ NHG Inter-professional Teaching Award	14
○ NHG Outstanding Education Partners Award	10
○ NHG Teaching Award for Senior Doctors	19
○ NHG Teaching Award for Junior Doctors	26
○ NHG Teaching Award for PGY1s	16
○ NHG Outstanding Nurse Teachers Award	15
○ NHG Teaching Award for Nursing Preceptors	62
○ NHG Teaching Award for Pharmacy Senior Preceptors	5
○ NHG Teaching Award for Pharmacy Preceptors	8
○ NHG Teaching Award for Allied Health Senior Educators	8
○ NHG Teaching Award for Allied Health Educators	16
NHG QUALITY DAY AWARDS 2018	60
○ NHG Excellence in Action Award (EIAA)	30
○ NHG Exemplary Patient & Caregiver Award (EPCA)	9
○ NHG Quality Improvement Award (QIA)	21

* Contact Centre Association of Singapore (CCAS)

^ Health Manpower Development Plan (HMDP)

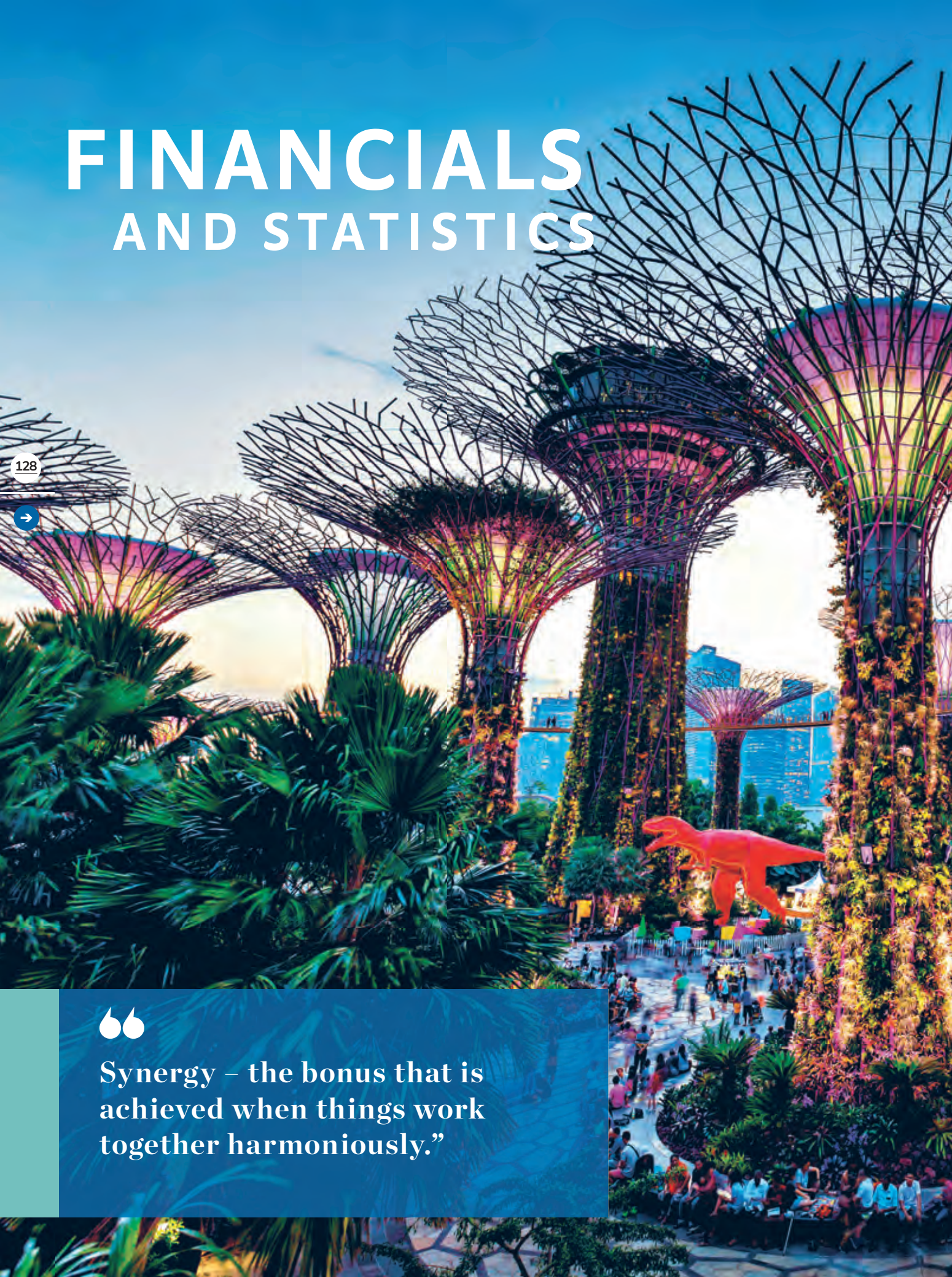


FINANCIALS AND STATISTICS

128



Synergy – the bonus that is achieved when things work together harmoniously.”







WORKLOAD FIGURES



BED COMPLEMENTS (Acute Hospitals)

Institutions: TTSH, NCID, KTPH & IMH

FY2018: 4,649

FY2017: 4,553



BED COMPLEMENTS (Community Hospital)

Institution: YCH

FY2018: 258

FY2017: 262



BED OCCUPANCY RATE (Acute & Community Hospitals)

Institutions: TTSH, NCID, KTPH, IMH & YCH

FY2018: 90%

FY2017: 93%



INPATIENT DISCHARGES (Acute & Community Hospitals)

Institutions: TTSH, NCID, KTPH, IMH & YCH

FY2018: 119,813

FY2017: 120,510



INPATIENT DAYS (Acute & Community Hospitals)

Institutions: TTSH, NCID, KTPH, IMH & YCH

FY2018: 1,487,514

FY2017: 1,512,774



AVERAGE LENGTH OF STAY (IMH – Short Stay)

Institution: IMH (short stay)

FY2018: 29.2

FY2017: 29.7

IMH (long stay) for FY2018 is 603.3 days (FY2017: 732.6 days) and this relates to the average length of stay of long-staying patients who were physically discharged during the year.

