CSC

ETHOS

A PUBLICATION OF CIVIL SERVICE COLLEGE, SINGAPORE

ISSUE 26
NOV 2023

The Next Bound for Health and Healthcare
Ng How Yue

Designing A Healthier City
Tai Lee Siang

Encouraging Healthier Choices: Helping People Take Better Care of Themselves
Rory Gallagher and Serene Koh

ETHOS

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ETHOS is circulated to the policymaking community in Singapore as well as to a select international readership.

We welcome contributions, suggestions and Letters to the Editor. The editorial team reserves the right to select, edit and publish articles according to its editorial policy. All correspondence should be directed to:

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Designed by Oxygen Studio Designs Pte Ltd

ISSN: 0218-799X


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Editorial

by **Dr Alvin Pang**
Editor-in-Chief
with **Dr Clive Tan**
Guest Editor

The COVID-19 crisis is the starkest recent reminder that ensuring a people's health is a task vital to a society's wellbeing, and a responsibility that extends well beyond the ambit of healthcare professionals: it is a critical aspect of governing well, and rests on a whole-of-society will to take care of one another and ourselves. The pandemic is by no means the only impetus driving a tidal change in healthcare. A silvering population, resource constraints, new affordances in medical, digital and data capabilities, and fresh insights into how care is best provided have moved Singapore, as elsewhere, to envision a more holistic and sustainable approach to looking after our people for the long term (*p. 6*).

The Healthier SG initiative, announced in 2022 and launched in July 2023, is an important first step in reframing how we think about health and care in Singapore. It is part of a broader effort to lay the technical, infrastructural and administrative groundwork for a whole suite of innovative health-related applications and solutions, while activating both individual and communal ownership of health (*p. 18*). In doing so, opportunities for providing and receiving attentive care will be greatly enhanced, beyond what centralised institutions such as hospitals alone can sustainably offer.

The implication is that the health and wellbeing of Singaporeans is a broader societal issue with ramifications for all aspects of public service work. It involves questions about how we choose to live, work and play in future, what kind of urban environment will support our living well (*p. 30*), and what we can do to bring about a more caring, healthful Singapore for all.

There is much cause for optimism. The advancement of data and analytical tools, which has transformed many industries and lifestyles, will also benefit the health sector. It will enable

increasingly personalised and effective forms of care and prevention that, done well, could help nip potential health issues in the bud before they cause concern (*p. 38*). To support these and other advances, Singapore is developing groundbreaking regulations that will allow both public and private health records to come under one national database, with safeguards to ensure that this intimate personal data is managed responsibly and used appropriately (*p. 46*). Such information will strengthen the core relationship between patients and their primary care doctors (*p. 54*), by offering fuller insights into a patient's health and medical status. It could also help track progress towards agreed outcomes (*p. 64*), and in time reveal new and more impactful ways to improve decision-making towards health goals, both at an individual and population scale (*p. 74; p. 84*).

Giving patients agency over their health—which is to say giving Singaporeans ownership of their wellbeing—*works*. It is also part of a healthy broader movement in governance that values working with the public, and across boundaries, to co-design and co-craft our collective futures (*p. 92*). Game-changing as new technology and new approaches may be, they are a means to better realise what good caregivers and public officers have long understood. A patient—a citizen—is a human being with diverse and interdependent needs, including the economic and the social, that must also be looked after—and it takes a whole village to do so (*p. 100*). Much authority and regard are vested in the healthcare profession, and rightly so, for the skill, leadership and vital service they provide (*p. 110*). But regardless of where and how we serve, we can and must pool our wits and will, drawing on our empathy, humility and imagination, in caring for the future wellbeing of Singapore.

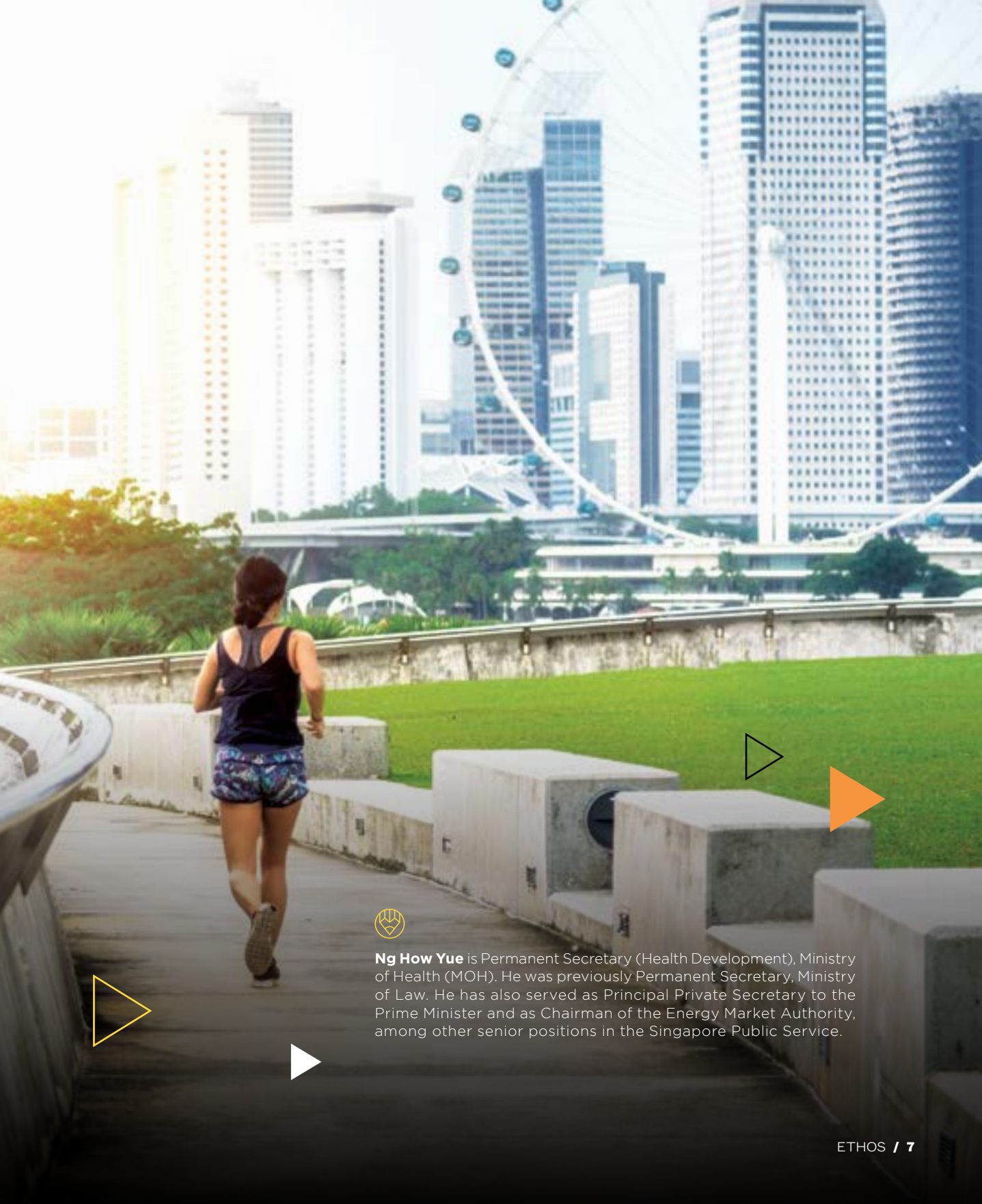
We wish you an inspiring and illuminating read. ■

THE NEXT BOUND

for Health and Healthcare

by **Ng How Yue**

Strong community relationships, cross-sector partnerships and informed personal agency pave the way for a healthier Singapore for the future.



Ng How Yue is Permanent Secretary (Health Development), Ministry of Health (MOH). He was previously Permanent Secretary, Ministry of Law. He has also served as Principal Private Secretary to the Prime Minister and as Chairman of the Energy Market Authority, among other senior positions in the Singapore Public Service.

Everything affects health, but not everybody thinks health is their problem. Yet, maybe this point of view is changing as the COVID-19 pandemic has shown how a health threat can cause massive disruption and affect most aspects of life… Through [H]ealth for All Policies, health is put at the forefront, highlighting what the health sector can do for other sectors while simultaneously attaining co-benefits for its own sector."

▶ The Lancet Public Health, 2022[1]

Health extends beyond our hospitals and clinics and into homes and communities. All of us have an interest in creating a healthy society for all.

There is a pressing need for us to improve our population's health. Most of us are familiar with the oft-quoted statistic, that in 2030 approximately one in four Singaporeans would be aged 65 and above, up from about one in six today.[2] For those 65 and above, the likelihood of being hospitalised quadruples.[3] Furthermore, Singaporeans are already losing up to a decade of healthy life largely due to chronic conditions.[4] Cardiovascular diseases, cancers, and diabetes account for about 35% of our total disease burden.[5] Living with one or more of these conditions compromises our quality of life and increases caregiving needs. On a broader scale, they impose additional strain on our healthcare resources.

The good news is that our health is not fixed and can be improved, both individually and as a population. We know that an unhealthy diet, physical

inactivity, obesity, and tobacco use are major contributors to cardiovascular disease, cancers, and diabetes. And now, more than ever before, we have information and sophisticated tools at our fingertips to help prevent or delay the deterioration of these conditions.

PREVENTION ON ALL LEVELS, WITH ALL PARTNERS

At the Ministry of Health (MOH), we are shifting the centre of gravity of healthcare towards prevention on all levels: keeping healthy individuals well; early detection and intervention; and mitigating health deterioration. On this journey of transformation, MOH recognises that we cannot do everything on our own. We are making a conscious effort to work across silos, and build trust and confidence with partners.

To strengthen preventive measures, we are partnering General Practitioners (GPs) and polyclinics to engage more Singaporeans through Healthier SG. Most patients today visit doctors on an ad-hoc basis only when a concern arises or if they need a medical certificate. But the research has shown that those who have a regular family doctor are generally healthier and require fewer visits to emergency departments and hospitals. Under Healthier SG, we aim to strengthen the regular doctor-patient relationship and increase the emphasis on maintaining or improving the individual's health.

Family doctors are trained to care for individuals of all ages across a range of healthcare needs and be their main care provider. We can expect to see an increasing number of ageing patients with multiple chronic conditions. They will benefit from more support to live well and improve their health in the community, which is preferable to providing them with more and more healthcare services after their health deteriorates. To build a high-quality primary care sector capable of meeting these growing care needs, we need our primary care doctors to be trained in Family Medicine. MOH is working with the family medicine training committees, College of Family Physicians Singapore, and other partners involved in Family Medicine training to ensure there is sufficient training capacity and strong support for GPs to upskill and attain the relevant postgraduate qualifications for Family Physician accreditation.

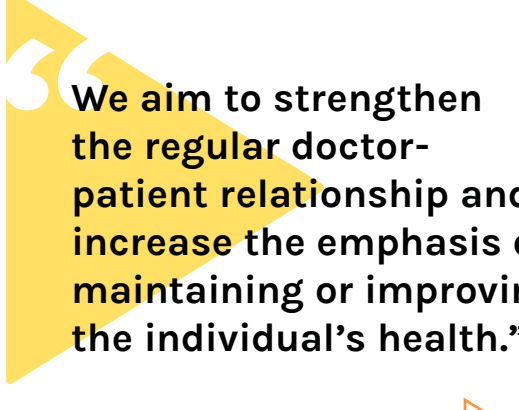


Figure 1. Healthcare clusters, as regional health managers, will organise community partners in support of better health outcomes.

Primary and community care providers are also crucial in supporting mental health needs. Mental health and wellbeing came to the fore during the last few years, when the COVID-19 pandemic exacerbated existing stressors and brought about new ones. On top of ongoing efforts by community outreach and intervention teams, MOH is working with partners in primary and community care to increase mental health literacy across the population.

Our three healthcare clusters—SingHealth, National University Health System (NUHS), and National Healthcare Group (NHG)—who have traditionally built up strong capabilities in specialist medical care, acute care, and primary care—will do more in the prevention space. A big part of this involves working with community providers to integrate services and deliver more comprehensive care to residents. Over the last few years, clusters have put in place geographical-based community nursing teams, so residents can consult community nurses and receive health advice at health posts located conveniently within Active Ageing Centres (AACs), Community Centres (CCs), Residents' Corners (RCs), and Social Service Offices (SSOs). Since 2022, we have also worked with the Ministry of Social and Family Development (MSF) to pilot Family Nexus, which provides children and their families with a "one-stop shop" near their homes to access services across different domains. With Family Nexus, couples and families with young children can receive health and social support in a single session.

To facilitate the transition of patients back into the community after hospital episodes, the clusters have also been implementing the "Hospital-to-Home" programme. Post-discharge patients with complex needs are managed by a multidisciplinary care team who helps to assess their health and psychosocial needs, and follows up accordingly.

ADDRESSING UNDERLYING SOCIAL AND ENVIRONMENTAL CONDITIONS

Beyond preventive care, MOH is broadening our view on what factors contribute to poor health. Many of them are underlying social or environmental conditions that are much harder to address, and require concerted and coordinated efforts beyond MOH. The World Health Organisation states that health inequities are greatly influenced by "non-medical factors that influence health outcomes…the conditions in which people are born, grow, work, live, and age". We are grateful that different Ministries across the public sector are working alongside us, to shape a Healthier Singapore for the benefit of all our residents.

Schools have been strong partners for us in laying the foundations of health literacy. Through the years, the Ministry of Education (MOE) has worked with MOH to incorporate health education in its curriculum, from early childhood all the way to tertiary education. School health programmes started being rolled out in as early as the 1930s, and have evolved over the years to stay relevant to each new generation of students. Research findings show that good health habits such as proper diet, sleep, and device use, if inculcated from young, could have a profound impact on one's cognitive development and wellbeing later on in life. We are working with MOE and the Early Childhood Development Agency (ECDA) to roll out a more holistic school health package that will give every child a good start in fostering lifelong health habits from young. This will encompass evidence-based programmes and interventions that

> **"Health inequities are greatly influenced by 'non-medical factors that influence health outcomes… the conditions in which people are born, grow, work, live, and age'."**

“We want to strengthen Singapore’s ‘social infrastructure’ to make our environment more conducive for taking up healthier lifestyles.”

promote good health and address key health issues—such as obesity, screen and device usage, as well as smoking and vaping—among youth.

We are also harnessing the power of social connectedness in improving health and wellbeing. On top of our well-established physical infrastructure of green spaces and fitness amenities, we want to strengthen Singapore’s “social infrastructure” to make our environment more conducive for taking up healthier lifestyles.

One example is the Active Health Labs by Sport Singapore, which provides affordable and accessible health and

wellness coaching by trained coaches. As part of Healthier SG, we are encouraging primary care doctors to refer their patients to these sorts of programmes, so that residents can get active and form new habits in a safe and supportive context.

Another example is the Health Promotion Board's (HPB) Healthy Workplace Ecosystems. Through partnerships with landlords, developers, and business associations, HPB has been bringing initiatives such as mass workouts and health talks to workers in various precincts and workplace clusters, tailored to suit their needs and demographics. Today, over 80 Healthy Workplace Ecosystems have been established throughout Singapore.[6]

We are making an extra effort to tackle social isolation amongst seniors through Age Well SG. Social isolation, a key driver of frailty and a threat to seniors' physical and mental health, often goes overlooked. Without the companionship of family members, friends, and the wider community, loss of function is expected to hasten. Thus, a key thrust of Age Well SG is to expand and enhance the network of AACs as nodes for seniors to remain both physically active *and* socially engaged. AACs create more opportunities for seniors to make friends, volunteer, and take part in active ageing programmes. For those who are enrolled into Healthier SG, AACs would be an additional supporting arm for GPs, to help seniors follow through with their health plans.

Figure 2. Community assets, such as Active Ageing Centres, help keep seniors meaningfully engaged and socially connected.

> **“We are keen to do more to lower barriers to health and healthcare, and to be more targeted in supporting not just seniors, but other vulnerable population segments.”**

In tandem, MOH will work with the Ministry of National Development (MND), Housing and Development Board (HDB), and Ministry of Transport (MOT) to continually upgrade homes and residential estates, as well as offer more housing options, for seniors to age independently in the community. An example of a new senior housing typology is the Community Care Apartments, which are integrated with care services. MND will also be expanding their Enhancement for Active Seniors (EASE) programme. EASE 2.0 will offer more subsidised fittings within homes so that seniors can go about their daily activities literally with greater EASE! At the same time, our HDB estates are becoming increasingly senior-friendly, with more shelters, rest points, barrier-free access ramps, pedestrian crossings, and even green man signals that last longer.

In the coming years, we are keen to do more to lower barriers to health and healthcare, and to be more targeted in supporting not just seniors, but

other vulnerable population segments. We have begun partnering with MSF in making healthcare services more accessible for lower-income households. Close to two-thirds of families under MSF's ComLink programme have indicated having at least one family member with a chronic health condition, with a quarter of them not compliant in adhering to medical appointments or medication. ComLink family coaches and SSO coordinators will thus be working more closely with the clusters to address ComLink families' health needs. Besides equipping the ComLink family coaches with tools to support these families through health nudges and navigation support, the respective cluster will also assign a team to provide joint case management for families with complex needs.

WHAT IS OUR ROLE AS A PUBLIC SERVICE?

The Public Service is well placed to provide the enabling infrastructure through which stakeholders from across different sectors—government, private sector, community space—can work together towards common goals. With both Healthier SG and Age Well SG, MOH is bringing in partners *outside of healthcare*, recognising the important roles they play in the population's health.

Figure 3. An ecosystem of support helps individuals to form and sustain healthy habits.

During our public consultations for the Healthier SG White Paper in 2022, we heard from many residents that peer and family influence were key factors in motivating them to exercise regularly and eat healthily. We also saw that partners could help to introduce more variety into the types of activities that are organised on the ground. One example is the Live Well Age Well programme that HPB and the People's Association (PA) jointly organise at various community touchpoints, which aims to empower seniors to continue doing what they love, while improving their physical, mental, and social health. In future, HPB will look at how to incorporate programmes from other public sector agencies to rejuvenate our healthy lifestyle offerings under Healthier SG and Age Well SG.

The Silver Generation Office (SGO) will keep up its efforts to identify socially isolated seniors, and can now connect them to nearby AACs for follow-up. Over time, AACs can augment their manpower and extend their reach by broadening their volunteer pool through SG Cares, and leveraging Residents' Networks to establish satellite locations. AIC is even working on an "Adopt-an-AAC" initiative with corporate partners, where staff can contribute to building up a more sustainable pool of volunteers for an AAC which they have adopted.

Beyond the public sector, we have been actively engaging organisations in the private sector to be part of our health ecosystem. MOH and HPB adopt a tripartite approach to encouraging workplace safety and health through collaborations with corporates, unions, associations, and other public sector organisations. In July this year, we worked with the Ministry of Manpower (MOM), NTUC, and Singapore National Employers Federation (SNEF) to publish a Tripartite Statement that outlines recommendations for employers to promote employee health and wellbeing in support of Healthier SG. We are now working together to develop Tripartite Standards to guide employers in implementing practices that enhance workplace health and wellness. Today, employees can benefit from HPB's programmes like the aforementioned Healthy Workplace Ecosystems (HWE), Mature Workers Programme (MWP), and Workplace Outreach Wellness

"Our initiatives must inspire individuals to themselves adopt a mindset of personal ownership, and influence others around them to do the same."

(WOW) Programme, or the Workplace Safety and Health (WSH) Council's Total WSH Programme. The Tripartite Oversight Committee on WSH oversees the scaling up and sustained adoption of these programmes, to support partners' and employers' efforts in promoting healthier lifestyles at the workplace.

Over the past years, HPB has also been actively engaging industry partners and steering them towards the provision of healthier options, such as reformulating their products to develop healthier food and beverages. For instance, as part of the nationwide sodium reduction strategy that was announced in 2022, HPB has been working with major suppliers to expand the range of lower-sodium salt, sauces, and seasonings. HPB also extended its Healthier Ingredient Development Scheme (HIDS) to support the development and commercialisation of lower-sodium ingredients.

As a government, how we design and implement national policy is evolving. With public issues that are ever more complex and interlinked, we need the cooperation and support of many players, all doing their part to shift residents, households, and organisations in the right direction. In creating space within our policies for community and private sector partners to contribute, the public sector can become more effective as a whole in serving the needs of all Singaporeans.

Ultimately, our initiatives must inspire individuals to themselves adopt a mindset of personal ownership, and influence others around them to do the same. This I believe is the next bound of work for us. Even with the best efforts of government and community, the agency and willingness to change lies with the individual. The design of our policies and programmes must take this into account, in order to drive lasting changes in society. ■

Notes

1. Scott L. Greer, Michelle Falkenbach, Luigi Siciliani, Martin McKee, Matthias Wismar, and Josep Figueras, "From Health in All Policies to Health for All Policies", *The Lancet Public Health* 7, no. 8 (2022): E718–E720, doi: https://doi.org/10.1016/S2468-2667(22)00155-4.
2. Source: Population in Brief 2022. The proportion of citizens aged 65 and above is estimated to be 23.8% in 2030, up from 18.4% in 2022.
3. Based on admissions data in 2019.
4. Based on National Health Survey 2010, National Health Surveillance Survey 2013, and National Population Health Survey 2019/2020.
5. Based on Global Burden of Disease Study 2019.
6. As of end-December 2022.

CONVERSATION

CREATING THE FUTURE OF HEALTHCARE:

A conversation with Tan Chorh Chuan

by **Tan Chorh Chuan**

The veteran clinician and Chairman of MOH Office for Healthcare Transformation envisions how new data frameworks, digital tools and cross-sectoral partnerships will revolutionise the way we stay healthier for life, on a national scale.

Professor Tan Chorh Chuan is Chairman of the MOH Office for Healthcare Transformation (MOHT). He set up MOHT in 2018, and was concurrently MOHT's founding Executive Director and MOH's Chief Health Scientist till September 2023. Professor Tan is currently Permanent Secretary (National Research and Development), Permanent Secretary (Public Sector Science & Technology Policy & Plans Office) as well as Chairman (Agency for Science, Technology and Research). He continues to lead healthcare transformation as Chairman of the MOHT Board and Chair of the Healthier SG Implementation Office.

You wear several hats in the healthcare sector. How do your different roles help in advancing the future of healthcare in Singapore?

I set up and am currently Chairman of the MOH Office for Healthcare Transformation (MOHT). It was established five years ago to look at more fundamental challenges to our health system, and to work on how we can facilitate and accelerate the transformation of the health system. We chose a number of critical areas in healthcare, such as primary care, where we felt major changes were needed. We focused on scaling: developing capabilities to take ideas that had been shown to be promising and cost effective, and scaling them up to the mainstream system much more quickly.

I am also Chairman of the Healthier SG Implementation Office, which was set up less than two years ago. To deliver a complex multi-stakeholder programme like Healthier SG, we needed a new structure to integrate all the different policy inputs that impinge on delivery, bringing them together in a coherent implementation plan to be carried out. For instance, what takes the most time in Healthier SG is developing the supporting IT system. But for these IT changes to be delivered in time, you first have to confirm the clinical model, clarify the financial mechanisms, and determine the data reporting requirements, and freeze these. This is what I call the policy-policy integration. Then there is the policy-operations interface, which often involves a much wider range of health family and non-health partners. The Implementation Office I chair looks after these aspects of integration, to ensure the effective rollout of the Healthier SG programme.

I also chair the Human Health and Potential Executive Committee, which oversees the biomedical sciences, research innovation and enterprise system. Many clinical improvements, or concepts such as precision public health, come out of the research lab. We need to convert these research-based approaches or products into implementable clinical and public health interventions. Being Chief Health Scientist up until September 2023 gave me the opportunity to help bring useful research ideas and applications into play: developing a system where they can be tested and validated more quickly in practice, then adopted more widely.

The different roles I play overlap, and provide opportunities to synergise between them, on the national scale.

WHY IT IS DIFFICULT TO SCALE UP IN A HEALTH SYSTEM

Healthcare innovations do not scale easily because many elements have to be brought together at the same time in order for them to be adopted widely.

You need leadership as well as a whole change management system for the professionals. Then the new technology you need to bring in must work, and must interface with the mainstream systems, with smooth data flows. Having the right payment systems and incentives are also critical, and in some cases adjustments to regulatory requirements.

Say you want to allow patients to receive hospital-level care at home: the providers and care teams need new protocols and processes to ensure care can be safely and effectively delivered. Suitable patients have to be selected. The payment system has to make financial sense for the patient, provider and payor. Regulatory issues have to be addressed to allow the innovation while protecting patient and public interests, and so on.

All this is often too complex for institutions to deal with because it requires many different parties to come together in the right environment, and enablers have to be developed so that scaling can proceed. Significant variations in practice across different providers often also hamper scaling.

On a national scale, how can the Public Service in general, especially non-health-related agencies, contribute to the goals of Healthier SG?

I think the Public Service can play a very critical role in several areas.

One area is in enabling and sustaining behaviour change. In considering behaviour, we quite often think in terms of individuals: our mental model is to educate, nag and nudge individuals, say to exercise, one person at a time. This is important, but it is hard; it would take a long time to have an impact on the whole population this way. But there are other behavioural drivers, such as environmental or cultural factors, that could have a broader impact at the population level.

Behavioural drivers, such as environmental or cultural factors, could have a broader impact at the population level.

A good example is cigarette smoking, which has perhaps seen the most successful public health intervention. Smoking is expensive because we have put taxes on it. And we have made cigarettes difficult to access, because we have all kinds of restrictions on its sale. Smoking is prohibited in most public spaces. The nett effect of these non-health measures is that it is not easy to smoke. Overall, some 90% of our people do not smoke. Over time, the cultural and social norm is to not smoke, except perhaps among certain limited groups. So a combination of these environmental changes engenders a social norm towards desirable behaviours. In fact, a few behaviours—lack of physical activity, poor diet, and smoking—contribute disproportionately to bad health outcomes, accounting for more than 40% of mortality.

Take physical activity: what can we do to promote it? We could try to persuade people to exercise, but if we make it easy—if our neighbourhoods are walkable, pleasant and safe; if there are nodes that promote interaction with others; if there is good programming and placemaking along the way to offer activities and a sense of place—then people are more likely to congregate and walk, whether for leisure or to commute. There is

evidence in the literature that the more walkable your neighbourhood is, then the more people walk, and people tend to be healthier.

So there are many things we can do to shape the physical and built environment—including reducing noise, light and air pollution to improve sleep and promote health. We could also do more about the food environment—if we were to promote more healthy options within high density traffic areas where people pick up a meal on the way home, then they are more likely to default to healthier food options without having to actively make the choice all the time. Upon this foundation of a health-promoting environment, we could then add on other elements, such as technology, education and programming, to further enhance participation and ownership.

There are a number of initiatives to do exactly this in Singapore, such as MOHT's Healthy Precinct programme.[1] We are also looking to see how we can incorporate health as a policy outcome in our planning—the way we now think about environmental sustainability as an outcome. From the ground up, we are also validating tools to help communities to come up with health promoting programmes,

We can shape the physical and built environment to promote health. We could then add on other elements to enhance participation and ownership.

in a more design-focused manner. Activating community participation will be important for sustained cultural and behavioural change.

Indeed, artificial intelligence can be used in health not only at the level of nudging individuals, but also in helping us to design better environments; to see how foot traffic flows and assess whether our interventions are working. The use of data, collected in a trustworthy and confidential manner, can provide very useful insights.

Is data key to the future of healthcare transformation?

Data is absolutely critical. The technology already exists to collect data in all fields, but two other factors are essential.

One is public trust, which is related to how we use the data; how we are responsible stewards of data; how we demonstrate the value being created for the benefit of the community and the people through its use.

The other element is analytics. Data can be used for three main purposes:

1. There is **data for understanding and planning**, which can be anonymised and aggregated.

2. There is **data for intervention**, where you need sophisticated analytics to understand how and when to encourage different groups, say to exercise, and how best to continue to dynamically motivate them over time so that their behavioural change becomes sustained in the long term.

3. Next, there is **data for monitoring results**, to determine whether the interventions have worked, and whether they have reached the right groups. We know for instance that disparities in participation and outcomes are important drivers for overall outcomes at the system level in many health systems, so we want to see, for instance, more exercising among people who are not just those who are already self-motivated to do so.

One aspect of Healthier SG is to place much greater emphasis on personal responsibility for health, which is not something that can be legislated into being. What are some further ways we can think about engendering this behavioural and paradigm shift?

We have spoken about working with individuals to facilitate long-term behavioural changes. Another way to think about this is at the provider level. The thesis of Healthier SG is that we connect residents with general practitioners (GPs) so that they have a trusted primary care doctor, who will get them to do their screenings and vaccinations on time and give them timely advice to motivate them into taking action. But we also need to make sure that the providers, the GPs, are able and enabled to play these roles.

We can do this by improving data flows, so GPs can work better with their residents and patients: they can more easily identify who has not taken their shots or gone for screenings and so on, and then nudge them in a timely manner. We will also want to provide training and streamline processes to make it easier for the providers to carry out these interventions. We can also extend this to many more providers—such as to community-based services, or to organisations and initiatives helping residents to age well in place—enabling all of them to work more effectively in encouraging their clients to adopt healthier behaviours.

All this will take time, and different players are at different levels of readiness. So we need to do this in phases. We are starting in Healthier SG by looking at common health conditions like diabetes, high blood pressure, and basic preventative measures such as vaccinations, screening and weight management. We are creating platforms to make it simpler to perform these basic interventions, such as streamlined care protocols and IT and data systems to help the GPs do these things efficiently. This lays a

Activating community participation will be important for sustained cultural and behavioural change.

foundation and ensures the system is robust before moving on to the next set of reforms. It also gives us more time to build up systems and learn reiteratively with each new tranche of measures.

You work at the frontier of health technology and other advances. What are some opportunities that lie ahead for transforming public health, and how might these build on Healthier SG?

Healthier SG lays an important foundation. We are developing a more integrated and effective delivery model, upon which we can then implement elements of the healthcare of the future.

I think precision medicine, and especially precision public health, will become much more salient. The data revolution will enable us to identify groups who have a higher susceptibility to important diseases, allowing us to intervene early. We should be able to target high-burden diseases in a more effective and efficient way: rather than trying to screen everyone, we target high-risk groups. A GP for example may have a patient whose family member had a heart attack at a young age. The patient and his family can be advised to undergo screening for genetic mutations that could predispose them to early heart attacks. By screening the whole family, we can identify and treat those who need it very early in a targeted way. With many conditions, including cancers, this could change the trajectory of the condition for both the affected individuals and the population.

Precision public health could also be applied to engage individuals for behaviour change, or more personalised intervention, using data specific to them. For instance, wearables, which can continually monitor a patient, could also be used to titrate medication, while measuring side effects continuously. In future there will be more conditions that we will be able to predict and monitor using digital technologies—including behavioural aspects that have been difficult to measure in the past.

For example, MOHT is looking into using digital tools to address mental health, which is a particularly challenging area to address. Mental health issues carry a stigma; we also need scalable solutions, because how many counsellors can we have? We need to find effective and scalable ways in which the majority with relatively minor issues, such as coping or adjustment problems, can

In future there will be more conditions that we will be able to predict and monitor using digital technologies.

actually help themselves. Digital mental health solutions, with human specialists offering further help when necessary, are a promising way to provide this type of support at scale.

One example of such tools comes from a study we recently completed with the Institute of Mental Health (IMH) involving patients with schizophrenia.[2] There is no objective marker of when someone on treatment for the condition is going to get worse, and it is difficult to ascertain how patients are doing at any given point in time. MOHT worked with IMH to develop a platform to collect digital data, with the patients' consent, through wearables and smartphones. This data was then analysed using AI. Based on these digital signals, we were able to tell the care team which patients were more likely to relapse. This is now being adopted as a mainstream service in IMH, for psychosis and for mood disorders.

While this is an example from a severe mental health condition, we are looking into how the same technology might be applied to moderate or mild disorders as well. Such digital markers could provide doctors with more objective and regular indicators, which could help ascertain if a patient is getting better or worse or might need further intervention. In time, it might also possibly facilitate self-help. If we are able to engender better awareness and better self management, then we reduce the risk of over-medicalising, where we see a therapist for any minor issue, which is neither sustainable nor helpful in the long run.

We have just been through the COVID-19 pandemic. If Healthier SG and its related reforms were in place, would Singapore fare better in a similar crisis?

The pandemic had three big lessons for the health system. First is the importance of governance—of the health system and more generally. Second is the advantage of integration. In general, health systems which were fragmented did more poorly, mainly because they could not coordinate their actions,

whereas health systems with a high level of integration were better able to deliver. The third is the value of data.

If we had another major event after Healthier SG is fully implemented, we are likely to be better off in several ways:

For one thing, we will have **better data flows**. We have good data from the public system, but we have significant gaps from the private system, including GPs. With Healthier SG, this will be improved. We will have channels by which better and additional data could be collected if needed.

We will also have **more trusted channels of communication**—with residents above 40 years of age enrolled to a primary care doctor, we have a powerful means to reach out to residents, including those who tend to be more vulnerable in a pandemic.

We will also have a **delivery system** which can be readily mounted as the mainstream way to deliver vaccines or drugs to a large segment of the population.

We are also extending **telehealth** into primary care, although it will take a few years to fully roll out. An established, well-functioning telehealth system would be invaluable in a crisis in which physical presence in a clinic were difficult or risky. It would also be a major advantage if extended into the community care sector: during the pandemic, many older people were socially isolated with restrictions on physical gatherings, and many services for them had to stop.

Of course, such technologies rest on **established relationships** that have to be regularly exercised in normal times. So it is not as if residents have to interact with someone they have never met before over a digital channel rather than face-to-face. If we had a hybrid system of both physical and digital provision, even during normal periods, we would have better options in a crisis.

As Singapore builds towards its vision of future healthcare, what in your view are our most critical uncertainties?

There are a number of milestones critical to the success of Healthier SG:

1. The first milestone is having **enough GP clinics** embrace it and come on board as partners, which means they can see that the programme is good for their patients and makes clinical and business sense to them as well. So far, with about 1,000 (out of 1,300) clinics on the programme,[3] we are doing well here.

2. The next milestone is the **value proposition to patients**: whether residents can see a clear and compelling reason to enrol in Healthier SG. Again, with over 400,000 residents enrolled in Healthier SG since July 2023,[4] we are off to a good start.

3. The third milestone will be critical, and that is the **delivery outcomes**. Whether patients stay with their enrolled GPs, whether preventative care—as indicated, for example, by screening and vaccination rates; by better control of common chronic conditions like diabetes, high blood pressure—are all trending in the right direction. That would provide good evidence that the intent of Healthier SG is being achieved.

In the further future, once we have the framework in place, we will be able to introduce precision public health, digital health and other interventions. All these will ride on the foundations that are being built today.

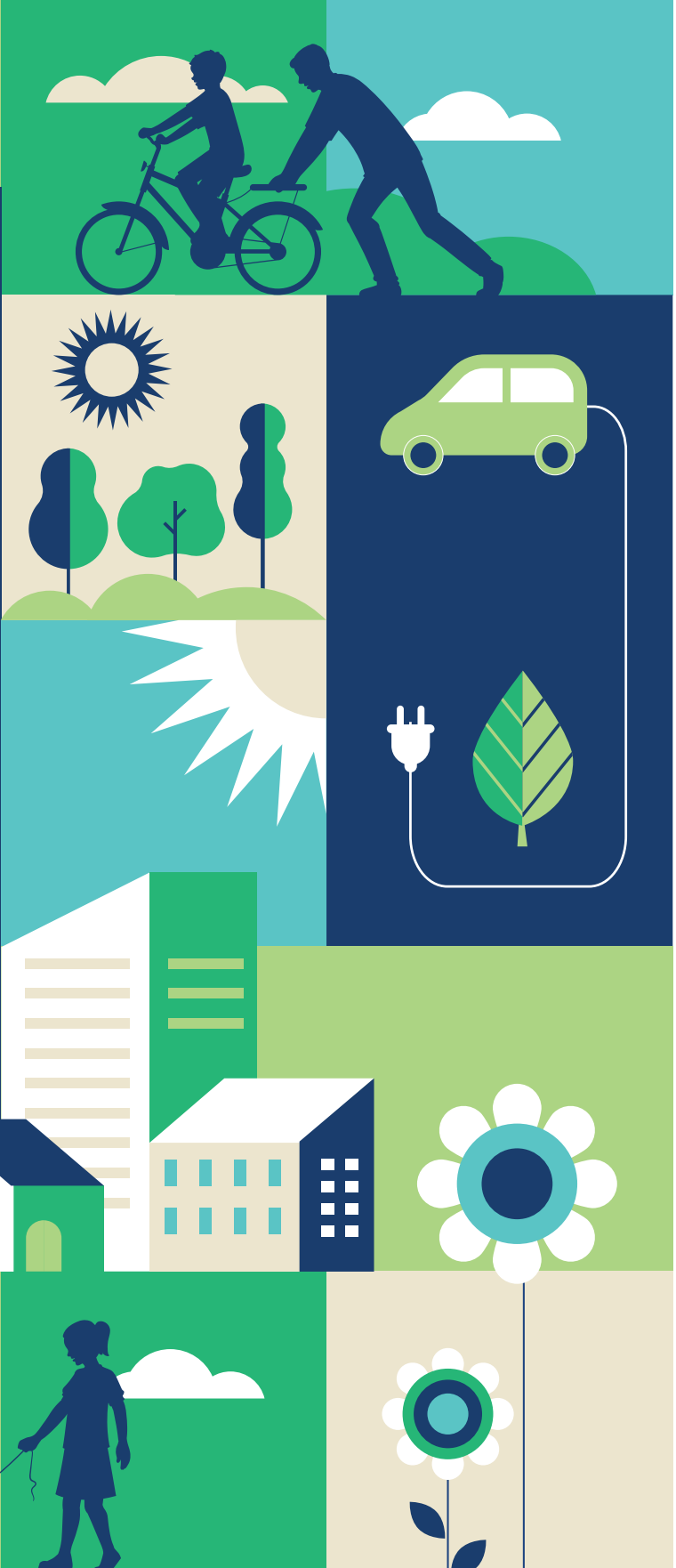
All of this will rest critically on public trust and support: both at the individual level, but also the sense that this is creating public good; that even if it does not benefit me directly, it is good for the health of the Singapore population as a whole. We want people to see and believe that what we are doing will result in the broader good, which means we must demonstrate and report the progress that is being made, in ways that are relatable to the general public. ■

Notes

1. See: https://moht-hp.my.canva.site/healthy-precincts.
2. See: Salma Khalik, "Good Healthcare with Less Manpower Is Possible with New Technology: S'pore Chief Health Scientist", *The Straits Times*, August 28, 2023, https://www.straitstimes.com/singapore/good-healthcare-with-less-manpower-is-possible-with-new-technology-s-pore-chief-health-scientist.
3. Figures to date, as of October 23, 2023.
4. Figures to date, as of October 23, 2023.

DESIGNING A HEALTHIER CITY

by **Tai Lee Siang**



Urban environments can be designed at different scales to support healthier ways to live, work and play, with tangible benefits for productivity, sustainability and human wellbeing.

Professor Tai Lee Siang is Head of Pillar, Architecture and Sustainable Design at the Singapore University of Technology and Design (SUTD). He is also Programme Director, Design and Artificial Intelligence, and the Centre Director of DesignZ, SUTD's design centre. A practicing architect and urban planner since 1990, he has served as President of the Singapore Institute of Architects, the Singapore Green Building Council, and Design Business Chamber Singapore. He was also Chair of the World Green Building Council (2016 to 2018) where he spearheaded the Advancing Net Zero movement, resulting in increased adoption of Net Zero Buildings worldwide.

HOW URBAN DESIGN CONTRIBUTES TO PUBLIC HEALTH

In the context of many countries, when we speak of public health, what we mean is health in the city. The evolution of city design began in the 1900s precisely because the Industrial Revolution had brought about various health hazards, due to poor sanitation, pollution, poor infrastructure and so on. It led to thinking about how cities could be better planned.

Since then, cities such as Singapore have taken the notion of urban planning forward. When then Prime Minister Lee Kuan Yew advocated the Garden City concept, it wasn't new, but it had not been implemented before on the city scale. He had argued that it was not only a way to attract investors but was also a way to care for citizens. This is something that we who live in this beautiful city take for granted today. We enjoy beautiful greenery and the convenience of good infrastructure. We know that human experience is shaped by our environment. But exactly how it does so is not really looked at or discussed. There is a science behind how our environment affects our health that we need to look at.

For instance, we are developing a research lab to look into the correlation between sustainability and human wellbeing. Envisioned as a 'Positive City Lab', our research highlights the potential of environmental design and systems to yield medium-term incentives and long-term positive impacts, and to achieve balance and prosperity in both ecological and human health.

TOWARDS A POSITIVE CITY LAB

Our lab's research encompasses **three** domains:

Data science
Unravelling correlations between environmental attributes, sustainable planning, and physical, mental and social wellbeing.

Citizen Science
Engaging in design ethnography to assess communities practising climate positive actions and their wellbeing impacts.

Generative Design
Crafting radical design proposals and future scenarios planning embodying Positive Urbanism, informed by insights from the data and citizen science.

We cannot talk about environment wellness without first addressing the issue of sustainability, which is more urgent and complex than just trying to create a beautiful urban setting. We can no longer discuss development as an output that costs how many billion dollars to build, because we also have to consider the carbon emissions involved in building. Ultimately, we would want to lower emissions for people's good. So, we have to address sustainability at the same time as trying to talk about enhancing our urban environment. In the past, we built non-stop to achieve development in a short time, and also built up our carbon footprint rapidly. Today, we have to balance that.

DESIGNING FOR HUMAN WELLBEING AT DIFFERENT SCALES

How might we apply urban design to enhance human wellbeing and health? We can think of it as a series of challenges to work on at different scales.

First, the overall city scale. In the past, it was all well and good to separate our urban functions based on zoning, with industry separate from housing and so on. But one outcome of this separation was also to create more carbon emissions from road traffic and transport. So urban planners, including private sector developers who handle large tracts of land, should think about what new paradigm or model can be created to strike a balance between the separation of functions or users and lowering the carbon emissions from the movement of goods and services.

We spend over 90% of our time inside buildings: we should consider how best to ensure we function optimally in them.

Next, we can look at design at the building scale. In 2017, Harvard T. H. Chan School of Public Health did a study on the impact of green buildings' indoor environment on cognitive function.[1] The study found that those working in high performing certified green buildings had 26.4% higher cognitive test scores. There were also other significant benefits: including better sleep, thermal comfort and lower sickness symptoms. Since my transition from industry to the Singapore University of Technology and Design, I have seen the great potential of using science-based approaches to evaluate the outcome of sustainability features in a building on its human occupants. It would be timely to resume such studies now, particularly with the development of better, smarter environmental sensors and better ways with which to measure human performance in spaces. We could look at the impact of factors such as lighting, ventilation, air-conditioning

and so on, on human performance and wellbeing. This is paramount because we spend over 90% of our time inside buildings: we should consider how best to ensure we function optimally in them.

Finally, we can go down to the product scale. There are many things we can do to improve health and performance with innovation. For example, you have phone accessibility functions to increase the legible size of text, or to support hearing. There could be devices to help people struggling to bring strollers or wheelchairs up stairs, sidewalks or buses. The list goes on.

DESIGNING FOR HEALTH: KEY PRINCIPLES

One general principle we need to bear in mind in our innovations is human centricity. In other words, we start with the human needs to be met, instead of with the cost in mind. Thinking about cost is a common mindset, especially where profit is a key driver. That is not to say that it is not an important consideration. But without having human centricity at the core of whatever we are trying to achieve, our reasoning becomes lopsided.

We often also forget there are alternative paradigms to the status quo. For instance, the COVID pandemic taught us that we can in fact abandon the city and work from home on a massive scale. Since that is the case, we should perhaps take stock of our actual office space needs. We may save a lot of resources instead of building offices unnecessarily.