**AVERAGE LENGTH OF STAY** (Acute Hospitals)**Institutions:** TTSH, NCID & KTPH

FY2018: 7.2

FY2017: 7.3

**AVERAGE LENGTH OF STAY** (Community Hospital)**Institution:** YCH

FY2018: 25.9

FY2017: 24.6

**DAY SURGERIES****Institutions:** TTSH, KTPH & AdMC

FY2018: 100,730

FY2017: 101,632

**SOC ATTENDANCES****Institutions:** TTSH, NCID, KTPH, IMH, NSC & AdMC

FY2018: 1,454,593

FY2017: 1,447,633

**A&E ATTENDANCES** (Acute Hospitals)**Institutions:** TTSH & KTPH

FY2018: 283,936

FY2017: 300,927

**DAY REHABILITATION CENTRE ATTENDANCES** (Community Hospital)**Institution:** YCH

FY2018: 2,982

FY2017: 2,495

**POLYCLINIC ATTENDANCES**

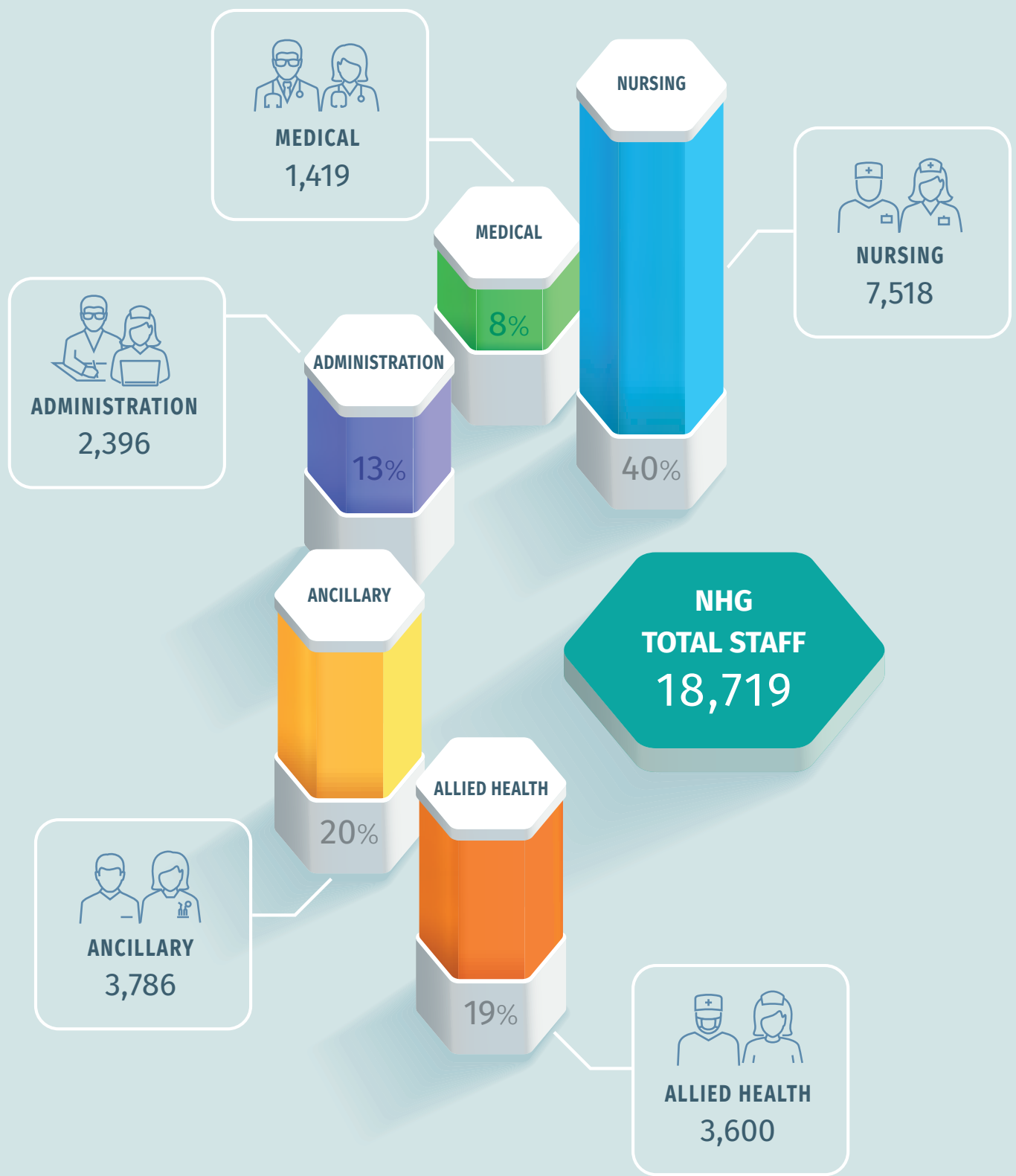
FY2018: 2,324,553

FY2017: 2,880,847



DISTRIBUTION OF STAFF

As At 31 March 2019 (FY2018)



“The first wealth is health.”



ABOUT OUR INSTITUTIONS



TAN TOCK SENG HOSPITAL

11 JALAN TAN TOCK SENG
SINGAPORE 308433
TEL: 6256 6011
FAX: 6252 7282
www.ttsh.com.sg

Tan Tock Seng Hospital (TTSH) is one of Singapore's largest multi-disciplinary hospitals with 175 years of pioneering medical care and development. Today, with 1,700 beds and 9,000 staff, TTSH serves the 1.4 million population in Central Singapore, in partnership with patients, Primary Care and community partners.

The hospital is a member of NHG and part of Singapore's public healthcare system, hosting the National Centre for Infectious Diseases, Institute for Geriatrics & Active Ageing, NHG Eye Institute, and the Centre for Healthcare Innovation.

Recognised as AON Hewitt Best Employer (Singapore) in 2013 and 2015, and Hay's Employer of Choice at the HRM Awards 2018, TTSH believes in Better People delivering Better Care and building a Better Community to achieve Better Health and Better Value for the population it serves.

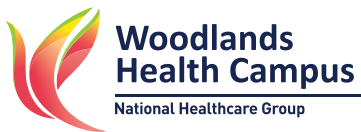


KHOO TECK PUAT HOSPITAL

90 YISHUN CENTRAL
SINGAPORE 768828
TEL: 6555 8000
FAX: 6602 3700
www.ktph.com.sg

Khoo Teck Puat Hospital (KTPH) is a 761-bed general and acute care hospital which opened in June 2010. Serving more than 800,000 people living in the north of Singapore, KTPH combines medical expertise with high standards of personalised care, set within a healing environment, to provide care that is good enough for our own loved ones. From intuitive wayfinding to logical clustering of services, KTPH's design is focused on providing a hassle-free experience for patients.