A third principle is that being human centric could bring benefits across the board, because people are healthier and work more optimally if their unique individual needs are catered to, rather than making them adopt a one-size-fits-all model of living or working. The problem has been that the technology to viably meet all these different needs at scale was not available in the past.

We start with the human needs to be met, instead of with the cost in mind.

We should look carefully at how to harness the potential of powerful new tools, such as artificial intelligence, to meet these diverse needs more readily. This means that instead of adopting human centricity for a small, select group of people, we could use AI to provide very detailed mass customisation, so that the system as a whole is efficient and less wasteful. For example, with the right use of AI, we might now be able to generate hundreds or thousands of

design possibilities quickly, that could be coupled with robotics and rapid prototyping to make personalised products—say, shoes or furniture—that are tailored to the specific needs of thousands of different users.

In terms of urban design, we are accustomed to thinking of buildings in terms of fixed and moveable assets—but what if we could apply AI and robotics so buildings themselves adapt to human needs? It is now possible to consider how we might thus make buildings safer, more comfortable, and more supportive of human health, wellbeing and performance. Indeed, SUTD started a degree course called Design & AI two years ago, and while the batch has yet to graduate, we are starting to see experiments to use AI to help achieve better sustainability and health outcomes. For example, some students designed an app powered by AI that lets users self-examine their posture when lifting weights in order to make corrections for better health. In another project, students will be using AI to design more sustainable and better performance indoor spaces for a human-centric outcome.

INNOVATING URBAN DESIGN FOR HUMAN WELLBEING IN THE PUBLIC SECTOR

Today, there are thousands of cities in the world, with potentially 60% to 70% of the global population living in them. While the prospect of creating

As more people are enticed to walk, run or cycle, human health is likely to improve significantly.

brand new cities as testbeds for new ideas is exciting, the more practical and meaningful move is to innovate within existing urban environments.

There are many possibilities in urban innovation, but many are challenging for a number of reasons. For example, the concept of car-free or car-light cities requires drastic change in transport behaviour connected to zoning. I personally favour firstly a significant improvement of human spaces or the pedestrian realm. Despite the value of nature, not many cities have embarked on total greening of their physical environment. Successful partial examples are usually found in first world economies. But for cities that do not have the financial means to transform themselves, greening pedestrian spaces is a good place to start.

For instance, in Singapore, the successful implementation of Park Connectors by NParks demonstrates a simple and yet effective way to achieve a few objectives synergistically. It combines under-utilised remnant spaces in a linear fashion to join different parts of the city, resulting in hundreds of kilometres of park spaces. Today, many use the park connectors as alternative ways to commute between home and work. If we can extend the same concept to dramatically improve all walking spaces in a city by turning them into park-like settings, it will fundamentally alter urban ambience and behavioural patterns. Spaces that could be connected in a park-like fashion include sidewalks, tunnels, overhead bridges and any spaces likely to be used by people. As more people are enticed to walk, run or cycle, human health is likely to improve significantly. The urban environment will be more conducive for human beings to live, work and play.

To further improve health and wellbeing, the park-like concept could be extended to buildings, which are microcosms of cities. Buildings comprise occupied spaces and movement spaces such as corridors and stairs. At present, most of these spaces are sparsely utilitarian. Without compromising on function, we could create healthier buildings by making these neutral spaces greener. Such initiatives could start with public sector buildings such as schools, hospitals, transport hubs and public housing. I would go so far to say that environments that are conducive for plants are also conducive for human wellbeing.

The above are suggestions on how we could, in small ways, revolutionise our built environment. These efforts do not require excessive budget increases or

fundamental alterations of urban structure. Such efforts are more often held back by legacy mindsets. It is time to set aside the outmoded notion that cities are most vibrant when there is no nature in sight. Instead, nature should be seen as a force multiplier for the growth of a city in terms of the three aspects of sustainability: social, economic and environmental.

It may be a stretch to try for holistically human-centric cities overnight. Hence, I propose small, fast and effective changes at a system level like what Singapore's pioneers have opted for—integrating the city with nature, with a range of immediate and longer-term benefits, and ultimately happier, healthier inhabitants. ■

Note

1. Piers MacNaughton, Usha Satish, Jose Guillermo Cedeno Laurent, Skye Flanigan, Jose Vallarino, Brent Coull, John D. Spengler, and Joseph G. Allen, "The Impact of Working in a Green Certified Building on Cognitive Function and Health", *Building and Environment* 114 (2017): 178–186, https://www.sciencedirect.com/science/article/pii/S0360132316304723.

Getting Ready for PRECISION PUBLIC HEALTH

by **Clive Tan and Jeremy Lim**

Digital and data-centred approaches to personalised medicine may soon revolutionalise care and open up new opportunities for Singapore.

Dr Clive Tan is a public health physician working on population health and integrated care at the National Healthcare Group, to add years of healthy life to our population. He was the Organising Chairman of the Precision Public Health Asia Conference, which was held in Singapore in July 2023.

Dr Jeremy Lim is Director of the Leadership Institute for Global Health Transformation (LIGHT) at the National University of Singapore's Saw Swee Hock School of Public Health. He is the current President of the Precision Public Health Asia Society.


2714 STEPS
131 KCAL
HEART RATE
105 BMP

NAVIGATING A CHANGING WORLD

If you asked anyone in a classroom or meeting today to open up a map, chances are they would take out their phones to launch the digital map application on their devices. But just 20 years ago, we were still using only hardcopy paper maps. Google Maps was launched in 2005, and Apple Maps in 2012. Today, digital maps are ubiquitous, and they have changed our understanding of maps as a concept, how we interact with them, and how we see the world. New ways of seeing and working have created new opportunities and jobs, new solutions, and also new problems for the current generation to solve.

The revolution that has taken us from hardcopy maps to digital maps bears similarities to and lessons for the ongoing transformation of the health sector. Today, people are leading longer lives than ever before—death from infectious diseases is at an all-time low and even many cancers are now curable. There are many contributing factors: advances in medical science, better health infrastructure, economic progress, improved living standards and environments, better nutrition, public health initiatives such as vaccines, improved safety culture, better education, and greater health literacy.

While we can be proud that many old problems have been solved, the current generation will face new challenges: widening health disparity and inequity between and within populations, new and emerging infectious diseases with the potential to cause epidemics and pandemics, increased prevalence of chronic non-communicable diseases, antibiotic resistance, mental health, climate change, and planetary health. These new challenges require new approaches, new innovation, and new investments. Fortunately, we are also equipped with new enablers and tools to address these challenges.

A NEW ERA OF PRECISION PUBLIC HEALTH

A useful way to think about this transition is to compare it with how Digital Maps built upon traditional maps to deliver a new experience and create value for the users and the system. Digital Maps are powered by the enablers of Digital Technology, Big Data science and Personalisation. In a similar way, **Digital Health** technologies, **Big Data** science and **Precision Medicine** developments are bringing about a revolution in the way we look at health at a population level. This has given rise to the term Precision Public Health, which is the use of technology and the principles of public health to advance the health system and population health goals.

Public health has and will play an important role in promoting and improving health outcomes for countries, health systems and populations. It has a strong emphasis on prevention of diseases, health promotion, advocacy for health access and coverage, enhancing people's overall wellbeing and the many facets of public health research and evaluation. The COVID-19 pandemic, while devastating, has led to many positive changes in how health systems, researchers, providers and industry think about public health transformation. Catalysed by the pandemic, public health is experiencing a radical rethinking that is being fuelled by these three enablers that have changed the practice of public health in many positive ways.

THREE CRITICAL ENABLERS

Just as Digital Maps use large amounts of data and analytics to connect the dots, create value and be personalised to users, Precision Public Health calls for our big health data sets to be connected, analysed with advanced data science techniques, and personalised through precision medicine and personalised health.

Precision Medicine builds on the technological advances and development of new approaches for treating and preventing disease in a way that is tailored to the individual. Examples include tailored disease management in specific patient populations, targeted disease prevention and early diagnosis for certain at-risk groups, and ongoing research and development for personalised medical treatments.

Digital Health is the use of digital technologies to improve health. It is a multidisciplinary field at the intersection of healthcare, technology, and information management. Types of digital health technologies that most people are familiar with include telemedicine, remote health monitoring devices, healthcare related mobile phone applications, electronic health records, and patient health portals.

Big Data is the lifeblood of Precision Public Health. Collectively, Precision Medicine and Digital Health generate a vast amount of health data that is useful at both the health systems and population level, and at the individual, personal level.

The healthcare industry believes that harnessing this wealth of health data can lead to numerous benefits. At the individual and provider level, it can improve patient care through connected health data for care coordination, and timely health insights that are actionable by the individual and providers. This data can also enhance health services research, research for product development, and understanding of the health needs of the population—all of which could lead to insights on how we might build better health systems.

GOVERNMENTS NEED A BLUEPRINT AND STRATEGY FOR PRECISION PUBLIC HEALTH

A healthy population is a form of economic and social capital, and governments have been the traditional payer and investor in public health services and functions. Historically, most of these investments have been borne out of necessity (e.g., water and sanitation, vaccinations, workplace safety regulations) or because they are low-cost, high-value and efficient investments (e.g., health education campaigns, tobacco taxation and regulation, operating public primary care and maternal and child health clinics).

With economic progress, greater affluence and a more educated populace, a society comes to expect higher quality public services. The public also expects the government to play a more central role for public health services, especially when it comes to infrastructure investments, health ecosystem development and regulation for safe and accessible quality health services. In this regard, we find it useful to draw parallels with how governments and the private sector both invest in transportation infrastructure and services.

With Precision Public Health, we are moving from building 'roads' in the healthcare system to the next step of building the equivalent of expressways, flyovers and underground tunnels. The fruits of infrastructural investments made by a previous generation are clearly visible: Singapore's health system is a high-performing system providing accessible and affordable primary healthcare services to the population. The new healthcare infrastructure that we next need to build include elements such as shared health data, investments in digital health and precision medicine, and a population health approach in which Precision Public Health will serve an important foundational role.

To understand Precision Public Health in action, look no further than the example of Singapore's National Steps challenge. This was started in 2015 by the Health Promotion Board (HPB) and is a population-level digital health intervention that leverages wearable technology to track physical activity and incentivise healthy behaviour through gamification. It has provided health sector planners with insights into health behaviours and allowed data analysis, health advice and interventions to be personalised to each individual. When connected with a digital health App such as HPB's Healthy 365, the individual is able to get personalised recommendations on suitable activities that are located close by. This programme embodies the Precision Public Health approach and principles, and is designed to be simple to adopt and personalised for participants.

Another forerunner in Precision Public Health is the national research entity PRECISE (Precision Health Research Singapore), which aims to transform health in Singapore through Precision Medicine. In 2019, it completed whole-genome sequencing of 10,000 Singaporeans, and has moved on to target to reach 100,000 Singaporeans. Such Asia-based genetic research allows us to better understand why certain diseases, such as ALDH2 deficiency (Asian Flush) and peanut allergy, are more or less common in Asians. PRECISE is currently researching how genetics can affect our responses to certain medications, and our risks of having certain side effects to these medications. Such efforts contribute towards a Precision Public Health strategy that intersects at both the individual and population level—helping the health system, provider and patients use medicines more safely and effectively.

Just as a good transport system serves the whole nation, so too will these infrastructural investments in Precision Public Health benefit everyone, increasing the health capital of our population, and leading to positive health states and more productivity. A future-ready health system positioned to make the most of precision public

health approaches will also attract more investments in digital health, big data and precision medicine to Singapore.

At the same time, in a free and open market, there will be those who can more readily afford some of the most sophisticated new health services, just as there are road users who own and drive luxury cars. The more innovative services are likely to be offered to private healthcare patients initially, while over time the costs of making these new services and products to a wider market will decrease, and more will be able to benefit from them. To avoid a situation where investments in Precision Public Health only benefit the wealthy and amplify health disparities, our healthcare ecosystem must have mechanisms in place to ensure that efficiency benefits from privately offered health services are transferred to support resources in the public sector health system to promote equity in the long term. These may include redistributive processes, stronger needs-based resourcing, ethical safeguards and other system-level balancing loops.

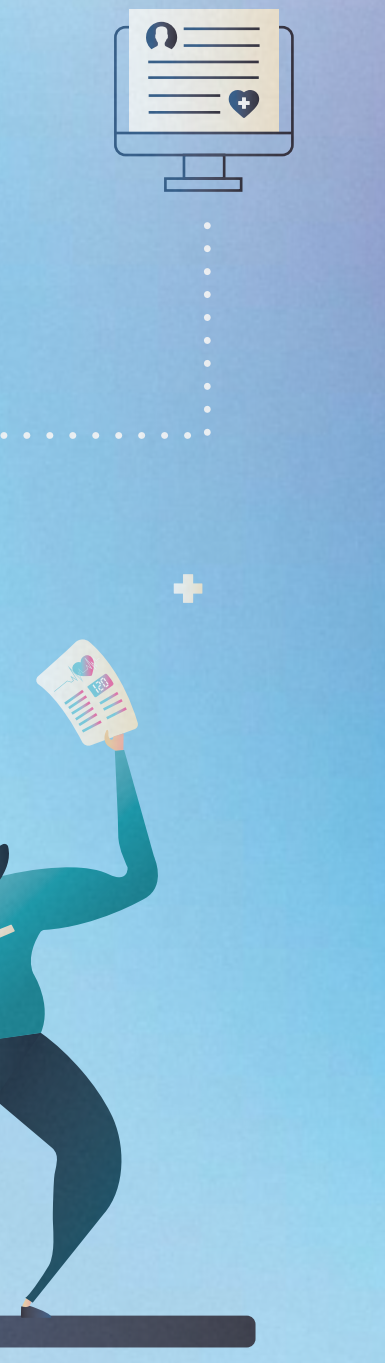
WE ARE IN A POSITION TO BE A GLOBAL LEADER FOR PRECISION PUBLIC HEALTH

The performance of the health sector will be an issue of growing importance to the population and ageing electorate in the next decades. In terms of digitalisation and data sharing, the health sector is already a laggard compared to finance, logistics and education.[1, 2] Countries fortunate to have a strong digital service ecosystem and a robust health sector are well-placed to make a strong case to invest strategically into the field of precision public health as a public good. It is a fast-growing field that, like what digitalisation did for maps, has tremendous potential to change how we see, think and work to improve the health of our population and ourselves. While we are not (yet) the world leaders in Precision Public Health, we have the necessary foundation, infrastructure, ambition, capability to be a leader in this space, especially as our health system pivots to a population health approach. ■

Notes

1. See: Martin McKee, May C. I. van Schalkwyk, and David Stuckler, "The Second Information Revolution: Digitalization Brings Opportunities and Concerns for Public Health", *European Journal of Public Health* 29, no. 3 (October 2019): 3–6, https://academic.oup.com/eurpub/article/29/Supplement_3/3/5628047.

2. See: Roberta Pastorino, Corrado De Vito, Giuseppe Migliara, Katrin Glocker, Ilona Binenbaum, Walter Ricciardi, and Stefania Boccia, "Benefits and Challenges of Big Data in Healthcare: An Overview of the European Initiatives", *Euro J Public Health* 29, no.3 (October 2019): 23–27, https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6859509/.



Realising the Promise of Health Information

by **Raymond Chua**

Singapore is introducing a regulatory framework to collect and share health records across the healthcare sector, easing continuity of care for patients and unlocking new potential for public health advances.

Associate Professor (Dr) Raymond Chua is Deputy Director-General of Health (Health Regulation), Ministry of Health, overseeing the regulation of healthcare services and health digitalisation in Singapore. He is concurrently Assistant Commissioner for Cybersecurity (Healthcare), tasked to track and enhance cybersecurity policies relating to medical devices and Singapore's Critical Information Infrastructures in healthcare. From 2012 to 2016, he was the Group Director of the Health Products Regulation Group with the Health Sciences Authority. He has also previously served in roles in the public healthcare sector as well as the private pharmaceutical industry.

The need for timely quality health information

Health information is vital for the provision of safe and good quality of care for patients. A key challenge, however, is obtaining accurate and complete details of previous healthcare consultations across a wide variety of settings. Some patients may be on multiple medications, have had multiple laboratory tests done, have visited different healthcare providers, or simply cannot recall previous diagnoses or prescriptions. Where such information is vital for the care of the patient, it can take a significant amount of time for doctors to obtain these from other practitioners, especially if they all have different medical record systems. As a result, clinical investigations into a patient's condition may be delayed, or the patient may be asked to repeat certain tests, at their own additional expense.

It can take a significant amount of time for doctors to obtain information from other practitioners.

To overcome these issues, the Ministry of Health (MOH) has been looking into improving the infrastructure through which health information can be collected and shared, allowing information to flow in real time to improve the overall continuity of care. In 2011, a system was developed to share a selected set of electronic medical records within the public healthcare system. Patients who visit different departments within a public hospital, or different public hospitals, could now draw on this centralised set of health records. Today, this National Electronic Health Record (NEHR) system allows healthcare professionals to be able to view their patients' selected health information at any point in time when they are in the public healthcare system.

MOH had planned to extend the use of this system to the entire healthcare sector. However, the 2018 SingHealth cybersecurity incident, which resulted in 1.5 million individuals' personal particulars being stolen, put a halt to these plans while MOH worked on further strengthening cybersecurity measures. While we were doing this, the COVID pandemic hit us, which pushed many healthcare providers to go digital. This made it more urgent to improve the collection and use of health information. We thus revived our plans and started conceptualising the Health Information Bill, an important regulatory framework to enable and support the digitalisation of our healthcare system. This was first announced in March 2022 and is still under development: the Bill is set to undergo public consultation by end of the year, and targeted to be read and ratified in Parliament in the first half of 2024.

Regulatory shifts for a new healthcare paradigm

The Health Information Bill has three broad objectives:

1. The Bill mandates that any licensed healthcare provider, whether public or private, must contribute selected patient health information into the NEHR. Any Singaporean, Permanent Resident or Long-Term Pass holder who is seen by a healthcare practitioner in any part of the Singapore healthcare system—be it a hospital, private clinic, dental clinic, dialysis centre or nursing home—will have a set of their health information entered into the national NEHR database. Correspondingly, healthcare providers will be able to access this key information when required to ensure patients receive holistic, seamless, safer and more informed care. The type of data to be contributed will be tailored depending on who the licensed providers are and what information is useful for care. We are also looking into whether other providers, such as retail pharmacies and home nursing services, could also contribute useful information.

More comprehensive information for better medical care

The **National Electronic Health Record (NEHR)** serves as a one-stop repository of key patient health information, so that our public and private healthcare providers can offer more informed, complete care. NEHR helps ensure seamless care transitions are maintained, even as a patient moves across different care providers in Singapore's healthcare system.

Take the example of an elderly patient, Mr X:

Mr X, who has suffered a fall, hitting his head and hurting his knees, is admitted to hospital. Upon admission, he feels dizzy and cannot respond clearly to doctors' questions about whether he has any prior medical conditions or drug allergies. So Mr X's doctors decide to check his NEHR entry, which has **documented the relevant information from previous visits** to his GP as well as past admissions to hospital, to help them determine the proper care he should be given.

After a few days, Mr X is well and is discharged. He must continue rehabilitation, as well as receive home medical services from his GP for his wounds. To provide **better follow-up care** for Mr X, his care providers access the NEHR to better understand his hospitalisation episode. It has a record of his hospital discharge summary, which includes helpful information such as the radiological tests performed and medications prescribed.

2. The Bill facilitates the sharing of certain patient health information among MOH, specific care providers and partners for approved purposes such as ensuring seamless continuity of care, enabling assessment of eligibility for financial schemes and reaching out to residents for national healthcare programmes such as Healthier SG.

3. The Bill stipulates data security and cybersecurity standards to safeguard health information. This is vital to assure the public that their personal health information is safe. Healthcare providers will be required to put in place appropriate cybersecurity measures to ensure that their systems for collecting, storing, and sharing health data are secure. For example, healthcare providers will need to implement firewalls in their network, install antivirus software, institute two-factor authentication features on their computer systems containing sensitive information, and ensure that their staff are well-trained in cybersecurity practices. Proper data access controls will also be required, so that staff are granted access to the health information only if their role requires it. We will also stipulate that healthcare providers use IT vendors with appropriate security safeguards built in their products and services, and have a proper incident escalation plan to notify the authorities in the event of any suspected data or cybersecurity breaches.

The Bill facilitates the safe storage and appropriate sharing of health data across the healthcare system, to assure continuity of care for patients.

These three broad provisions facilitate the safe storage and appropriate sharing of health data across the healthcare system, to assure continuity of care for patients, in a trustworthy and secure manner.

Underlying all of these objectives is **patient autonomy**. Individuals will be able to block all healthcare providers from accessing their records on NEHR and limit the sharing of their healthcare information, if they so wish. The health information generated from interactions will still be contributed to NEHR to ensure continuity of care should patients decide to allow access again in future, with no gaps or disruption to their NEHR records.

The existing ethical code for all doctors states that disclosure of medical information without patient consent is acceptable in a medical emergency where patients are unable to provide consent, if the doctor deems that the actions taken is in the patient's best interest. To this end, the Bill will contain a **safeguard** where a doctor may initiate 'emergency access' to a patient's NEHR. The doctor will have to professionally justify the need for such access, and may be subject to penalties if this is later found to be unjustified.

Assuring the security of patient data in clinics

Since medical clinics can access patient records through NEHR, they need to have safeguards in managing this sensitive data.

To illustrate, say we have a family doctor's Clinic Z:

Clinic Z understands that its **employees serve as the first line of defence** in data security, and can also be the weak link. The clinic ensures that its employees undergo periodic cyber and data security awareness training. This is supported by publicly available cybersecurity toolkits from the Cyber Security Agency of Singapore (CSA)'s website. The clinic's employees can stay up-to-date on the latest security best practices and behaviours, through self-learning materials on basic cyber and data security hygiene practices, structured training conducted by external vendors, and internal simulated phishing exercises.