The hospital has been designed with patients' comfort in mind. Since its opening, the building has garnered numerous awards for its green and energy efficient design. Patients can enjoy comfortable accommodation in different categories of wards with views of greenery and naturally cool air from improved ventilation. KTPH also provides a wide range of outpatient specialist services.



WOODLANDS HEALTH CAMPUS

CORPORATE OFFICE
9 MAXWELL ROAD
MND COMPLEX ANNEX A
#03-01A
SINGAPORE 069112
TEL: 6681 5999
www.whc.sg

The 1,800-bedded Woodlands Health Campus (WHC) is a purpose-built Campus comprising a fully integrated acute and community hospital, Specialist Outpatient Clinics, and Intermediate and Long-Term Care facility. It is slated to open progressively from 2022.

WHC aims to reinvent the way care is delivered by breaking organisational and process boundaries — to provide seamless integration of care within and beyond hospital walls. It will achieve this by leveraging SMART technology to enhance care within the hospital, and extend the reach of its healthcare professionals into the community. Work has already begun at WHC's pre-operations wards to test innovation and user-friendly solutions for inpatient care, emergency medicine, pharmacy, logistics, and the community.



INSTITUTE OF MENTAL HEALTH

BUANGKOK GREEN MEDICAL PARK
10 BUANGKOK VIEW
SINGAPORE 539747
TEL: 6389 2000
FAX: 6385 1050
www.imh.com.sg

The Institute of Mental Health (IMH) is a 2,000-bed acute tertiary psychiatric hospital. Set amidst 23 hectares of serene surroundings, IMH offers a multidisciplinary and comprehensive range of psychiatric, rehabilitative, and counselling services in both hospital and community-based settings to meet the needs of children and adolescents, adults, and the elderly. Besides providing patient-centred clinical services, IMH trains the current and next generation of clinicians, nurses, and allied health professionals in psychiatry and conducts research related to mental health.





YISHUN COMMUNITY HOSPITAL

2 YISHUN CENTRAL 2
SINGAPORE 768024
TEL: 6807 8800
www.yishuncommunityhospital.com.sg

Opened in November 2016, Yishun Community Hospital (YCH) is a 428-bed hospital which provides intermediate care for recuperating patients who do not require the intensive services of an acute-care hospital. Apart from providing rehabilitation and sub-acute care services, YCH provides geriatric, dementia, and palliative care services, to help support a growing, ageing population in Singapore.



NATIONAL HEALTHCARE GROUP POLYCLINICS

HEADQUARTERS
3 FUSIONOPOLIS LINK #05-10
NEXUS@ONE-NORTH (SOUTH LOBBY)
SINGAPORE 138543
CONTACT CENTRE: 6355 3000
www.nhgp.com.sg

National Healthcare Group Polyclinics (NHGP) forms the primary healthcare arm of NHG. Its six polyclinics serve a significant proportion of the population in the central and northern parts of Singapore.

NHGP provides a comprehensive range of health services for the family, functioning as a one-stop health centre providing treatment for acute medical conditions, management of chronic diseases, women & child health services, and dental care. The focus of NHGP's care is on health promotion and disease prevention, early and accurate diagnosis, disease management through physician led team-based care, as well as enhancing the capability of Family Medicine through research and teaching.

Through the Family Medicine Academy and the NHG Family Medicine Residency Programme, NHGP plays an integral role in the delivery of Primary Care training at medical undergraduate and post-graduate levels. With the Primary Care Academy, NHGP provides training to caregivers and other primary care counterparts in the community sector.



NATIONAL SKIN CENTRE

1 MANDALAY ROAD
SINGAPORE 308205
TEL: 6253 4455
FAX: 6253 3225
www.nsc.com.sg

The National Skin Centre (NSC) is an outpatient specialist dermatological centre with a team of dermatologists who have the experience and expertise to treat a wide variety of skin conditions. The Centre also aims to facilitate subspecialisation and be the national focus for the treatment, research, and training on all aspects of skin diseases.

With a comprehensive range of subspecialty services, and serving about 80 per cent of dermatology outpatients in Singapore, NSC is firmly established as a reputable dermatology centre in Singapore and the region. NSC also collaborates with the Agency for Science, Technology and Research (A*STAR) and Nanyang Technological University (NTU) to operate the Skin Research Institute of Singapore (SRIS), which focuses on conducting high impact, inter-disciplinary skin research designed to translate into improved health outcomes and quality of life.