Clinic Z also uses a Clinic Management System (CMS) to support their patient care. It ensures, through the IT vendors it employs, that the CMS includes **appropriate technical measures** to protect the sensitive patient data on record. Such measures include anti-malware scans, appropriate firewalls and audit logs.

Like many offices, Clinic Z uses various IT assets such as desktops, laptops, or mobile devices in their day-to-day operations. The clinic keeps an **up-to-date inventory of all IT assets**. This helps it to track what needs to be protected, including all hardware, software and connected medical devices, and where these assets are at all times.

Clinic Z has also developed and implemented **policies and processes** to ensure that access to relevant patient data is regulated and only accorded to the staff who needs access for their work, depending on their role in the clinic.

Nonetheless, Clinic Z acknowledges that cyber attacks and data loss is a matter of when and not if it happens. As such, Clinic Z establishes a proper **cyber and data incident response plan** to clarify how it will mitigate the impact of an incident, recover from it quickly and ensure business-critical services can continue, so that patient care is not compromised.

Getting ready for the bill

MOH will be conducting a **public consultation** on the Bill in December 2023, before finalising it and then bringing it to Parliament in the first half of 2024. Enacting the Bill is only the start: it is to signal the need for us to digitalise the healthcare system and enhance continuity of care for patients. We are also developing guidelines and other support mechanisms to help the healthcare sector get ready for this change, which may take one or two more years. It is best to wait for most people to be ready, nudge them along the way, before beginning to enforce the new requirements. This will give us time to get everyone on board and avoid disrupting care and services.

Digital systems are helpful tools but not replacements for the doctor-patient relationship.

This Bill will have both upstream and downstream **implications for other public agencies**. There are medical or related records in different Ministries—such as the Ministry of Defence, for instance. We are engaging with these Ministries to ensure that the sharing, access and use of any health data within NEHR will be in accordance with the prescribed use cases, and to address any further concerns that may arise.

In addition, there are several groups that we have been engaging and must continue to. **For the general public**, we will communicate the benefits of sharing health information, and to assure them that their privacy, confidentiality, and security concerns will be looked after. They need to know that not just anyone can go in to access healthcare data, and that we will also take serious action against anyone who breaches our information or cybersecurity regulations.

For our healthcare providers, particularly the smaller providers, it is a matter of dollars and cents: digitalising systems can be costly. To help the smaller players, we are calibrating requirements accordingly and developing grants and implementation support schemes, as well as a whitelist of accredited IT vendors, to ease transition. For practitioners who may not be familiar with using digital platforms, we are suggesting that their pen-and-paper record systems could be transcribed and digitised, so that they can come on board as well. We are also developing a training curriculum to ensure that healthcare providers and their staff are equipped with the capacity to ensure proper cybersecurity and data practices in their work.

In our initial closed-door consultations with medical practitioners last year on the Bill, we also heard concerns about increased **medical liability** simply because a patient's medical history is now going to be much more accessible. We also realised that healthcare professionals were not consistently aware of the potential of the NEHR. We therefore formed a workgroup, comprising representatives from various healthcare professional associations and lawyers, to develop a set of guidelines

for the appropriate contribution, access and use of NEHR information to benefit patient care. We have consulted on these guidelines with the professional associations through surveys and focus group discussions and are working on refining these for publication next year, in tandem with the reading of the Bill.

Our medical practitioners will not be expected to access NEHR for every medical consultation: they should continue to use professional judgement to decide when to do so to supplement or augment their clinical decision-making. **Good history-taking and physical examination are still fundamental requirements**; digital systems are helpful tools but not replacements for the doctor-patient relationship. Because medical practitioners may be liable for complaints about their care provision, they should maintain proper documentation in their IT systems. Even if there may be a perceived increased risk of discovery of care lapses, there may not be added liability due to the increased visibility of care provision from NEHR. At the same time, patients cannot expect their doctors to look up every detail of their medical history in NEHR and bear full responsibility for any poor outcomes. **Patients should still take ownership of their own health and medical history** by offering good history when seeking medical attention.

Unlocking future potential for population wellbeing

It is our hope that the health information collected and shared through this initiative will benefit patients in unprecedented ways at both the individual and population levels. At the individual level, patients can have better and more complete care. At the aggregate level, health information can present benefits for public health research, planning and intervention, such as informing on disease trends correlated with risk factors such as age groups, socio-economic status, geographical location and so on. But these benefits can only be reaped when the information is adequately anonymised and robust safeguards are put in place.

As we reach out to the public in shaping the Health Information Bill, we want to hear from public officers from different sectors and different disciplines, and your policy perspectives on this issue. Since public officers are ourselves be patients too, we would also want to hear your thoughts on what implications you may envisage for yourselves or your family members. You can help us make this Bill more robust, harness the promise and opportunities that health information holds to better serve Singaporeans in their healthcare needs. ■

Details on public consultation for the Bill will be made known soon. To share your views, write to us at **HIA_enquiries@moh.gov.sg**.

HUMANISING THE FUTURE OF CARE

A Conversation with Leong Choon Kit

Singapore's primary care sector is evolving into a sophisticated web of care, with the whole wellbeing of citizens at its heart.

by **Leong Choon Kit**

Dr Leong Choon Kit administers the Tampines Family Medicine Clinic and is the Clinical Lead for Class Primary Care Network—both MOH projects. A Family Physician in private practice, he also teaches at Singapore's leading medical schools, and is Council Member of the Singapore Medical Council, Chair of the Primary Care Network Council and member of the National GP Advisory Panel. Among other engagements, he is the founder and immediate past Chairman of GP+ Co-operative, a self-help social enterprise aiming to transform care by benchmarking clinical quality with price.

WHY IS THERE A FOCUS ON PRIMARY CARE IN SINGAPORE'S HEALTHCARE SYSTEM TODAY?

Primary care is not new to the healthcare sector: certainly, it was around when I was born in the 1960s. In many ways, the notion of primary care back then was ideal: the general practitioner, or GP, was the one-stop doctor you saw for any medical condition you might have.

Since then, however, family medicine has become much more complex. It has expanded into many different subdisciplines. When I was a medical student, we were looking at perhaps ten subjects in this field. Today, we are looking at 32 subspecialities. While the field has advanced, GPs as a profession has not kept up with the times. In fact, in some ways it has regressed and we are now years behind other advanced nations.

One example of this is the way in which we put into practice the concept of third-party administration. In theory, it is meant to enforce efficiency and effectiveness to lower the cost of healthcare. A third party, such as an insurance company, puts pressure on doctors to try to lower costs. However, it also adds a layer of administration, which itself takes up costs. In response, some GPs might make up for these additional costs or loss of earnings by taking more patients. Or they may cut costs in other ways: they may give fewer days of medicine, prescribe a generic or cheaper drug instead of a more expensive one. Or they may even give fewer days of medical leave, even though it is not realistic to expect patients to recover in the given time. Ironically, these can lead over time to inefficient healthcare outcomes. Patients who fail to get well get referred to hospitals, which adds to the acute care burden, when in fact their conditions could have been resolved earlier at the primary care level. Third-party administration may also mean that some procedures and investigations which could have been done cheaply at the primary care level are delivered instead at the more expensive tertiary level. This raises costs, causes inconvenience to the patient and adds to the workload of our specialists.

A second factor is the way in which healthcare policy is structured. Healthcare subsidies are necessary, but how they are applied can make a difference and can shape where patients flow. For instance, why is it that for a patient to receive subsidised physiotherapy, their GP must refer them to an orthopaedic surgeon? The surgeon is not keen to see such patients, because his main role is to take on complex cases and perform surgery. This approach may have been relevant in the past, when physiotherapists were rare, and access had to be managed. Today we no longer have a shortage of them, but the way subsidies continue to be structured has yet to change to match the new context. This creates distortions in our system.

> **“Many healthcare needs can in fact be met well and cost-effectively at the primary care level.”**

Another factor is the change in societal expectations. In the past, patients hardly ever saw specialists; the polyclinics handled conditions that today would be referred to a hospital or a specialist. The quality of medical care was just as good—but today, patients have different perceptions of what the healthcare system can deliver. Indeed, in the past GPs used to carry out routine procedures, such as childhood vaccinations, that today are often done by specialist paediatricians. Over time, GPs can feel that there is no longer demand for them to provide these services. GPs are generalists. If they lose some part of their clinical practice because of lack of demand, they can go into other areas to survive. The fear is that they might then lose touch with important skills or lack the confidence in these aspects of care, even though it is part of their medical training.

Many healthcare needs can in fact be met well and cost-effectively at the primary care level, whether by polyclinics or GPs.

There are also good reasons for preferring that patients be looked after by primary care rather than by acute care. In Belize, GPs are being encouraged to look after patients who are stable after cancer treatment. Because of modern medical developments, most cancer patients survive to have a decent quality of life. But they are still vulnerable: if they aren’t seen by their primary care doctors close by, they risk ending up in the hospital emergency ward each time they have a fever or even influenza that worsens.

In Australia, where my children practise as doctors, it can be difficult to refer patients to specialists in a city which could be hundreds of kilometres away. So primary care practitioners in smaller towns must manage on their own. They form groups of fellow GPs, each with special interests. These “GPwSI”[1] groups are supported by specialists in main hospitals, through telemedicine as well as regular programmes where they are brought back every three to four months to familiarise themselves with the latest specialised medical developments and advances in management. So they are semi-specialists—or rather, they are specialists in family medicine, working together to support their rural or suburban communities. This is something we hope to see happen in Singapore in future.

We are persuading GPs that they should and are able to take care of most patients; we are setting up systems, and we will have systems to support and renumerate them for doing so.

HOW IS PRIMARY CARE IN SINGAPORE EVOLVING?

What we hope to achieve, through the Primary Care Networks and the latest developments in Healthier SG, is to transform primary care and shape it to match the demands and opportunities of the future. This is a long-term strategy that will take many years to achieve, but we are now moving a step closer.

> **“Through the Primary Care Network and Healthier SG, we hope to transform primary care to match the demands and opportunities of the future.”**

One of the things we want to do is to give GPs support for their clinics. Most GPs are solo practitioners. If we expect them to perform more healthcare services in future, they will need staff help. It is not efficient to see a patient and also carry out scans, tests, and other checks, all of which take time. It is better to employ a nurse to perform these tasks. They can spend an extended period talking to the patient, whereas a doctor may only be able to spare a few minutes before focusing on other areas such as prescriptions. We could also support family clinics to be multi-doctor practices, so that we can accommodate GPwSI practices and hence offer a better one-stop service. The space allocated to clinics in newer housing estates may also have to be much larger to accommodate entire primary care teams and the expanded role expected of family clinics.[2]

This is where the Primary Care Network (PCN) approach makes a difference. Each PCN is a virtual group of GP clinics, supported by a HQ. The HQ has a team of nurses and what we call primary care coordinators. These coordinators manage the software that helps keep track of patients who are lost to follow-up (say they had been prescribed three months of regular medication but have not come back for more after that period). The coordinators contact these patients and remind them to follow up. If these patients do not follow up regularly, their conditions could worsen and lead

to complications that may land them in hospital or worse: which is bad for them and for the healthcare system.

My nurses have full access to my clinic management software and patient health records. They help to ensure that my patients do their follow up and ensure that the burden for remembering to check with patients does not only fall on the doctor's shoulders. In some cases, such as for diet counselling, it may be even better for nurses to do so. They can be very good at administering injections or blood tests, or they may be better with talking to patients or persuading patients to observe certain health habits, than doctors are. Indeed, some of the older nurses are superior at these tasks because they are regarded as more patient and caring figures.

This is why our vision is not just to advance GPs and family medicine, but to upgrade the whole primary care system. We must involve not just doctors but also nurses. Nurses must be as well trained as doctors: the only difference is the licence to prescribe medicines. They can really multiply doctors' capabilities, especially in primary care contexts.

There are also important allied health practitioners, such as optometrists, psychologists and so on. In Singapore, we look at psychology as looking after mental health. But in fact, they could also help encourage people to look after themselves: you don't need to be

"Our vision is not just to advance GPs and family medicine, but to upgrade the whole primary care system."

mentally unwell to see a psychologist. This could be an important role as Singapore's public health paradigm shifts towards preventive health and personal responsibility. Indeed, many targets of health promotion, such as obesity, exercise, healthy eating and so on, have to do with mental and psychological factors. We need the motivation to look after ourselves and to work out. Eating can be comforting, so if we feel stressed, we just want to eat comfort foods, which could be unhealthy ones in the long run. We know the obesity pandemic is greater than the COVID pandemic, and it can lead to all kinds of other conditions. But if we get our psychology and mindset right, we could stay healthy as a nation and not reach the disease stage nor require

further healthcare. This could be a good way for a broader idea of primary care to shape the entire system and improve population health.

WHAT CHALLENGES DOES SINGAPORE FACE IN ADVANCING THE PRIMARY CARE SECTOR?

To move towards our vision, we need to address different stakeholders: including the practitioners themselves, policymakers, and the public, who are also the patients.

First, practitioners. Clinically, we are all well trained and know the right thing to do in medical terms. But we also need to make sure that the business model for GPs makes sense, or else their work is not sustainable. With Healthier SG, we want to change the primary care infrastructure to support GPs in doing the right thing. First, we create standardised clinical protocols that work like KPIs: for example, we specify that a diabetic patient should do a blood test every three months, which is the clinical best practice. When we did an audit of such practices, we realised that only about 50% of patients received such tests, when the aim is for 80% to 90% of them to do so. Next, we develop outcome indicators: for instance, whether patients' sugar levels have really been brought under control. If so, the GP gets an additional bonus. If the patients are healthier, the GP gets rewarded. This helps make GPs accountable for the health of their patients.

At the same time, we also want to reward the patient for taking care of their own health. Patients can now get 3,000 health points (which is worth about $20 in value) for sitting with their GP to develop a health plan, looking for example at what they should be doing, such as exercising more or quitting smoking. We hope to empower the patient and at the same time encourage the patient to take ownership of their health.

We overturn the paradigm, so that instead of patients paying to see a doctor, they get paid to see a doctor once a year. And if they meet their health KPIs, they too get rewarded. In a departure from decades of policy on healthcare subsidies, we are also completely waiving the co-payment for certain procedures, such as influenza and pneumococcal vaccinations, for those who sign up with Healthier SG. This encourages patients both to enrol, and to get vaccinated: both of which contribute to overall population health.

Enrolling a person with a GP through Healthier SG gives both physician and patient a chance to build relationships and coordinate as well as to personalise care, which are principles of family medicine. It gives doctors a longitudinal and more comprehensive understanding of a patient's needs and even that of their family. At the same time, Singapore's version of the programme does not restrict patients to any clinics, unlike many other countries, where people are obliged to stay with the same clinic within their vicinity, which is often assigned by the government. Singapore allows patients to choose clinics freely, although subsidies are reduced if they jump clinics.

A positive side effect of the Healthier SG programme to enrol patients with GPs is that it gives the clinics a regular customer base. This is not a captive market, since patients are free to change doctors, but if the relationship between them is a good one, they are likely to stay on. Over time, this gives family clinics a clear sense of value: not only the clinic's premises and equipment, but the patient enrolment numbers, which are tied to the renumeration given to primary care under Healthier SG. Being able to envision the total value of the clinic as a sustainable business means there can be continuity over time: Doctors who retire may be able to take on and groom younger physicians, who can take over the clinic in time, with confidence that the business will be viable. In turn, the local patients can get to know a new doctor at the clinic they have become used to and continue the good relationship they have. This transition of care, when done well under Healthier SG, will benefit the public by adding stability to the care of the population.

HOW IS THE PRIMARY CARE SYSTEM EXTENDING BEYOND MEDICAL NEEDS TO SUPPORT OTHER ASPECTS OF WELLBEING?

An important development in our vision for primary care is the renewed emphasis on social prescribing: that is to say, any kind of care provision that has to do with a person's survival and wellbeing. This is related to our understanding that health has many social determinants. To be healthy, we need food; we need money; we need to have a job; our mental wellbeing depends on having a sense of identity, dignity, self-esteem, confidence and so on. Healthcare needs go beyond

the medical field per se. This concept is not new, especially to public health physicians, and in the old days, GPs were often consulted on non-medical issues by their patients. Nevertheless, it is probably unfamiliar to most clinicians in Singapore today. Doctors have come to see these non-medical aspects of care as not part of their job.

Today, we have a Referral Management System (RMS), based in our Primary Care Network HQs, that can help connect patients with important services such as social services, palliative care, homecare, and even community funding. While in the past it was difficult to find information on these services, the RMS now consolidates these into a single portal. It is currently underused because many GPs are not aware of it. But we want to expand this. Voluntary Welfare Organisations are being funded and trained to be the extended arms and legs of our GPs, helping to monitor blood pressure and sugar levels of the elderly, for instance. In this way, the broader community, not just medical personnel, can contribute to primary care for Singaporeans.

There is synergy between the development of the healthcare system and other sectors, with the new focus on not just disease prevention and treatment but overall wellness. In fact, in some countries, such as Malaysia, the Ministry of Health also has responsibility for Social Services. The work we do to take care of Singaporeans in different ways could involve all aspects of service provision, across the whole public sector and community ecosystem.

As services become more and more specialised, they tend to fragment, and then the tendency is for any part of the system to be bypassed or overlooked. Instead, conceptually, the GP should be the first point of contact for help in Singapore. We want to remind our physicians that they are responsible for their patients not just in clinical terms, but for the whole being of the person.

“We want to remind our physicians that they are responsible for their patients not just in clinical terms, but for the whole being of the person.”

They will be supported in this role and should know what resources are available for them to do so.

GPs need to relearn this conceptually, but also to put it into practice actively. As with any process, if you don't practise it, you will not be sharp at it, and will not remember all the resources that are available. GPs should make it a habit to always bear these other aspects of care in mind when helping patients.

WHAT DO YOU SEE AS THE ROLE OF FAMILY DOCTORS IN AN IDEAL FUTURE?

The healthcare system cannot just be about primary care or tertiary care. Every aspect of the ecosystem has a role. Each must talk to one another so that the patient can get what they need, without the care they receive becoming disjointed or disconnected. We want our GPs to become patient advocates, helping the patient to understand and navigate the system and to communicate with say, other doctors or specialists and allied health professionals. Communication will be key to this new role of our primary care practitioners.

We must see our patients not as customers or even clients, but as a friend and person we want to help. Like many civil servants, most doctors come into this vocation wanting to do good. If we focus on the whole person, we will do these things for them as a matter of natural progression and logical course.

My vision for the future of primary healthcare in Singapore is based on the point of view of the ordinary Singaporean. If I face any problems, whether it is a health issue, or a social, money or job issue, I want to go to one point of contact for help, who is a trusted friend, and that is my GP. I want to be able to talk to them freely, without being judged, and be pointed to the right place, without having to navigate the whole system on my own. The GP will be able to put me in touch with a primary care coordinator, who will know how to arrange all the services I need across the whole complex spider web of services and resources. And once that is done, I will not need to be anxious, and can continue to live my life well. I will be taken care of, not just for health matters, but for all aspects of being.

Healthier SG is the first of many steps towards this future. ■

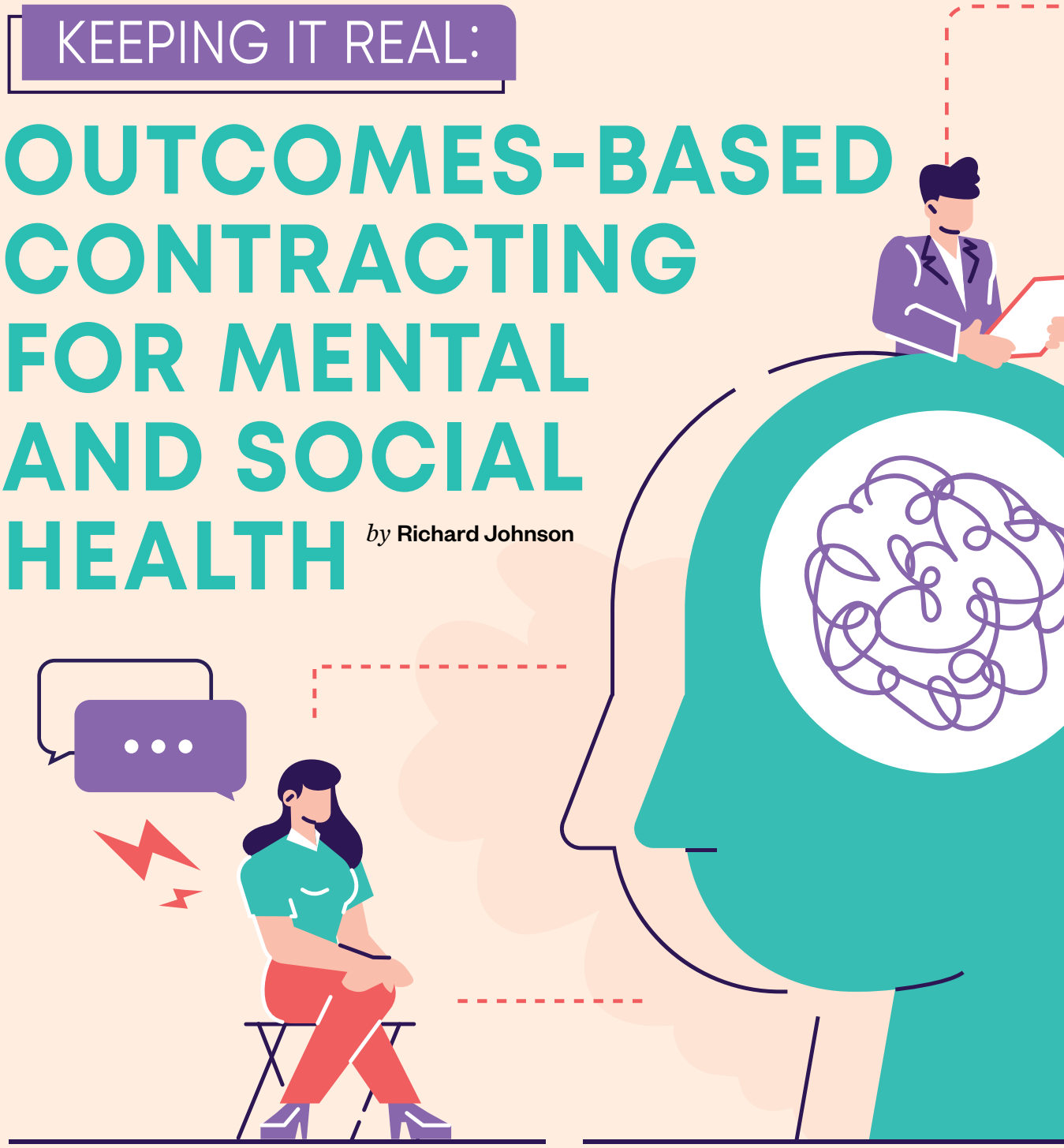
Notes

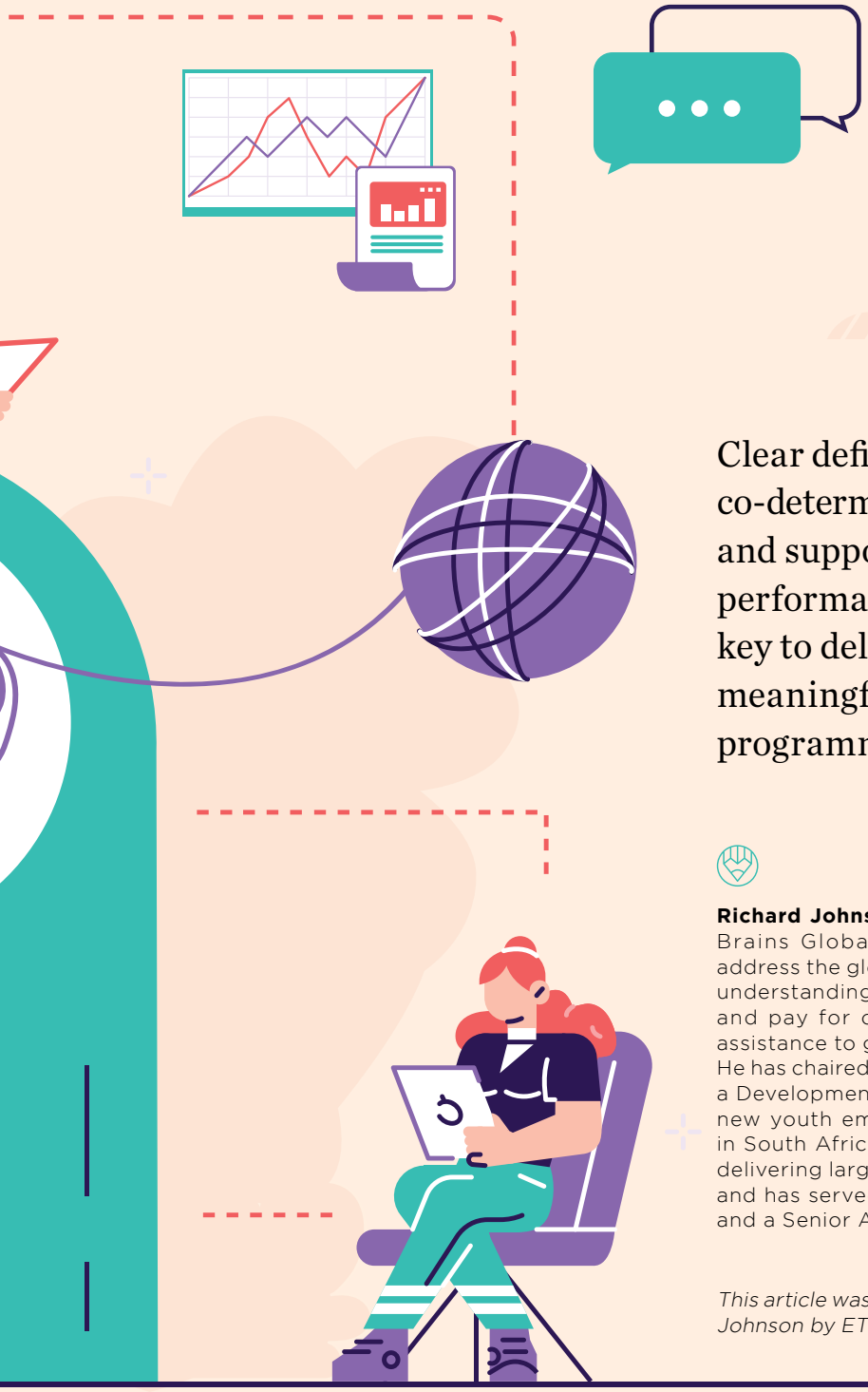
1. General Practitioners with Special Interests (GPwSI) is a term commonly used across Commonwealth countries. They may also sometimes be referred to as GPs with Extended Roles.
2. Currently, the HDB shop space for clinics is between 40 to 50 square metres, whereas it may need to be 2 to 2.5 times larger. Another approach may be to only allow Primary Care Networks HQs to bid for these larger units, as PCNs are the main movers for developing the primary care system of the future.

KEEPING IT REAL:

OUTCOMES-BASED CONTRACTING FOR MENTAL AND SOCIAL HEALTH

by **Richard Johnson**





Clear definitions of success, co-determined with stakeholders and supported by robust performance management, are key to delivering results meaningful to the people programmes seek to serve.

Richard Johnson is Chief Executive of the Healthy Brains Global Initiative (HBGI), which looks to address the global gap in mental health services and understanding by pooling philanthropy to contract and pay for outcomes, and to provide technical assistance to governments and other organisations. He has chaired eleven Social Impact Bonds, including a Development Impact Bond in Palestine, and has a new youth employment programme starting soon in South Africa. He has run for-profit organisations delivering large scale outcomes contracts in the UK, and has served as a World Bank Senior Consultant, and a Senior Advisor at the Global Fund.

This article was adapted from an interview with Richard Johnson by ETHOS Editor-in-Chief Dr Alvin Pang.

An outcomes-based approach to addressing mental health

Be it in high- or low-income countries, mental health is part and parcel of everyday existence. There is no physical health without mental health, and there is no social health without mental health. Social health has to do with one's ability to perform in the labour market; to do well at school; to raise a healthy baby; to age well without ending up as a significant cost burden to the community.

The Healthy Brains Global Initiative (HBGI) was established to address the global lack of understanding and data around mental health. Such data as exists tends to be from white wealthy communities, outside of which there is a paucity of data. HBGI set out initially to try and fill that gap, raising money to collect the data. It was a struggle because, I think, donors wanted to pay not for data but solutions. HBGI also had no clear operating model for how to gather that data. This is when I started talking to them.

Based on my 23 years of practitioner experience in outcomes- and performance-based contracting, I proposed that if we want to gather this data and learn what needs doing, we must implement a whole new range of mental health services. From these, we can then derive data and learning, that could in turn be shared with others. If we want to deliver these services as effectively as possible, we must attach funding to the outcomes that the programmes deliver for the individuals accessing those services. For each individual, we want to ensure that they achieve the outcomes that they are looking for. The outcomes that we want to contract for are livelihood-linked outcomes: they will be linked to someone's life experience and social wellbeing, while allowing us to track and better understand mental health and its impacts at the same time.

Given the growing global interest in outcomes-based contracting, and since mental health is significantly under-invested globally, this should interest donors. There is a lot of interest among service providers in delivering on outcomes-based contracts, who say: "I deliver big results, pay me for that result and I will do more of it." There is also a lot of interest among social investors willing to provide the catalytic cash or working capital; but these investors also want returns on their investments. So there needs to be someone at the end of the process who is willing and able to pay for the outcome: each time a child goes back to school; each time a person goes back to work; each time a homeless person is housed. While in some instances this could be government, in many

cases, particularly in international development, there is a dearth of people willing to pay for these outcomes. The big institutions are set up to award grants and pay for inputs, not outcomes. At HBGI, we are now looking to establish and run a series of thematic outcomes funds to pool the resources of various philanthropic donors, and then use those funds to contract and pay programmes on the basis of the results that they achieve. We also want to provide technical assistance to governments or others in how to contract for outcomes and how to carry out performance management on such contracts.

An outcomes-based approach is not a cure-all. But it can help show that you can genuinely deliver an impact on individuals' lives, and ensure that programmes are more likely to achieve results than not. This minimises the resource waste that exists in so many programmes and services, which is particularly important for low-income countries. We know that by attaching the money to the performance, we are going to increase the performance focus within that programme, minimise opportunities for fraud, and more likely increase the outcomes for the individuals accessing these services.

We also know that an outcomes-based approach is different from the typical fee-for-service programme which is very much one-size-fits-all: the programme is determined in advance and then people are put through that process. An outcomes-based programme, by design, is an individualised programme. If I'm looking to deliver outcomes for individuals, my service has got to be individualised; I have got to be engaging with that person and understanding their life circumstances to enable them to achieve their outcome. This means that the service itself becomes very localised and contextualised. This also means the programme is not imposing some sort of cultural understanding of mental health. Mental health varies from culture to culture in the way it's perceived, described or experienced. You need to create a service that can reflect and respond to that, rather than imposing some preconceived notion or counselling process that everybody has to squeeze through. This is why mental health is ideally suited to outcomes-based approaches.

> THERE IS NO PHYSICAL HEALTH WITHOUT MENTAL HEALTH, AND THERE IS NO SOCIAL HEALTH WITHOUT MENTAL HEALTH.

> MENTAL HEALTH VARIES FROM CULTURE TO CULTURE IN THE WAY IT'S PERCEIVED, DESCRIBED OR EXPERIENCED. YOU NEED TO CREATE A SERVICE THAT CAN REFLECT AND RESPOND TO THAT.

Enabling and evaluating success

In outcomes contracts, there is always a question around the metrics: or what it is we are going to pay for. We need the outcomes, as far as possible, to be very clear, tangible and concrete. It should be relevant to the individual in their life, and also something that we can measure and verify, because we want to attach a payment to it.

There are a number of established and internationally accepted measures of mental health and mental wellbeing, but these are generally self-reported. And they may not get to the heart of what mental health means to an individual and their ability to function and engage with their social life. We have seen during the COVID pandemic how social isolation can lead to a breakdown in the social network, which in turn leads to a deterioration of mental health. We have seen on the back of COVID, a range of social impacts that are clearly related to mental health, such as among young people an increase in self-harm, an increase in suicide, an increase in failure at school, and so on.

So we need to recognise that socialisation—enabling individuals to return to their social environments—is in itself going to be part of the desired outcome of such programmes. We can measure this in some ways: such as whether or not they return to school, work or social activities. On many of our programmes, we look to define these real-life outcomes, and then measure mental health alongside it, and over time learn a little bit more about their interplay. This will help in other ways: preventing further deterioration or further harm, for instance, lends itself clearly to outcomes-based models.

One way to approach evaluation is to look at measuring outcomes across a population. We can start with a baseline, say of current levels of school attendance,

self-harm, suicide ideation and how children are behaving and performing in schools. And then against these baselines, we can determine what outcomes we might be looking to achieve—what difference we might be looking to make—over a 12-, 24- or 36-month period—and then attach payments to these goals. In the particular context of a school population, you have a captive group and could introduce some regular measurement processes to assess social wellbeing within that environment over time, which we can attach payment to.

We talk about 'incentivising', but such programmes do oblige the service provider who is aiming to achieve the outcomes to go in and listen to the young people, engage with them, and try to understand exactly what the core issues are. We might then find them starting to innovate around youth mentors, for instance, to enable engagement and real outcomes for the young people, such as coming up with appropriate warning signs to identify when an individual is in distress.

Letting Beneficiaries Choose Their Desired Contracted Outcomes

An impact bond in Greater Manchester, in the UK, sought to prevent homelessness among high-risk young people. The associated contract had two fixed outcomes, with a unit price attached for each, as well as three more variable outcomes—A, B and C—each also with a price attached. The young person themselves decide what those outcomes are. From a menu of options, they choose the three that are important to them, and how to prioritise them.

The actual individual beneficiaries on the programme determine what outcomes they want from the service delivered to them. This empowers them in the process, returning to young people a sense of agency over their circumstances.

But you cannot design a programme in Geneva and impose that in Ghana to address such issues. Solutions have to be developed on the ground, around the individuals one is trying to help and their social circumstances. The challenge is how to do this and at the same time ensure that that intervention is actually going to deliver an outcome for them.

We should not fall into the trap of coming up with one model, such as for warning signs of distress, that is then imposed across different schools or other contexts. Instead, we must create the conditions for communities, such as schools, to identify within their population what it would mean to increase their wellbeing over the next 12, 24 or 36 months. It could look like increased social cohesion and social strength, better communication and so on: then we can have other sub-measures, such as warning signs, that could then be implemented according to what has been identified as important to them.

That said, bottom-up approaches and personalised, context-sensitive solutions require a structure, to ensure that the performance is real, accountable, and delivers what we want; that the funds are spent in the right way, with clear metrics tied to what it is we are looking to pay for. These will be a mix of outputs and outcomes. There will also need to be strong performance management systems in place. We need to ensure that we have visibility over what is being delivered, and have a way of tracking, reporting on and reviewing what is going on, on an ongoing basis.

> BOTTOM-UP APPROACHES AND PERSONALISED, CONTEXT-SENSITIVE SOLUTIONS REQUIRE A STRUCTURE, TO ENSURE THAT THE PERFORMANCE IS REAL, ACCOUNTABLE, AND DELIVERS WHAT WE WANT.

Getting good at outcomes contracting and performance management

Performance management is not contract management. It is not a bureaucratic process of counting pieces of paper, but an ongoing engagement with the programme, and with the experiences of the community one is trying to help, to ensure that as many of them as possible achieve the outcomes we want.

In Afghanistan after 2001, there were no health services in the country. All the basic essential health services were contracted out to international NGOs, who were on budget reimbursement contracts with a very tight specification of what they had to deliver per clinic. When I started working there in 2017, we looked to shift all these services to performance-based contracts. To begin with, I engaged with 50 different stakeholders across government and funders and asked them what success looked like—and received 50 different answers. There was no cohesive definition of success. The crucial intervention was to pull them back and get everyone to agree on what successful performance would look like—such as better health services delivered to more people—which we could then use to drive the design of the performance contracts and how these programmes would be performance managed.

This is what we need to get public servants better at: developing a good definition of what success looks like. To ensure that the definition is relevant, we need to move from bureaucratic

definitions to ones that are real for the individuals concerned. Indeed, let's engage those individuals in developing those definitions. We need to determine what success looks like, and engage the people to whom it matters, from a range of different disciplines, in defining that success. Then we use that to cohere efforts around and structure the response that comes after: if that is what success looks like, then what are the steps we need to take to achieve that? And if those are the steps, what are the skillsets that we currently have, mapped against what we need? And then how do we upskill towards that? We build capacity in this way.

If you can shift the conversation to one around a clear definition of success, you can shift a culture within a system to one of performance, because everyone then begins talking about the achievement of that success. Within a properly implemented outcomes contracting environment, you also generate a lot of rich data, because you are constantly tracking, recording and reviewing what's going on. So rather than doing impact evaluation, which is disconnected from delivery, you embed a regular ongoing activity to review what's going on. You focus on how you are on track to achieve this given level of success, based on

Success Determined by Those Who Live It

HBGI has a very active Lived Experience Council—a group of people with intimate lived experience of poor mental health—whom we seek input from each time we reach a relevant touchpoint.

Likewise, we are about to start a project with YMCA Global, where we will spend 18 months training a group of young people to speak to other young people, to ask: *What is concerning you right now and what would be a meaningful outcome?* These findings can then be used to inform future definitions of success as young people see it.

what has been collectively defined, and you change the language that people use.

Some well-meaning service providers may have been delivering a service for decades in a particular way. They push through a fixed process with a paternalistic view of the people they are supposed to be serving or working with, considering themselves the experts who know what's best. Many of these organisations do not even know how many people they are working with at any one time, because they have not been tracking the data, nor their progress towards the outcomes that the individuals need to achieve. But once they are led to think about these questions, they begin to change their mindsets away from one-off performance measures. Most organisations feel empowered by this and change the way they operate within their contract. They begin to step back from their paternalistic view and to recognise the people they are working with as assets.

Several factors underlie success in using an outcomes-based approach. First, do not do outcomes contracting just for the sake of it. Instead, you need to start off with an understanding of what you are looking to achieve, and then find the best tool to get you there. Second, it is important not to overcomplicate this. Often, when everybody weighs in, you can end up with a very complex beast of a solution. Make sure to keep it real for the individuals you are trying to achieve success for. Keep that definition of success as clear and simple as possible. Keep bringing everybody back to that simple definition and strip out the complications, so you can have lean solutions.

> WITHIN A PROPERLY IMPLEMENTED OUTCOMES CONTRACTING ENVIRONMENT, YOU ALSO GENERATE A LOT OF RICH DATA, BECAUSE YOU ARE CONSTANTLY TRACKING, RECORDING AND REVIEWING WHAT'S GOING ON.

If you have people talking and thinking about performance and success, and about what's important for the person on the frontline, then you are taking a step in the right direction. ■

ENCOURAGING HEALTHIER CHOICES:

Helping People Take Better Care of Themselves

by **Rory Gallagher and Serene Koh**

Recent work in behavioural insights at both individual and systemic scales could help advance Singapore's preventative healthcare paradigm.

Dr Rory Gallagher is the Behavioural Insights Team's (BIT) Managing Director across Australia and the Asia-Pacific, and has been with BIT since its inception in 2010. Based in Sydney since 2012, Rory led the establishment of the New South Wales Department of Premier and Cabinet's Behavioural Insights Unit—the first Australian agency dedicated to applying BI to public policy—as well as the development of the inaugural Behavioural Exchange Conference (BX2014 Sydney). Rory holds a PhD in health and behaviour change from Cambridge University and has been a Visiting Fellow with Singapore's Civil Service College since 2014. Before joining BIT, Rory worked in the UK Prime Minister's Strategy Unit and the UK Department of Education. He is the co-author of *Think Small: The Surprisingly Simple Ways to Reach Big Goals* (2017).

Dr Serene Koh heads BIT's Singapore office and leads domestic consultancy work as well as capability building across the region. She has been with the Singapore office since it was founded in 2016. Before joining BIT, Serene was a researcher with the Ministry of Communications and Information, where she led the department's work in behavioural and social research. Serene holds a Masters in Research Methodology and a PhD in Education from the University of Michigan.

It is clear that in Singapore, as with health systems around the world, we can no longer afford to keep focusing healthcare on treating those who are ill; we have to shift focus upstream and help people make healthier choices in their daily lives. This is why Healthier SG's increased focus on prevention and healthier living is an encouraging and exciting development. We believe that behavioural approaches will be key to achieving this shift at individual, community, service, and system levels.

We know from the evidence and our own everyday experiences that there is often a chasm between what people know they should do, what they intend to do, and what they actually do in practice. In behavioural science, this is called the 'intention-action gap'. This gap is particularly pronounced where the reward for present action is only experienced in the future, which is clearly the case for many preventative health behaviours. I will not immediately lose weight if I reject a delicious dessert, nor will I instantaneously get healthier after attending a regular screening: the benefits will be felt only in the months and years to come.

Hal Hershfield's recent book, *Our Future Self*, sets out the mental biases we commonly experience when thinking about the future.[1]

He argues that we tend to view the future as a distant possibility, and our future selves seem like strangers. Consequently, we often opt for more immediate gratification, which disregards or discounts our future health and

wellbeing. Thankfully, Hershfield highlights the science behind these decisions and provides practical tips on how we can better connect with our future selves—balancing living for today and planning for tomorrow.

For example, there are people in our lives towards whom we act more generously and virtuously: people like our children, our parents, and our closest friends. Therefore, when it comes to preventative health behaviours, if we think about our future selves as if they are people we are close to, we may be more likely to take positive actions. This 'future self' approach is something we believe that health practitioners and family GPs could draw on in their sessions with Singaporeans. While working on a care plan together, doctors could help patients develop greater connections to their future selves in order to make better health decisions today.

However, we cannot rely solely on individuals and conversations with doctors to turn the tide. If we want to support preventive approaches and help people to live more healthily, behavioural science shows that we need to pull a number of systemic levers to change the environments in which people make these decisions.

Behavioural science shows that we need to pull a number of systemic levers to change the environments in which people make decisions.

NUDGING UPSTREAM AS WELL AS DOWNSTREAM

One area of prevention in which upstream interventions have been explored is tackling obesity. The Behavioural Insights Team (BIT) and our sister organisation, Nesta, are undertaking a major programme of work that seeks to help redesign food systems. Behavioural approaches have often focused on downstream changes, for example, by encouraging people to eat more healthily through information on calories and public education campaigns. However, we believe that this must be complemented by a much stronger focus on upstream changes, such as by shifting the behaviour of businesses and regulators. This includes everything from product reformulation to the changing landscape of how we all consume food in supermarkets, online, via delivery apps, and so on.

A prominent example of an upstream intervention that continues to reap benefits is the UK's sugar sweetened beverage levy.[2] We often describe this as a 'double nudge'—since while it was intended to shift consumer behaviour towards less sugary drinks, it was also explicitly designed to shift the behaviours of manufacturers and retailers. The levy was first announced in 2016 and two of its design features are important to flag. First, the levy would not come into force until April 2018, meaning that producers had two years to make changes to their drinks. Second, the levy was divided into two tiers: drinks with more than 8 g of sugar per 100 ml would face a higher levy than those with more than 5 g of sugar (see Figure 1).