NATIONAL CENTRE FOR INFECTIOUS DISEASES

16 JALAN TAN TOCK SENG
SINGAPORE 308442
TEL: 6256 6011
www.ncid.sg

The National Centre for Infectious Diseases (NCID) is a purpose-built facility designed to strengthen Singapore's capabilities in infectious disease management and prevention. NCID houses clinical services, public health, research, training and education, and community engagement functions under one overarching structure. In addition to the clinical treatment of infectious diseases and outbreak management, the expanded roles and functional units of NCID include the National Public Health and Epidemiology Unit, the National Public Health Laboratory, the Infectious Disease Research and Training Office, the Antimicrobial Resistance Coordinating Office, and the National Public Health programmes for HIV and Tuberculosis. Benchmarked to international standards and best practices for treatment and safety, NCID will better enhance Singapore's ability to respond effectively to infectious outbreaks.





ADMIRALTY MEDICAL CENTRE
 676 WOODLANDS DRIVE 71 #03-01
 KAMPUNG ADMIRALTY
 SINGAPORE 730676
 TEL: 6807 8000
www.admiraltymedicalcentre.com.sg

Admiralty Medical Centre (AdMC) is a one-stop medical centre for outpatient clinic consultation, day surgery, rehabilitation and diagnostic services, as well as community health outreach activities. It provides selected specialist outpatient services, day surgery procedures and endoscopies for patients. The medical and surgical services are run by clinical departments from Khoo Teck Puat Hospital. AdMC aims to provide hassle-free, holistic specialist care in a convenient community setting in collaboration with other healthcare partners.



INSTITUTE OF GERIATRICS AND ACTIVE AGEING
 CENTRE FOR GERIATRIC MEDICINE
 TEL: 6359 6100 FAX: 6359 6101

The Institute of Geriatrics and Active Ageing (IGA) was set up to establish new directions for geriatric care in Singapore. Through research innovations and continuous education, the Institute aims to enable the delivery of holistic care to improve the health, independence, safety, and quality of life for the elderly.



NATIONAL HEALTHCARE GROUP DIAGNOSTICS
 3 FUSIONPOLIS LINK #05-08
 NEXUS@ONE-NORTH (SOUTH LOBBY)
 SINGAPORE 138543
 CALL CENTRE: 6275 6443 (6-ASK-NHGD)
 FAX: 6496 6625
www.diagnostics.nhg.com.sg

National Healthcare Group Diagnostics (NHGD) is a business unit of NHG, providing quality laboratory and imaging services at the primary healthcare level. The first to introduce Tele-radiology in Singapore and via its extensive network of static and mobile centres, NHGD provides one-stop imaging and laboratory services which are accessible, cost-effective, seamless, timely, and accurate. In a continuous quest for quality excellence, NHGD received international accreditation such as ISO 15189:2012 – Particular Requirements for Quality and Competence in Medical Testing by Singapore Accreditation Council.



NHG PHARMACY
 3 FUSIONPOLIS LINK #05-07
 NEXUS@ONE-NORTH (SOUTH LOBBY)
 SINGAPORE 138543
 TEL: 6340 2300
www.pharmacy.nhg.com.sg

National Healthcare Group Pharmacy (NHGPh), a business unit of NHG, provides a wide range of pharmacy services to meet the needs of the community. Our pharmacies offer trusted services to help the community use their medication in a safe, effective, and responsible manner. As the leading provider of pharmacy services in the long-term care sector, we actively address the needs of the senior community and their caregivers. Our team of pharmacists provides clinical pharmacy services to help customers achieve the best results for their prescribed therapy by working with other members of the healthcare team. Customers can seek advice on medication and purchase quality and affordable healthcare essentials from our retail branches and online store.



NHG COLLEGE
 3 FUSIONOPOLIS LINK #03-08
 NEXUS@ONE-NORTH (SOUTH LOBBY)
 SINGAPORE 138543
www.college.nhg.com.sg

NHG College plays an instrumental role in facilitating continuous learning and development of our workforce, as well as driving leadership development and systems improvement in NHG. It collaborates with renowned institutions and industry partners to build collective capabilities of NHG leaders, educators, healthcare professionals, and staff in managing the health of the population.