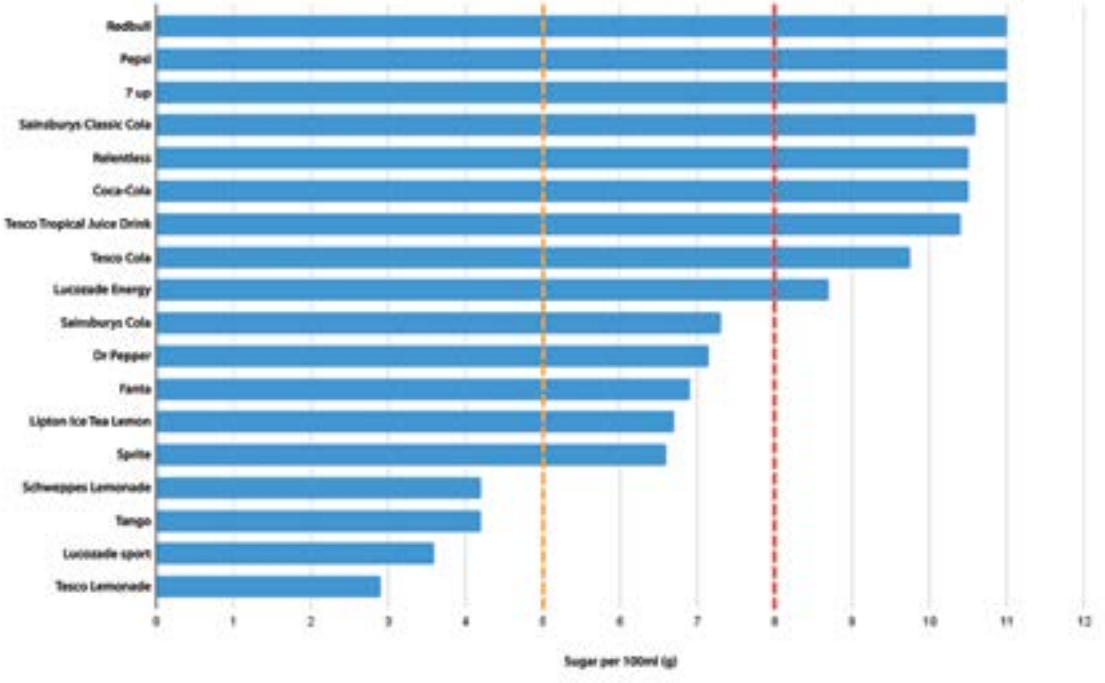


Figure 1. Sugar content in selected beverages and two tiers of the levy (2016).

These tiers meant producers had a clear incentive to reformulate their products to avoid higher levies. Eight months after the announcement and more than a year *before* the levy came into effect, major beverage companies announced that they were reformulating their drinks so that they were exempt from the levy.[3] In other words, consumers benefited from this intervention without changing their behaviour and purchasing decisions. The levy had successfully nudged providers to reduce sugar in their drinks; this system change was doing the heavy lifting rather than individuals.

In Singapore, efforts such as the Nutri-Grade initiative are setting similar goals;[4] Nutri-Grade hopes to spur companies to reformulate their products by reducing sugar content. Following the announcement of the measures in 2020, the median sugar level of pre-packaged beverages fell from around 7% to 4% the following year. The Health Promotion Board is hoping to build on this momentum by working with food and beverage operators to make *kopi 'siew dai'* (with less sugar) the default for local coffee orders. This would mean that, like the UK sugar sweetened beverage levy, individuals are supported to make healthier choices by changes to the choice architecture of the food system.

Similar approaches can also be applied to growing online environments.[5] The pandemic has led to a huge uptick in

the use of food delivery apps, which presents an opportunity to influence the design of these online platforms to help people make healthier decisions. BIT's online studies have demonstrated that repositioning lower energy options more prominently has the potential to encourage lower energy food choices in online delivery platforms.

ALIGNING INCENTIVES AND INTERVENTIONS

Our research has shown that these types of healthy nudges can be implemented within a sustainable business model. We believe that the economic impacts of these upstream nudges are critical to understand and address. For example, BIT Australia worked with the Alfred Hospital and VicHealth, on trials to explore the impact of reducing the visibility and increasing the cost of sugary drinks in hospital canteens and vending machines.[6] Retailers were understandably worried that these interventions would decrease their overall sales, but in fact, our trials demonstrated that this was not the case in practice. Consumers did not stop purchasing drinks altogether but *shifted* from purchasing sugary 'red' drinks to buying healthier 'amber' and 'green' drinks. Highlighting that these interventions do not hurt retailers' bottom line is critical to scaling the uptake of these approaches.

Another approach to engage and align incentives with retailers is through signifiers like health ratings. If there is competition and comparison between retailers and delivery platforms in terms of healthier ratings, then there is an incentive for them to shift towards healthier options to improve their market positioning.

However, where there is evidence of misalignment between profits and public health objectives, we need to use harder levers, such as regulations. For instance, in Singapore and many countries around the world, we know that unhealthy snacks and sweets are often positioned at retail checkouts. These impulsive food purchases are money spinners for retailers, so the economic and health objectives are clearly misaligned. In October 2022, the Department of Health and Social Care in the UK set limits on where unhealthy food can be placed in shops. These restrictions directed that products high in fat, salt, or sugar can no longer be displayed in prominent locations such as at store entrances, aisle ends, and checkouts. The rules apply to equivalent high-traffic spots on food shopping websites. At BIT, we are supportive of these types of regulatory interventions and continue to run trials and collect evidence to explore how we can work together with industry when incentives align and how to intervene when they do not.

> **Healthy nudges can be implemented within a sustainable business model.**

HARNESSING TECH TO ENCOURAGE HEALTHIER CHOICES

There has been much discussion about the role of technology in supporting healthier choices. Over the past decade, we have seen an explosion of apps: food apps, health apps, vaccine apps, travel apps, payment apps and so on. For service delivery organisations, it can often feel like we need to have an app as part of our armoury. But for those working in public health and policy more widely, it is worth recognising that the vast majority of apps are not actually successful, and indeed, many seem like a solution looking for a problem. We often get asked how to increase the uptake of a particular app, but the first question we generally ask is whether an app is the right solution in that particular space. If it is indeed a viable channel, given the heated competition for consumers' attention, we have to ensure that it is carefully designed to meet users' needs. So we work with partners to test different communication strategies to increase engagement and, perhaps most importantly, evaluate their impact on desired health objectives.[7]

Technology solutions go beyond apps, of course. For instance, good old-fashioned text or SMS message reminders can be effective at encouraging attendance and engagement with health interventions, especially as messaging systems enable these prompts to become more tailored. In the past, we might have had to send the same text message encouraging people to attend their medical appointments to all recipients. Today, it is much easier to make these messages much more personalised. For instance, we can provide specific details like individual names, dates, clinics' addresses and directions from home. Such simple but effective messaging has been shown to be highly effective nudges for tasks such as vaccinations and follow-ups for boosters.

> "Simple but effective messaging has been shown to be highly effective nudges.

Chatbots have also shown effectiveness in increasing attendance and uptake. AI-powered healthcare chatbots can now handle simple inquiries with ease and provide a convenient way for users to research information. In many cases, these self-service tools are also a more personal way of interacting with healthcare services than browsing a website or communicating with an outsourced call centre. In fact, according to Salesforce, 86% of customers would rather get answers from a chatbot than fill out a website form.

One notable area that has benefited from the advent of chatbots is mental health management. Healthcare chatbots can provide mental health assistance 24/7. This can be critical to those living in rural areas where mental health resources are scarce or for people experiencing a crisis in the middle of the night when 'human help' is not available. For example, a chatbot could quickly:

- Offer self-help tips like meditation, relaxation exercises, and positive affirmations.
- Connect people with mental health experts who can help them with specific challenges related to living with a mental illness.
- Connect patients with other people who are going through similar struggles, offering peer support and a community.

Technology may also help us to better connect with our future selves. If GPs were to take up Hershfield's recommendation to help people make a stronger connection with their future selves, they may, for instance, be able to draw on apps that enable us to create 'filters' that visibly age us, often realistically. Obviously, there will be a delicate balance to be struck about how these tools and data should be used, but we see opportunities to work with GPs on how they can harness the power of technology to help people make healthier choices. For example, the research of Susan Jebb has highlighted that technology can make it easier for GPs to bring up, address and monitor sensitive issues like obesity and loneliness.[8]

BEYOND MASS MESSAGING: PERSONALISATION AND TARGETING

Governments around the world often rely on running mass information campaigns to raise health awareness. While these mass efforts have their place in promoting health behaviours, too many campaigns are run without being tested for effectiveness (particularly in terms of actual behaviour change rather than engagement metrics) or an assessment of return on investment. As with many organisations, the pandemic spurred methodological advancements at BIT in terms of our ability to test communications online at speed and scale. For instance, we can now test different campaign messaging through online experiments with panels of people in matters of days, rather than weeks or months.

While there is a role for mass campaigns, we believe we need to shift away from trying to target the entire population at once to thinking more deeply about personalisation and targeting. How do we get the right messages to the right people at the right time, rather than always to the largest number of people?

We also need to combine these campaigns with service delivery. In Healthier SG, as we move to pair each household with a GP practice, we can consider how to leverage this relationship to individualise health messaging. By designing good care plan templates, we can help all GPs have targeted discussions with their patients about the kind of tailored solutions that will work best for them.

It is important to note while we underline the importance of personalisation, this does not automatically mean individualisation. People's decisions are often strongly shaped by their social context and group dynamics. For instance, we saw through the pandemic that social networks were extremely powerful in influencing vaccination

behaviours—messages about protecting your family and community were more effective for many people than simply reminding them about vaccinating to protect their own health. As such, we believe that a huge driver of positive health outcomes will be one's immediate family. As GPs implement care plans with their patients, how you personalise that by household and how you engage next-of-kin in conversations becomes very important as well.

EXPLORING THE NEXT FRONTIER OF HEALTH BEHAVIOURS AND CHOICES

A few things continue to animate discussion in the "What next in health behaviours?" space:

1. As we consider the behaviours of individuals in response to various types of levers, we must also consider the context within which these interactions are taking place, i.e., the healthcare institutions themselves. **Health delivery systems** are an area of huge interest in Singapore and across the world. In the UK, BIT is doing critical work on redistributing hospital load and demand,[1] which may well have resonance for Singapore. We are also exploring the evidence on organisational behaviour and systems to tackle productivity issues, such as how we get health staff to procure more effectively and how we attract and retain health professionals.

2. From a cohort perspective, we are expanding our attention on **ageing**. For example, we are undertaking exciting work with the UK's Centre for Ageing Better that looks at debiasing recruitment of older workers. This is an area that should also be of interest in Singapore in terms of how we can help our seniors continue to live productive and fulfilling lives in later life. More broadly, we are asking how we might shift from talking about ageing to talking about *longevity*.

3. Adjacent to health but very much associated with longer term wellbeing is **food sustainability**. One of the lessons Singapore learned from COVID is how vulnerable we are to disruptions in the global food supply chain. The Singapore Food Agency has announced that as part of the Singapore Green Plan 2030, Singapore will build up our agri-food industry's capability and capacity to sustainably produce 30% of our nutritional needs by 2030. Behavioural Insights could help shape the design of incentives, markets, and platforms around this—from the food production angle and/or to raise consumer acceptance (e.g., of plant-based protein).

Note

1. See: https://docs.google.com/document/u/0/d/123IGpK0r_Z7zJWYSFLeD2okdHv9US9KIuIbWqe0fwIQ/edit.

Personalisation does not automatically mean individualisation. People's decisions are often strongly shaped by their social context and group dynamics.

As we approach a decade of applying behavioural insights in Singapore, behavioural tools become more critical than ever to help us make the right decisions in order to live healthier lives. But we should not limit ourselves to focusing on individual behaviours and mass campaigns: behavioural levers can help us redesign our health systems and environments, working closely with industry, regulators, GPs and communities whilst unlocking the potential of technology. And this should be done with an experimental, iterative and human-centred mindset. If we do this, we may better achieve the exciting ambitions set out in Healthier SG. ■

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Social Norm Nudges and Social Sensemaking:

Lessons for Policymakers

by **Do Hoang Van Khanh**

Do people make decisions based on what their peer group does or believes? Ground reality may complicate public policies based on this assumption.

Do Hoang Van Khanh is Lead Researcher at the Institute of Governance & Policy, Civil Service College. Her research interests include applications of behavioural insights and evaluation tools in public policy.

What is social sensemaking and why does it matter?

Behavioural nudging is a popular tool for policymakers, but research suggests that social sensemaking may reduce their effectiveness.[1] Social sensemaking is when individuals try to infer the intent behind the choice architect's decision and what their decision would signal to the choice architect and/or other people around them. This can forestall the automatic cognitive biases that make nudges effective. In some cases, questioning the motives of the choice architect can even lead to backfiring on the intended outcome of the nudge.

A BACKFIRED NUDGE

In 2016, the Dutch government—encouraged by the success of opt-out organ donation systems in many countries where residents are automatically considered organ donors unless they explicitly state their non-consent—passed a bill to switch their organ donation system from an opt-in to an opt-out scheme.

However, unlike in other countries, this change resulted in a 40-times increase of opt-out requests in the Netherlands. This dramatic jump in active rejections occurred not only among newly registered donors but also among those who had previously consented to donate but now deliberately revoked their consent. One explanation for this backlash is that some Dutch residents may have interpreted the change in choice architecture as an attempt by the government to limit their freedom of choice, prompting them to explicitly exercise their opt-outs in protest.[1]

Note

1. J. M. T. Krijnen, D. Tannenbaum, and C. R. Fox, (2017). "Choice Architecture 2.0: Behavioral Policy as an Implicit Social Interaction", *Behavioral Science & Policy* 3, no. 2 (2017): 1–18.

Nevertheless, some behavioural researchers argue that social sensemaking, when used correctly, can increase the effectiveness of nudges.[2] They cite the example of defaults, which always reveal the intent of the choice architect, yet are one of the most effective nudges available in most contexts.

In considering nudges as policy tool options, policymakers in Singapore should understand how social sense-making works in our context, since it could influence how citizens react to such measures.

A study of social norm nudges and social sensemaking in Singapore

A recent study by a Civil Service College (CSC) team has examined social sensemaking and its effect on social norm nudges, a common intervention used by public agencies in Singapore.

In late 2021, CSC, with support from the Central Provident Fund Board, the Ministry of Sustainability and the Environment, the National Environment Agency, and the Ministry of Health, conducted an online survey with 2,000 Singapore citizens and permanent residents, aged 21 and above. The survey aimed to identify whether individuals engage in social sensemaking when presented with social nudges for health, environment, and finance public policies. In addition, the study also sought to understand the factors that can trigger social sensemaking and influence the effectiveness of social norm nudges in these policy domains.

In the survey, each participant was presented with five hypothetical scenarios to do with:

1. Central Provident Fund (CPF) top-up
2. CPF refund used for housing
3. Buying locally produced vegetables
4. Bring your own bag for grocery shopping
5. Long-term health insurance scheme

The scenarios were presented in a random sequence. For each scenario, participants were randomly shown either the control or treatment message. All treatment messages contained a social norm nudge (see Figure 1).

EXAMPLE - SCENARIO 1
TOP UP TO CPF SPECIAL ACCOUNT OR RETIREMENT ACCOUNT

A social norm nudge was added to all treatment letters.

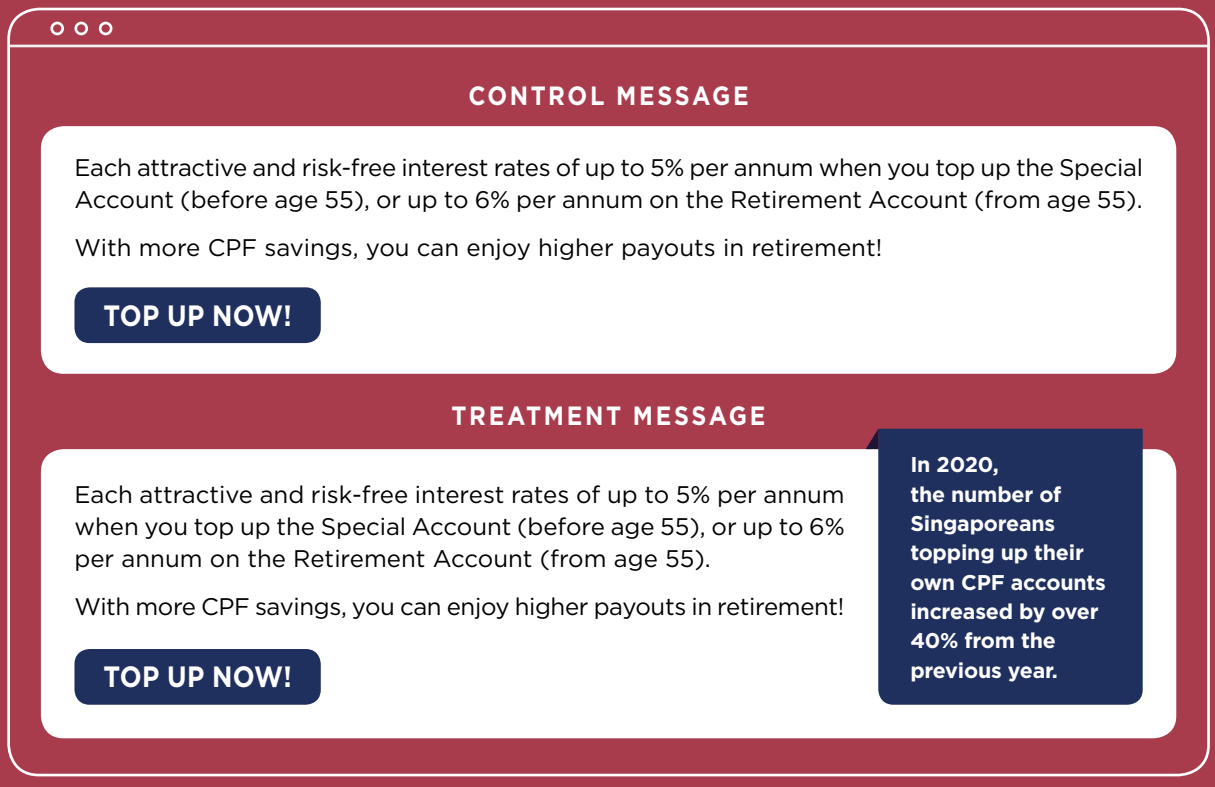

Figure 1. Example of Control and Treatment message.

After viewing the message, participants were asked to indicate their intended decision and answer ten questions on factors that might have influenced their social sensemaking and decision-making. These questions were designed to tease out information about participants' ease, importance, and certainty of their decisions, as well as their trust in the choice architect, who in this case was the government.

Additionally, these questions also asked about aspects of social sensemaking: specifically, if the participants thought of the government's intentions as well as other people's decisions when they made their decision, as well as if they were concerned how the government and other people around them would perceive their own decision.

These questions were intended to shed light on factors that might have affected their decision-making as well as to show if social sensemaking had been triggered.

What did the study find? Lessons for policymakers

1 Social norm nudges alone do not work. Instead, people are influenced by the importance of the decision and trust in the government.

The study found that social norm nudges had no statistically significant impact on the respondents' intended decisions for four out of the five scenarios. For the scenario on buying local vegetables, the treatment message with social norm performed statistically worse than the control message.[3] Instead, we found that participants' decisions were influenced by the perceived importance of their decision, if they agreed with the government's intention, and whether they believed that the government was more likely to succeed in their policy objective.

These results suggest policymakers should avoid relying solely on social norm nudges to elicit behavioural change. Instead, we could consider using other nudges in combination to trigger a stronger positive response. Additionally, policymakers may achieve greater results by helping citizens understand the importance of their decision as well as increasing their trust in government agencies. Public agencies could do this by being more transparent about the intention of the policy and communicate clearly with the public about the reasoning behind policy decisions.

Policymakers may achieve greater results by helping citizens understand the importance of their decision as well as increasing their trust in government agencies.

2 Social sensemaking made very little impact, at least in the online environment.

Based on the results of this study, respondents engaged in some degree of social sensemaking, but it was not consistent across all scenarios. They only thought sporadically about the government's intentions, other people's decisions, and if they were concerned about how the government and other people would perceive their decisions. In addition, these factors seemed to have only a small effect on people's decision-making. Hence, there may be little practical value for policymakers to specifically target social sensemaking for behavioural change. It is worth noting that the online environment of the study could have contributed to the small effect of social sensemaking as respondents made decisions in their own environment alone. Social sensemaking may have a greater impact in a physical environment where decisions are more public and hence people might be more concerned about what others think of their choices.

Social sensemaking may have a greater impact in a physical environment where decisions are more public.

3 Framing of benefits and costs of policies in public communications is essential.

From the qualitative responses, the study found that another important factor that played a role in respondents' decision-making in all scenarios was how they perceived the costs and benefits of the policy to both themselves as well as to the whole society. Hence, policymakers may get more buy-in from the public by highlighting and better framing the personal as well as societal costs and benefits of certain policies. By changing how the costs and benefits are communicated to citizens, policymakers may be able to sway people's perceptions of the policy.

Policymakers may get more buy-in from the public by highlighting and better framing the personal as well as societal costs and benefits of certain policies.

4 The importance of testing potential policy interventions.

This study highlights the importance of testing potential policy interventions for specific contexts. Some limitations of the study were that it was conducted as an online survey, conducted in only English and with a sample that was underrepresented for certain demographics. Hence, the findings might not be generalisable to the behaviours and decision-making considerations of the general population. In addition, the study relied on self-reported answers, which might not accurately reflect actual behaviours in real life.

The study's findings were unexpected, as social norm nudges have long been held as an effective nudge for behavioural change. However, this study showed that in the scenarios tested, social norm nudges alone as well as social sensemaking had very limited effect on people's decision-making and could even have backfired in the local produce scenario (see scenario 3 for buying locally produced vegetables). What the study did highlight is the importance of testing out potential policy interventions for specific contexts to better understand their effects before introducing them to the public. ■

Testing out potential policy interventions for specific contexts to better understand their effects before introducing them to the public.

This is a summary of a research project done by Do Hoang Van Khanh and Charmaine Lim. For the full research report "Social Sensemaking in Public Policies", please access https://www.learn.gov.sg/d2l/home#/course/400886?app=dlp.

Notes

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Building an Age-Inclusive Healthcare System in Singapore

by **Reuben Ng and Nicole Indran**

Dr Reuben Ng is Assistant Professor at the Lee Kuan Yew School of Public Policy and Lead Scientist at the Lloyd's Register Foundation Institute for the Public Understanding of Risk. He is a 2023–24 Harkness Fellow in Health Care Policy and Practice, serving as the inaugural Singaporean fellow and the first from Asia since the inception of the programme in 1925. A behavioural and data scientist, Dr Ng spent 16 years in government, consulting and research. In government, he was in the Prime Minister's Office driving evidence-based policymaking through data analytics and Smart Nation strategies. In consulting, he co-built the advanced analytics practice and implemented complex analytics capabilities across the healthcare value chain. He is an expert in ageism, social gerontology and quantitative social sciences, and has been credited with creating innovative techniques to measure health narratives that are applied to strategic policy communications. He is the first Singaporean and Oxonian to win the International Fulbright Science and Technology Award and was ranked in the top two percent of scientists globally by Stanford in 2022.

He can be contacted at https://lkyspp.nus.edu.sg/our-people/faculty/reuben-ng.

Nicole Indran is Research Associate at the Lee Kuan Yew School of Public Policy. Her research interests lie in the field of social gerontology. She has published in several peer-reviewed journals, including *JAMA*, the *Journal of the American Geriatrics Society*, *The Gerontologist* and the *Journal of Social Issues*.

An important part of creating a successful ageing society entails reframing the narratives around ageing and involving more seniors in policymaking.

Introduction

The COVID-19 crisis has thrown into sharp relief the importance of having a resilient and adaptable healthcare system. Among the trends that will profoundly shape the future of healthcare in Singapore is the rapid ageing of the population. Going by projections, the country is on track to join the ranks of super-aged societies by 2030. In 2019, 14.4% of the population was aged 65 and above. By 2030, this figure is anticipated to rise to 25%.[1]

The Singapore Government has received international plaudits for its proactive approach in preparing for an ageing population.[2] The groundwork for these preparations can be traced back to the 1980s when the Committee on the Problems of the Aged was formed.[3] Several more committees and initiatives have since been established as part of a nationwide blueprint to enhance the wellbeing of Singaporeans as they age. The recently introduced Healthier SG strategy marks a paradigm shift towards preventive care, underscoring the government's commitment to building a more sustainable healthcare system.

Demedicalising ageing will facilitate a more holistic approach to healthcare for older adults.

While Singapore is ahead of the curve in terms of preparations for an ageing population, efforts should also be directed at harnessing its benefits through large systemic shifts. We propose four strategies to cultivate a more age-inclusive healthcare model: (1) demedicalising ageing, (2) reframing ageing, (3) designing 'grey jobs' and (4) activating older adults in policy implementation.

Demedicalising Ageing

A crucial step to make the healthcare model more age-inclusive is to demedicalise the ageing process. For far too long, ageing has been unfairly stigmatised as an ailment that needs curing rather than a natural part of life.[4] Demedicalising ageing will facilitate a more holistic approach to healthcare for older adults. Instead of focusing merely on treating age-related conditions, healthcare providers can encourage older patients to adopt preventive measures in order to stay healthier for longer.

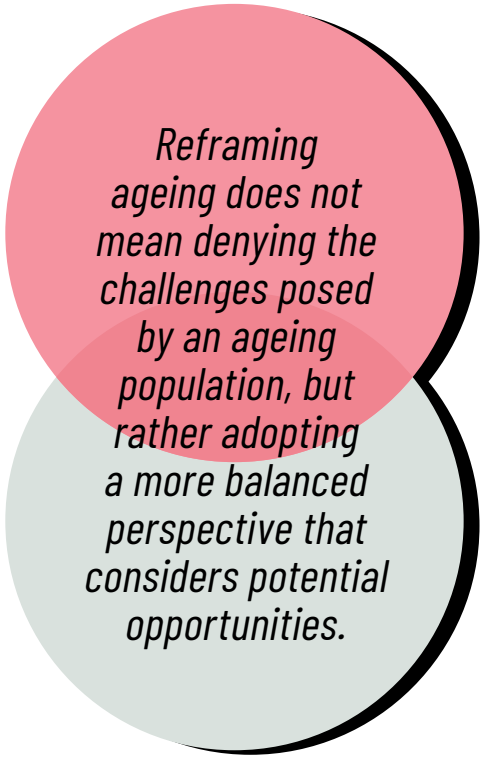
Importantly, healthcare providers and policymakers must be vigilant in their communication strategies when implementing initiatives aimed at the

older populace. The way policies are framed and conveyed can measurably affect public perceptions of old age.

An illustrative example of the importance of careful policy implementation is seen in the launch of the Pioneer Generation Package in 2014. Even though the package was introduced with the intention of supporting older Singaporeans, it may have unfortunately worsened the medicalisation of ageing by reinforcing perceptions of later life as a period of decrepitude.[5] This emphasises the need for policymakers to be cognisant of the repercussions of well-intentioned policies, and to strive towards developing greater age inclusivity.

Reframing Ageing

A fundamental shift in how ageing is viewed is needed. Gerontologists have discovered that negative age stereotypes proliferate in a sea of domains, including mainstream media like television programmes[6] and movies,[7] as well as social media platforms like Twitter[8] and TikTok,[9] among others. The movement to combat ageism—stereotyping, discrimination and prejudice on the grounds of age—is slowly gathering pace in developed countries like the United States. However, the issue remains very much under the radar in Singapore. Contrary to folk wisdom, ageism is as much of a problem in Asia as it is in the Western world;[10] evidence of this has also come to light in the Singapore context.[11]



Research on the theory of stereotype embodiment indicates that the internalisation of negative age stereotypes into one's self-concept is associated with adverse health outcomes such as a reduced sense of self-efficacy and a higher risk of depression.[12] On the flipside, positive age stereotypes are linked to favourable health outcomes such as increased longevity and better functional health. This means that reframing ageing can be a powerful tool in promoting preventive care and healthy ageing.

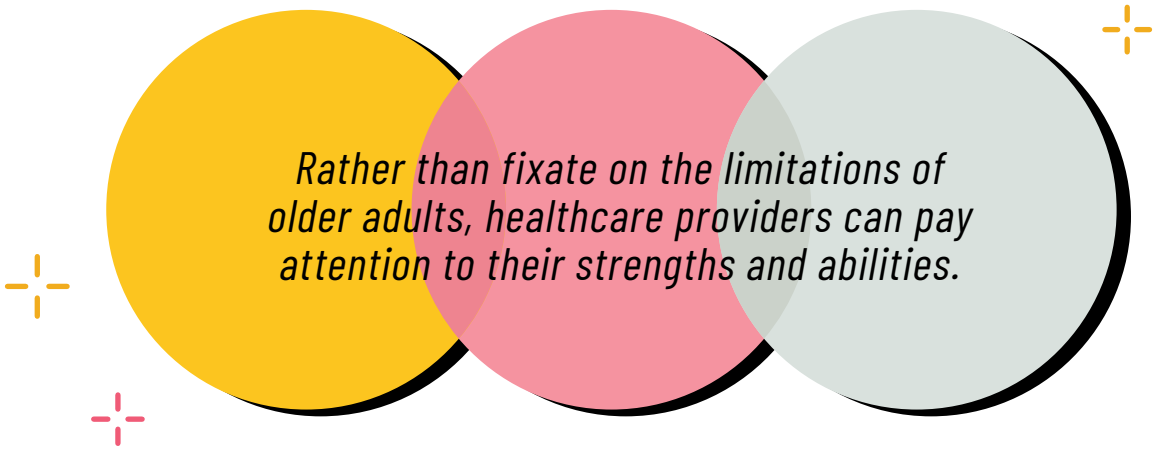
In Singapore, much like in other countries, the ageing population is often depicted using catastrophic terms like 'silver tsunami', 'age quake' and 'demographic time bomb'. These depictions invariably lead to discussions about population ageing as a phenomenon that will precipitate a surge in chronic diseases and strain an already stretched healthcare system. Such counterproductive narratives need to be unlearned. Reframing ageing in the healthcare context does not mean denying the challenges posed by an ageing population, but rather adopting a more balanced perspective that considers the potential opportunities it brings.

To this end, it is vital to cultivate a healthcare environment that upholds the inherent dignity of older adults. Rather than fixate on the limitations of older adults, healthcare providers can pay attention to their strengths and abilities. Rather than assume all older adults require the same level of care, healthcare providers can assess each individual's needs and tailor interventions accordingly. By reframing ageing, we set the stage for a healthcare future that embraces the unique needs and strengths of an older cohort.

Designing Grey Jobs

As the population ages, it becomes increasingly important to cater to the unique needs of older adults through specialised healthcare interventions. This presents an excellent opportunity to expand and create more 'grey jobs' in the healthcare sector. These are jobs that provide specialised care, support and services to older adults, ensuring their wellbeing and enhancing their quality of life.

Among potential grey jobs are eldercare navigators, who can assist older adults and their families in manoeuvring the complex healthcare system. These



Engaging older adults in decision-making processes ensures that healthcare policies can be better aligned with the needs and preferences of a diverse older population.

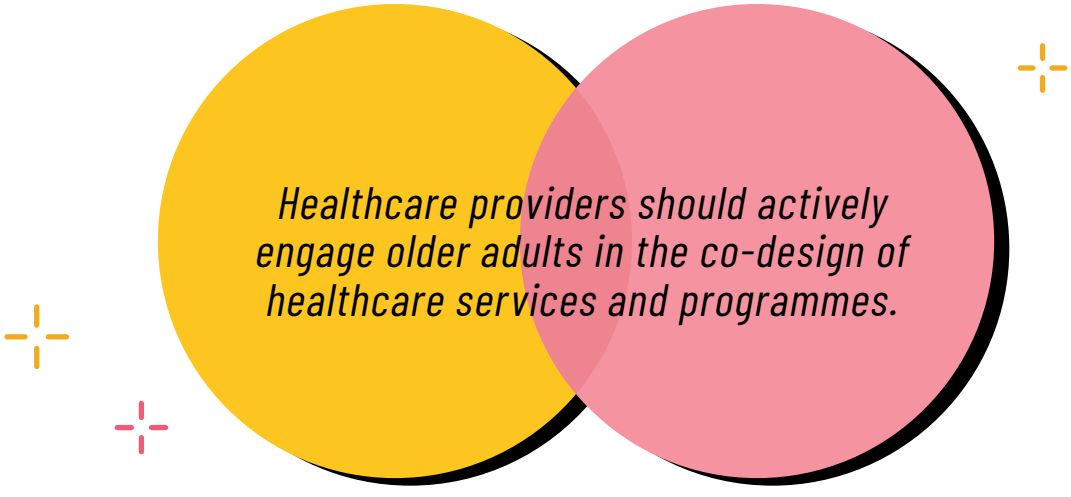
navigators can help them access relevant services and understand available resources to ensure a more efficient healthcare experience. Elder-specific technology advisors can offer older adults guidance on adopting and utilising various digital health technologies. Elder health educators can focus on promoting preventive care among older adults. Specifically, they can educate both older adults and caregivers on age-related health conditions, lifestyle modifications and strategies to maintain optimal health.

Increasing the number of geriatric care specialists, eldercare counsellors and home aides are also paramount to ensure older adults receive the specialised care and support that they need. By creating and ramping up these grey jobs, the healthcare sector will be well poised to meet the needs of an ageing population.

Activating Older Adults in Policy Implementation

Granting older adults positions of leadership in the policy implementation space is a key part of fostering a more age-inclusive healthcare system. With their wealth of experience and knowledge, older adults are uniquely positioned to contribute to the development of healthcare policies and programmes.

Leveraging this collective wisdom is especially critical in light of the prevalence of ageism among healthcare



professionals.[13] Engaging older adults in decision-making processes ensures that healthcare policies can be better aligned with the needs and preferences of a diverse older population. Their first-hand experiences as healthcare recipients enable them to provide valuable insights into the challenges they confront, the services they require and the improvements they wish to see in the healthcare system. Policymakers and healthcare professionals would then be equipped with a more comprehensive understanding of the real-life impact of their decisions, leading in turn to more effective and patient-centric healthcare solutions.

Thus, healthcare providers should actively engage older adults in the co-design of healthcare services and programmes. This can be done through focus group discussions, surveys and town hall meetings, where older adults could share their perspectives on how healthcare initiatives could be improved. Additionally, healthcare organisations and institutions should make a concerted effort to appoint older adults to decision-making roles. This can involve creating leadership roles dedicated to representing the interests of older adults, or including older adults in existing committees and boards that oversee the design of healthcare policies.

Conclusion

In order that its world-class healthcare system continues to flourish, Singapore needs to capitalise on its ageing population. The four strategies delineated above pave the way for a more inclusive and sustainable healthcare landscape. However, Singapore's journey towards

building an age-inclusive healthcare system is but just one facet of a broader cultural transformation necessary for reframing ageing.

With its unique blend of strong governance, first-rate infrastructure and predisposition towards filial piety, Singapore possesses the right ingredients to nurture an age-inclusive culture. Against this backdrop, Singapore can lead the way in pioneering age-friendly solutions, not only in healthcare, but also in other areas. This will position Singapore as a shining example of a society with an ageing population not disdained as a burden, but rather celebrated as a source of strength. ■

Notes

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Health is Social:

THE FUTURE OF CARE IN SINGAPORE

by **Eugene Fidelis Soh**

By taking responsibility not only individually but collectively for our health, Singaporeans can build the capacities and relationships needed to thrive well into the future.

Professor Eugene Fidelis Soh is Deputy Group CEO for Integrated Care at the National Healthcare Group. Concurrently, he serves as CEO of Tan Tock Seng Hospital & Central Health, Chairman of the Centre for Healthcare Innovation, and Adjunct Professor at Lee Kong Chian School of Medicine. His passion is in building population health systems, driving healthcare innovation for systems change, and deep learning through leadership and organisational development.

In his latest Netflix documentary "Live to 100", author and longevity expert Dan Buettner added Singapore as a sixth 'Blue Zone': a region in the world with residents who are known to live long and healthy lives. In his 2020 master class at the Global Wellness Summit,[1] Buettner had argued that "the big epiphany of all these Blue Zones is that long-lasting health is very rarely successfully pursued; it ensues". It is not genetics or willpower that boosts longevity in Blue Zones. It is a lifestyle. Then came Singapore, a Blue Zone that has been engineered, instead of emerging organically like the first five.

Singapore's life expectancy at birth has been increasing and the number of centenarians has more than doubled from 700 in 2010 to 1,500 in 2020. Its healthy longevity has come from its history, culture and tradition. It has been brought about over time because of its excellent access to healthy food, good healthcare, excellent public infrastructure and social practices that mitigate loneliness, such as intergenerational gatherings. In his documentary, Buettner cited Kampung Admiralty as a feat of engineered health: it houses an indoor park, amenities, apartments, healthcare facilities, and eldercare and preschool centres next to each other.

Singapore leads the world on the health-related Sustainable Development Goals, according to research published in *The Lancet* in 2017 and part of the Global Burden of Diseases Study. The 2019 edition of the Study reported Singaporeans as living longest in the world, with a life expectancy at birth of 84.9 years and a Healthy Life Expectancy of 73.9 years, with the lowest Disability-Adjusted Life Years (DALY) of 15,045 per 100,000 population. The study also indicated that 35% of our DALY burden could potentially be reduced by early intervention on risk factors contributed by our lifestyles.

Population Health moves us from the "Story of Me" to the "Story of Us".

With the launch of Healthier SG, Singapore embarks on the largest ever transformation of our care system. We are encouraging residents to enrol with their primary care doctor and establish health plans to keep them well. This is an important first step towards the health of our population. Given that 80% of our total disease burden is from chronic diseases, Preventive Care is the bedrock of our Population Health Strategy.

HEALTH IS FOR ALL

Population Health is not just about better outcomes for individuals but the distribution of those outcomes. Health is not just for the healthy or activated or those who access care. Health is for all. Health is not just for those we can see but those we cannot see. Population Health moves us from the "Story of Me" to the "Story of Us". In doing so, we expose our vulnerabilities as a population.

The Emotional Side to Activating Senior Health

A community nurse told the story of how TOUCH Community Services sought to encourage more seniors to keep fit by collaborating with ActiveSG to offer weekly aqua aerobics for the seniors. While this seemed like a great idea, not all the seniors owned swimwear. So TOUCH staff worked with donors to sponsor swimwear for the seniors and organised a shopping trip for the seniors to buy swimwear of their choice. This incentive, coupled with encouragement from TOUCH staff and friends, motivated more seniors to sign up for aqua aerobics. They also paired up with one another as buddies to keep a lookout for one another during the sessions. Soon, word of mouth on the positive experience and peer support led to the aqua aerobics class being oversubscribed with a waiting list.

Reflecting on this amazing story of health activation, I suspect that there were deeper feelings at work. Having or buying a swimwear may nudge the early adopters. However, it might not have changed the minds of those who felt vulnerable swimming or wearing swimwear; be it due to their scars from an operation, skin conditions, or anxieties about their body image. But the opportunity to go along with a buddy and as a group let them see each other's vulnerabilities and therefore gain courage to participate together.

▲ Seniors from TOUCHpoint @ Geylang Bahru at aqua aerobics, in partnership with ActiveSG.

Singapore has done well in addressing the social determinants of health like education, transportation, sanitation, housing and so on. With ageing, we see "new" social drivers of health, with an increase in prevalence of dementia, disabilities, frailty, and social isolation. In our centres of healthcare, we often fail to reach those we do not see until they arrive in crisis at our emergency departments. We must do better if we are to change healthcare. Our hospitals are filling up and patients are coming in more ill and with more complex conditions. There are more long stayers. They decondition during their prolonged hospital stay and most are unfit for discharge because they have greater care needs that their homes and communities cannot support. Are more beds then the solution?

HEALTHCARE ALONE IS NOT ENOUGH

If we look at healthcare as a pipe, we admit and discharge, and we diagnose and treat. We look at healthcare from an efficiency lens because we want throughput and are obsessed with waiting times and bed occupancy. We were once a young population and a young country. The focus was on the iron triangle of Healthcare—Access, Quality and Cost. Hence, we centralised volume to improve quality, especially where expertise and resource was scarce, and to keep costs down. This saw the development of hospitals and specialty centres as highly efficient and specialised centres of excellence.

In the past two to three decades, we introduced quality tools like Clinical Practice Improvement, Lean Healthcare (based on Toyota Production System) and Design Thinking to help reduce waste, improve efficiency, drive productivity and ensure a quality experience. These have served us well to ensure the pipe did not burst. When the healthcare pipe leaked due to pressure, we added resources to ensure a stronger pipe with better flow. Incentives were tied to volume to sustain increasing workload and pace.

Today, we are no longer a young population, nor do we have the high economic growth needed to flatten the percentage of Gross Domestic Product (GDP) we spend on health and offset the tripling of our national healthcare expenditure over the last decade. Will more of the same old paradigm give us better health and sustainable healthcare? We know that merely expanding or fixing the pipe that burst will not get us there.

HEALTH & SOCIAL CHANGE: THREE PHILOSOPHICAL SHIFTS

Healthier SG and the recently announced Age Well SG represent a new opportunity to change our healthcare paradigm. Age Well SG supports our seniors to age well in their homes and their communities. Singapore is projected to attain 'super aged status' when 21% of our population will be aged 65 years and above in 2026. So Age Well SG seeks to improve our living environment, encourage active ageing and support the care needs of our seniors in their homes and communities. We are moving

beyond the iron triangle of healthcare to the triple aim of population health.

The Triple Aim of Population Health goes beyond healthcare to achieve health outcomes for our population, improve the care experience across the system, and sustain cost per capita. In recent years, the triple aim has been expanded to the Quintuple Aim to include the wellbeing of our health workforce and health equity.

To transform our current healthcare system to a population health system, I see three core philosophies taking hold:

1. ***Ownership of Health for All***

   Our residents own their health, not just as individuals but as communities. As an engineered blue zone, we can engineer health in our communities and in doing so, activate communities for health.

2. ***Relationships to Care Together***

   Care should shift from transactional care encounters to building trusting care relationships that span the life course. These relationships wrap around care for our residents.

3. ***Stewardship to Invest in Health***

   The stewardship of a population health system requires a mindset shift from Healthcare being a cost to Health being our best investment for the future. The longer game in healthcare sustainability is not just cost containment, but commitment to grow our health as a nation.

According to the Ministry of Health (MOH):

In 2019, the number of elderly living alone increased to **67,600**, up from 47,000 in 2016. This increase represents **11.9%** of our elderly population.

1,000 attemped suicides.

400 reported suicides, with 122 being above 60 years of age.

1 in 10 seniors above 60 years of age has dementia.

According to the National Healthcare Group (NHG):

15% of our elderly residents are living with frailty.

According to a Department of Statistics Population Census Report:

In 2020, **100,000** residents were unable to perform or had a lot of difficulty performing one basic activity.

The impact of ageing on the elderly stirs us because it is also what we can all look forward to in time to come.

Building a Community of Care: Madam Amy's Story

by Karthikeyan J. R., CEO, Asian Women's Welfare Association (AWWA)

Amid the landscape of an ageing population within the Ang Mo Kio vicinity, the collaborative efforts of healthcare institutions and social service agencies are critical in providing holistic care for seniors. With this shared aspiration in mind, AWWA, Tan Tock Seng Hospital (TTSH), National Healthcare Group Polyclinics (NHGP), the Agency for Integrated Care-Silver Generation Office (AIC-SGO), and PanCare Medical Clinic came together to actualise it with Community of Care (CoC).

With CoC, Ang Mo Kio resident Madam Amy's memory and health issues have not stopped her from participating actively within the community. To build trust and a genuine connection, the team at AWWA initiated befriending visits, and soon learned that Madam Amy was hesitant to seek the medical assistance she required. Working with TTSH's Community Health Team (CHT) to assess her condition, the team worked out her unique needs and relevant care goals, while respecting her desire to remain independent.

For continued support, the AWWA team conducted regular checks to monitor Madam Amy's medication administration and vital signs. In addition, they created a personalised visual schedule with her favourite cat photos and voice-recorded reminders to encourage Madam Amy to take her medication on time. The team at PanCare Medical Clinic, which sits within the Ang Mo Kio vicinity, added to the network of support through home consultations, to ensure that her chronic conditions were comprehensively managed.