NHG EYE INSTITUTE
 TEL: 6357 8000
www.tei.nhg.com.sg

The NHG Eye Institute (NHGEI) was set up to meet the increasing demand for eyecare services. By combining the clinical expertise and facilities across NHG Institutions, it is able to achieve greater synergy and provide quality eye care to patients. It also works with various organisations – such as the Singapore Eye Research Institute, National University of Singapore and clinical research organisations – to undertake clinical research programmes relevant to its patients.



NHG HEART INSTITUTE

Established on 1 June 2019, the NHG Heart Institute encompasses the cardiology departments of Tan Tock Seng Hospital, Khoo Teck Puat Hospital and Woodlands Health Campus. It seeks to strengthen the practice of cardiology across NHG through good clinical and administrative governance, consistency in standards of care, and harmonisation of manpower to facilitate right-siting of services and provide evidence-based care. It also serves as a platform for collaboration and coordination for clinical practice, research, education, training, and population health. NHG Heart Institute will partner providers in Primary Care to deliver seamless care and transition for our patients in the community.



NHG 1-HEALTH
 4190 ANG MO KIO AVENUE 6
 LEVEL 3, BROADWAY PLAZA
 SINGAPORE 569841
 TEL: 6554 6868

NHG 1-Health was set up in 2008 with the goal of bringing excellent healthcare services closer to our patients' doorstep. Located in a populated mature estate in Ang Mo Kio, the services provided are streamlined to the following day surgeries/endoscopies: cataract surgery; gastroscopy; and colonoscopy. All staff, equipment, and governance are under the charge of Tan Tock Seng Hospital.

USEFUL LINKS & HELPLINES



MENTAL HEALTH

- IMH Emergency Hotline:** 6389 2003 / 2004
- Mental Health Helpline:** 6389 2222
- Singapore Association for Mental Health (SAMH)**
- Helpline:** 1800 283 7019
- Silver Ribbon (Singapore):** 6386 1928
- Community Health Assessment Team (CHAT):** 6493 6500 / 6501
- Community Wellness Clinics (CWCs)**
 - Geylang Polyclinic, 21 Geylang East Central, Singapore 389707
 - Queenstown Polyclinic, 580 Stirling Road, Level 4, Singapore 148958
 - Both CWCs open Mon, Tue and Thu, 8am to 5:30pm; Wed, 8am to 1pm; Fri, 8am to 5pm

CAREGIVER SUPPORT

- For caregivers to persons with mental illness:**
- Caregiver Alliance:** visit cal.org.sg/about-mental-illness
- Join support groups:** visit www.samhealth.org.sg/caregiver-support
- For caregivers to the elderly:**
- The Seniors Helpline:** 1800 555 5555
- Singapore Silver Line:** 1800 650 6060
- Alzheimers' Disease Association Singapore Helpline:** 6377 0700 or visit www.alz.org.sg
- AWWA Centre for Caregivers:** 6511 5318 or visit caregiversconnect.sg
- Samaritans of Singapore (SOS):** 1800 221 4444
- Caregiving Welfare Association:** 6466 7957 or visit www.cwa.org.sg
- Touch Caregivers Support:** 6804 6565 or visit www.caregivers.org.sg
- Agency For Integrated Care (AIC):** 1800 650 6060 or visit www.silverpages.sg
- Tsao Foundation:** 6593 9500 or visit www.tsaofoundation.org
- Sage Counselling Centre:** 6354 1191 or visit www.sagecc.org.sg

HOSPICE & PALLIATIVE CARE

- Singapore Hospice Council:** 6538 2231 or visit singaporehospice.org.sg
- Dover Park Hospice:** 6500 7272 or visit www.doverpark.org.sg
- HCA Hospice Care:** 6251 2561 or visit www.hca.org.sg/hospice





Keep your vitality.
A life without health
is like a river
without water.”





NHG IS A REGIONAL HEALTH SYSTEM FOR SINGAPORE



“Happiness is the new rich. Inner peace is the new success.
Health is the new wealth. Kindness is the new cool.”



Adding years of healthy life

www.nhg.com.sg [NationalHealthcareGroup](https://www.facebook.com/NationalHealthcareGroup) [@nhgig](https://www.instagram.com/nhgig)