The community also rallied around Madam Amy, with neighbours and local shop owners keeping a lookout for her and her brother staying in close contact to ensure her wellbeing.

The CoC model of collaborative care reflects a deep commitment to supporting seniors through strong partnerships so that they are empowered to take control of their health, thrive, and age well throughout their golden years.

▲ Adopting a person-centred approach: Visuals of Madam Amy's favourite animals, cats, were created to encourage her to take her medication on time.

We are building a Community of Care (CoC) in every neighbourhood to bring Healthier SG and Age Well SG to our population. Every CoC is anchored by an Active Ageing Centre (AAC) catering to elderly residents in that neighbourhood. By bringing together national and social agencies, family doctors, community health teams and residents, CoCs can bridge health and social care for the elderly in their communities and empower residents to proactively manage their health and embrace healthier living.

Our residents own their health, not just as individuals but as communities.

BUILDING CAPABILITIES FOR HEALTH AND SOCIAL CHANGE

The Centre for Healthcare Innovation's (CHI) Health & Social Change Academy was launched on 28 July 2023 by Minister for Health Ong Ye Kung. It aims to build the capabilities of health and social care professionals to work together in developing programmes and initiatives to engage the population on health issues collaboratively. The Academy is supported by strategic partners from across agencies, academia, healthcare, and community partners, including the AWWA, Care Corner Singapore, Methodist Welfare Services (MWS), and TOUCH Community Services. These partnerships and programmes will grow as it expands as a movement to launch initiatives for health and social change.

The academy features four strategic programmes to build Communities of Care through PACT—Population Health Management, Health Activation, Leading as a Collective and Transformation for Health & Social Impact.

▼ Launch of CHI Health & Social Change Academy by Health Minister on 28 July 2023.

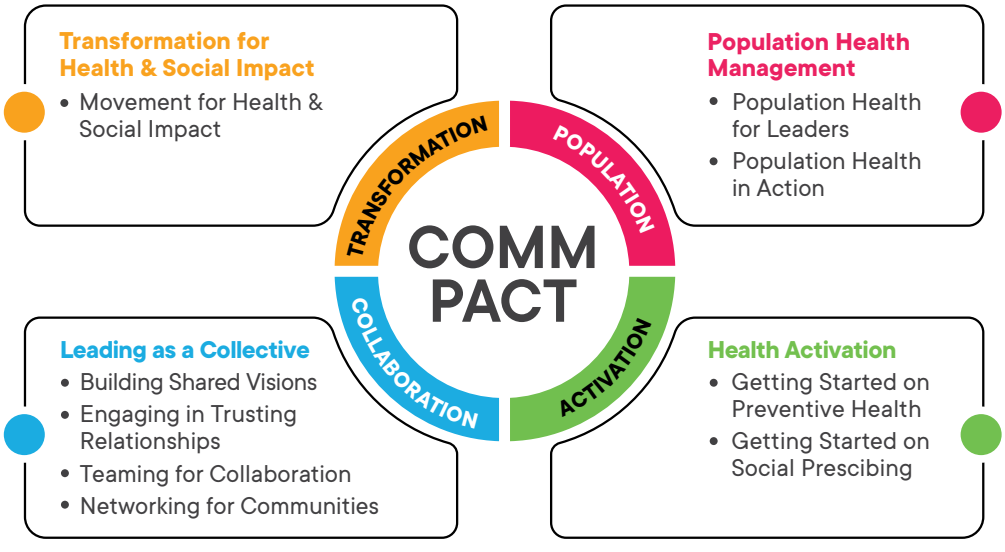


Figure 1. Diagram illustrating the four strategic programmes under the CHI Health & Social Change Academy.

The Academy will host more than 30 local and international experts from academia, health and social care, and government agencies under the CHI Co-Learning Network. The Academy's curriculum is designed around the premise that building healthier, happier communities requires a collective commitment and effort. Hence, it aims to nurture the environment for various stakeholders to come together to understand one another's roles in the community, learn new skills and concepts, and take collective action to design care that will keep our people and future generations healthier and happier.

BUILDING DIGITAL HEALTH COMMUNITIES

Alongside the academy, a digital sandbox called the Digital CoC Playground has been set up to facilitate collaborations, specifically on digital solutions that will more easily engage and activate residents to adopt healthy behaviour. These innovative solutions will be introduced and tested in real-world settings and, where appropriate, be scaled up to keep residents healthy and engaged.

The Digital CoC Playground will enable key stakeholders in the CoCs to identify and discuss everyday health and social care issues that residents face and develop personalised digital solutions to meet their needs. When community partners bring their problem statements into the Playground, CHI will help match them with like-minded organisations, sponsors, technology experts and funders to pursue the creation of a digital CoC solution together. This collaborative Playground will serve as a

test bed for the digital solutions to be piloted in the community before they are adopted or expanded to benefit more residents. Such digital solutions will complement existing programmes and services at a physical CoC. They will address three key aspects: Care to follow the Resident; Outreach to a wider Resident Population; and Integration to enable Resident-centricity so that they may own their health with the care and support needed.

By leveraging digital technology, we aim to overcome the limitations associated with resource-intensive care support work and introduce new ways to serve and empower a more significant number of residents towards healthy living that may not be possible with physical CoCs alone. Our elderly accounts for 20% or more of residents living in established neighbourhoods. A place-based care strategy works best for the elderly, while the young seniors above 50 years of age and the younger population are more mobile. The Digital CoC presents opportunities to engage and activate more residents to adopt healthy behaviours, regardless of their age, health status and location.

Building healthier, happier communities requires a collective commitment and effort.

By providing care where residents live, work and play, we anticipate that these Digital CoCs can better integrate health-social initiatives that bring about happier and healthier communities across various settings, including the neighbourhood, schools, and workplaces. This integrated approach will form a comprehensive support system that addresses residents' diverse needs and aspirations.

DEEPENING THE RELATIONSHIPS THAT MATTER

As we organise for Health & Social Change, we need a collective leadership beyond the walls of our healthcare system. Working closely with partners and residents, we can transform our future Health & Social Care to ensure that Health is for All.

Working in the National Healthcare Group, I am immensely proud of our vision of Adding Years of Healthy Life. It is not enough that we add Years to Life: we must also add Life to our Years. This is an ambitious vision, but Singapore can become a *deep* Blue Zone: not just living longer lives, but living better, and more fully, together. ■

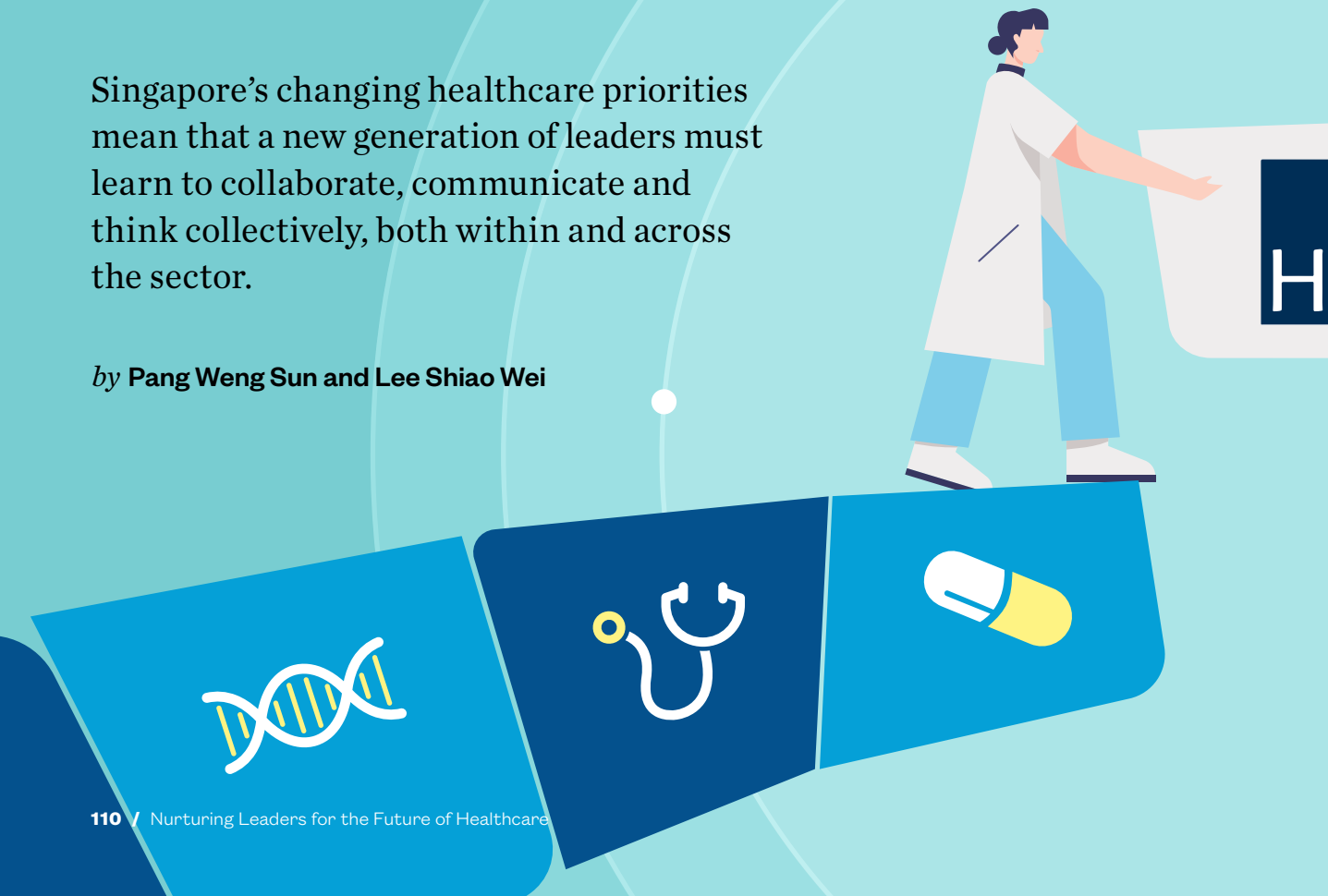
Note

1. See: Meredith Clark, "What Are Blue Zones and Why Do Some Suggest They Are the Secret to Living Longer?" https://www.independent.co.uk/life-style/health-and-families/blue-zones-netflix-diet-documentary-b2408185.html.

Nurturing Leaders for the Future of Healthcare

Singapore's changing healthcare priorities mean that a new generation of leaders must learn to collaborate, communicate and think collectively, both within and across the sector.

by **Pang Weng Sun and Lee Shiao Wei**



Professor Pang Weng Sun is Dean of the Healthcare Leadership College, MOH Holdings. He has been Vice-Dean (Clinical Affairs) at the Lee Kong Chian School of Medicine since 2011, and has also held leadership positions in the National Healthcare Group, the Geriatric Education and Research Institute among other senior engagements in the medical field. Professor Pang has contributed geriatric expertise to many community services and worked with the Ministry of Health and various voluntary agencies in eldercare and palliative care. He was a recipient of the Healthcare Humanity Award in 2005. He continues clinical practice as a senior consultant geriatrician in Khoo Teck Puat Hospital and Yishun Community Hospital.

Lee Shiao Wei is Director at the Healthcare Leadership College, MOH Holdings. Prior to her current role, she was with the Ministry of Health and was heavily involved in the review and implementation of MediShield Life, the national healthcare insurance scheme. She has held various appointments in the Singapore Public Service. Shiao Wei counts her experiences in MOH, during the 2003 SARS crisis and the implementation of MediShield Life, as being among the most meaningful of her career to date. She is now energised and inspired by the work she does in the Healthcare Leadership College to grow future generations of public healthcare leaders for Singapore.

The Healthcare Leadership College Story

Singapore's healthcare system has undergone rapid and massive change over the past few decades to meet the challenges of an ageing population and increasing complexity in healthcare delivery. In the past 20 years, we have seen major restructuring of the public healthcare clusters and institutions. Two new medical schools have been set up and nursing and allied health education pathways and career options have been greatly expanded. Huge investments have been made in research, new technologies and digital capabilities. Most recently, we have seen the launch of Healthier SG as a major strategic push towards preventive health and upstream intervention.

In 2010, Ms Yong Ying-I, then Permanent Secretary (Health), saw the need for healthcare leaders to "think across" healthcare clusters, systems and professions and also "think ahead" in anticipation of new challenges in healthcare on the national front. With the healthcare clusters reaching out to their respective communities and healthcare services in private and voluntary welfare sectors, it was recognised that at a national level there was also a need to build bridges and develop leadership capabilities on a wider scale, both within professional groups and across clusters. This led to the establishment of the Healthcare Leadership College (HLC) in 2012 to lead efforts in nurturing and developing healthcare leaders for the nation.

HLC's mission is to support the building of strong leadership capacity and capabilities for our national healthcare system, in line with the Ministry of Health's vision and strategic priorities. We aspire to be a keystone and trusted partner in developing leaders of and for Singapore healthcare, and in building bridges and growing community across agencies, clusters, institutions and professions in the Singapore healthcare ecosystem.

Our goal is to bring leaders together from across the healthcare sector, to sensitise them to key national issues and strategic priorities, so that they would not focus only on their specialised clinical knowledge or their own institutional agendas. Over the past decade, we have sought to bridge the healthcare clusters which had been developing separately: the different professions—doctors, nurses, allied health professionals, administrators and so on—as well as the different sectors involved in health and social care—including the acute care, primary care, long-term care, and people sectors.

HLC designs and delivers a suite of milestone programmes, continuing development programmes, and other learning and engagement platforms. We also publish a quarterly newsletter, *Leading Healthcare*,[1] which aims to connect with and inspire leaders in healthcare.

Note

1. See https://www.hlc.mohh.com.sg/resources/news-letter.

Developing new Competencies, Capabilities and Cultures to support Healthier SG and Singapore's healthcare transformation

Healthier SG, the new national health initiative, builds on earlier shifts to meet Singapore's healthcare needs in a sustainable manner. A central pillar of the Healthier SG strategy is the role of primary care practitioners, working closely and jointly with the clusters, polyclinics, hospitals, specialists, and allied health professionals, to holistically support the health and care needs of Singaporeans. The call for strong healthcare leadership is all the more important as we recognise the complexities of healthcare and the major structural and mindset changes that are required throughout our healthcare organisations and institutions, healthcare policies and frameworks, and the ways that healthcare professionals work and organise themselves.

ONE Healthcare Leadership Framework

To support Singapore's healthcare transformation, we need a corresponding evolution in healthcare leadership, which we call the ONE Healthcare Leadership Framework. We see this as involving **three** paradigm shifts:

1. **Shifting from Expert as Leader to Expert Leader**
   While clinical excellence remains important, we also need to recognise other forms of leadership vital to the practice of healthcare.

2. **Going beyond Developing Leaders to Developing Collective Leadership**
   As healthcare becomes increasingly multidisciplinary in nature, we must begin to regard healthcare leadership as a collaborative process that benefits from different perspectives and forms of expertise.

3. **Moving from Leading Institutions to Leading in Ecosystems**
   We want our leaders, who are accustomed to advancing their own healthcare specialties and institutions, to increasingly think in terms of, and work across, our national health ecosystem as a whole, to benefit all of Singapore.

At the Healthcare Leadership College (HLC), we see our role as helping to bring about these shifts in healthcare leadership.

We purposefully approach development from a broad-based understanding of leadership—not only in an institution but in the ecosystem as a whole.

For instance, we want to facilitate and create opportunities for some of our healthcare leaders, who are used to working as individual experts relying on their own specialised skills and clinical intuition, to develop closer links with a wider group of partners beyond the acute hospitals, such as providers in primary care, community care, and social care. In fact, the healthcare sector has had connections with the wider community for many years, and many institutions do work in ways that flow into the community. But this relationship has been given much stronger prominence and impetus with the launch of Healthier SG. The pieces are in place to strengthen this partnership. There is greater scope to, for instance, for clusters and institutions to work with the community and other partners upstream, to enhance health promotion and preventive care.

Broadening the idea of leadership in healthcare can be of great benefit. The boards of the public healthcare clusters and agencies include many eminent individuals with expertise and experience beyond healthcare, such as in business and finance. They see things from a different perspective, which can be very useful. Over time, they gain a good appreciation of our challenges, and are able to bring their perspectives to advise and to steer the healthcare clusters and institutions.

Across our HLC programmes, we bring different individuals together to promote interaction and better mutual understanding, which is vital. The programmes are intentionally designed to be interprofessional, to encourage mingling across professional and institutional boundaries. Participants get to meet fellow healthcare leaders from other clusters and professions; most would not have had interactions with other healthcare professionals outside of their immediate area of work and institutions. We even go one step further to invite participants who are not from public healthcare institutions, but who work in areas with a connection to healthcare. For instance, our programmes invite participants from the community care sector, SAF medical corps, CPF Board, Singapore Prisons Service, the Ministry of Finance, and so on. We make it a point to also include general

practitioners (GPs) who are involved in national primary care initiatives, including Healthier SG. This mix enriches classroom diversity and learning.

HLC programmes place emphasis on collective leadership: working collaboratively to achieve good outcomes. We purposefully approach development from a broad-based understanding of leadership—of healthcare leadership not only in an institution but in the healthcare ecosystem as a whole.

While collaboration is easy to talk about, it is not so easy to practise. Addressing personal barriers to collaboration is the first and best place we can intervene. We will have to step beyond our comfort zone in making the effort to invest in relationships and form diverse and open networks. It is hard to collaborate with someone you do not trust, you cannot trust someone you do not know, and you cannot know a person without interacting with them. The greater the human connectivity and trusted relationships, the higher the chance for successful collaboration. HLC is a bridge where those first connections are made, but leaders must continue to sustain those ties and continue to build up these relationships over time. These conditions are necessary in fostering a healthy culture of collaboration and collective leadership that spans clusters, institutions, and professions.

There is a leadership fable about a farmer who grew prize-winning corn and how one of his practices was to share his prize-winning seed with his neighbours, as he realised that if his neighbours grew inferior corn, cross-pollination would eventually degrade the quality of his corn.[1] Just like the farmer in this fable, in an interconnected and porous system, greater benefits are realised through generous sharing and collaboration. What we do impacts one another: if we want to do well, we must share our expertise and align our efforts.

Leadership for innovation in healthcare

Singapore has made major innovations in many areas of social and economic policy and practice over the past decades. In healthcare, the introduction

The greater the human connectivity and trusted relationships, the higher the chance for successful collaboration.

of the MediSave scheme in 1983 was a singularly innovative and visionary move. It allowed the implementation of the key philosophy of emphasis on personal responsibility, for the purpose of carefully husbanding our limited healthcare resources and expenses, by supporting Singaporeans to save up in advance for their future healthcare expenses. The MediSave scheme has itself become a critical enabler allowing for further new innovations. Almost every major patient financing scheme that has been introduced in the intervening 40 years has been built upon MediSave, including MediShield Life, CareShield Life, and Medisave for the Chronic Disease Management Programme.

Today, technological advances, e.g., in drug advancements, surgical techniques, use of robotics etc., are commonly cited as examples of innovation. One recent push has been for artificial intelligence and how it might be applied to medical practice. Beyond technological advances, innovation can also be seen in changes to processes and from different ways of working. For example, the introduction of systems such as the National Electronic Health Record will offer our practitioners, including primary care doctors, a greater wealth of information on patients that they previously could not access. This means that they do not have to spend time finding out these details of a patient's medical history that are already in the broader healthcare system and can invest their time and energy into providing more targeted care. Another example of this is the way the healthcare system has recently freed up 7,000 inpatient beds a year through the mobile inpatient initiative, where patients receive hospital level care but not in hospitals themselves. This is a form of innovation through re-engineering processes.

On a more radically innovative level that goes beyond continuous improvement to existing processes, Healthier SG—and more crucially, the larger mindset and strategy shift which it sits within, i.e., a pivot away from the traditional acute and specialist-centred healthcare model—may be one of the more transformative innovative answers for healthcare of the future.

But when radical innovations come about, they can meet with resistance. It may disrupt some people's routines. People

We need to develop communities of leaders like strong forests, providing mutual support and capable of weathering any storms collectively.

can be uncomfortable about a new way of looking at a particular healthcare situation, and there may be detractors or regulatory hurdles to cross.

Some doctors and healthcare professionals are more receptive and open to applying new ways of working and technologies, particularly if these have strong and clear benefits to patients or the healthcare system. We can help shape the future by encouraging and nurturing this new generation of practitioners.

Growing leaders for healthcare: the next lap

The current cohort of top healthcare leaders have built up strong trust and understanding with one another; many of them trained in the same medical school and practised in the same institutions. This trust and understanding has served us well through difficult situations such as SARS and the recent COVID-19 pandemic, where our healthcare colleagues had to rally together and work towards larger national objectives.

As our healthcare system evolves and becomes increasingly diverse, our challenge is ensuring that the next generation of leaders, who have trained in separate medical schools and worked within their own clusters and institutions, will be able to share the same level of camaraderie and trust as today's leaders, and collaborate well.

We need to build up reservoirs of mutual trust, so that it will be there when called upon, not just for times of crisis, but even more so as the healthcare ecosystem becomes more complex and interdependent. Healthcare leaders will need to build strong bonds and networks: firstly across their professional and institutional boundaries, and secondly with partners from the community and different agencies. We need to offer people a common platform so that they have opportunities to get to know one another and develop a better appreciation of each other's perspectives as well as a common understanding of Singapore's challenges and priorities.

In the last 10 years, HLC looked at developing leaders like strong trees—deeply rooted and sturdy. Today we need to develop communities of leaders like strong forests, providing mutual support and capable of weathering any storms collectively. The survival and healthy thriving of the forest ecosystem is dependent on not just one tree or one single species of tree, but the symbiotic interdependency and relationships between all the forest flora and fauna. So too, we hope to see a strong, thriving and diverse healthcare ecosystem that continues to sustain the growth of new leaders. ■

Note

1. For this fable and other stories that further reflect this important leadership theme, see: https://www.hlc.mohh.com.sg/NewsLetters/leading-healthcare-issue-23.pdf.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