

# Medicine

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A photograph of a busy, crowded street market in Afghanistan. The street is filled with people, including men, women, and children. Some are pushing carts or carrying goods. There are stalls on the right side of the street, one of which is displaying a large quantity of round produce, possibly potatoes. The background shows buildings and more people, creating a sense of a bustling, active community. The overall atmosphere is one of daily life and commerce.

**A SINGAPOREAN  
AT HOME IN  
AFGHANISTAN**



# DEAN'S MESSAGE



Dear Friends,

The impact of a medical school is seen in the work of its graduates, staff and students. While their contribution to improvements in a nation's overall health and well-being can be measured in many ways, it is what Shakespeare called "the quality of mercy" – in this instance, the compassion and professionalism expressed and displayed through the delivery of care – that most evidently touches and improves the lives of people.

Through the 113 years of the NUS medical school, our alumni and staff have consistently endeavoured to live up to this tradition of service. As we begin a new year, we pause to pay tribute to one of our finest – the late Professor Chia Boon Lock, who passed away in December last year at the age of 78.

Prof Chia graduated from the University of Singapore in 1963. He joined the University of Singapore from the Ministry of Health as a Senior Lecturer in the Department of Medicine in 1972. He was appointed Professor of Medicine in 1981. Prof Chia was awarded the title of Emeritus Consultant by NUH in 2005 and was conferred the title of Emeritus Professor by the University in 2006. He continued to teach, mentor and practice until 2017 when he retired.

Prof Chia was a master clinician, a skilled clinical cardiologist who could interpret any cardiac murmur unerringly and an unsurpassed master in analysing ECGs. It was in the area of electrocardiography or ECG that he established his metier, with published novel ECG findings in the diagnosis of acute inferior myocardial infarction, acute pulmonary embolism and heart failure. Prof Chia was also one of the first two cardiologists to introduce echocardiography and the first to introduce ambulatory blood pressure monitoring in Singapore. He published extensively, writing 158 scientific papers and publishing two well-known and well-loved books (Clinical Electrocardiography and An Atlas of Two-dimensional and Doppler Echocardiography).

An indication of Prof Chia's popularity as a much sought-after expert may be seen in the various appointments he held, such as being President of the Singapore Hypertension Society, Chairman of the Ministry of Health Workgroup for the Clinical Practice Guidelines on Lipids,

Member of the Workgroup on Hypertension, President of the Singapore Cardiac Society and Chairman of the Chapter of Physicians, Academy of Medicine (now the College of Physicians, Singapore).

He was also a caring and inspirational teacher, a favourite with generations of NUS medical students as well as registrars training in Cardiology. His steadfast dedication led NUS to confer on him the title of Emeritus Professor in 2006. A year earlier, he had received the Lee Foundation-National Healthcare Group Lifetime Achievement Award.

The medical fraternity recognised Prof Chia's decades of service by awarding him Honorary Membership of the Singapore Medical Association (SMA) in 2008. Asked once to reflect on his life-long career and how he would like to be remembered, he replied: "As a teacher and friend, and also as someone who has contributed to the success of cardiology in Singapore". Rest in peace Prof, we will always remember you as a great teacher, as a friend and as the 'Father of Cardiology' in Singapore.

To honour the legacy of this much-loved man, who will be sadly missed, and to perpetuate his passionately held beliefs about the practice of medicine and the education of Singapore's doctors, we are establishing the Chia Boon Lock Memorial Fund at NUS Medicine. [If you would like to support this initiative, please contact Ms Valerie Lee at [valerie.lee@nus.edu.sg](mailto:valerie.lee@nus.edu.sg) or 6772 3786.]

In this issue, we also salute Dr Wee Teck Young. Like Prof Chia, the MBBS Class of 1993 alumnus has followed his calling and spent the past decade in Afghanistan, serving first as a doctor and now as a volunteer with an NGO dedicated to improving the lives of Afghans. Far from the comfort and convenience of Singapore, Dr Wee says he is very much at home among the people he works with. Prof Chia's distinguished service to the profession and Dr Wee's devotion to a humanitarian cause remind us all of the fundamental reasons for the School's existence, inspiring each of us to help make the world a better place.

Happy reading.

Khay Guan

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# HEALTH SCREENING EFFORTS REACH OUT TO ELDERLY

By Goh Ying Xian, Goh Ying Xian, Ryan Lim and Drusilla Tan,  
Phase II Medicine students



**The Young Health Ambassadors' Programme (YHAP) assembly talk at Singapore Chinese Girls' School**

Public Health Service (PHS) was a project initiated in 2004 by the NUS Medical Society, with a small committee of medical students. In its 12th year of service in 2017, PHS has grown and matured over the years. PHS has continuously adapted along with the changing healthcare landscape in Singapore to better serve the public in line with its motto - "Promoting Health, Spreading Awareness".

Since the launch of the Young Health Ambassadors' Programme (YHAP), PHS has been greatly involved in primary prevention efforts through health education. PHS 2017 greatly expanded the reach of the YHAP, engaging over 2100 secondary school and junior college students from institutions like Singapore Chinese Girls' School, Choa Chu Kang Secondary School and Hwa Chong Institution. Secondary school students were educated primarily on Diabetes Mellitus and common chronic diseases via assembly talks.

In addition, 41 Junior College students also embarked on a year-long programme as Health Education Ambassadors, where they were mentored by the PHS Committee to design a poster and a game featuring Diabetes Mellitus to present at the exhibition area of the PHS screening event. They also went on a learning journey to the National Kidney Foundation to learn more about chronic kidney disease. PHS hopes to continue expanding into primary prevention in the hope that these young minds will spread health

messages to their families and develop good lifestyle habits throughout their lives.

Last year, PHS held its free annual flagship screening event over the weekend of 21 and 22 October, serving over 1100 participants in Jurong East. Modalities offered during the event included screening and education for common chronic diseases (diabetes, high cholesterol, hypertension) and cancers (colorectal, cervical, breast), geriatrics screening (cognitive, vision, fall risk), oral health screening and doctor consultations. Singaporeans and Permanent Residents aged 40 and above were eligible for the screening, while the exhibition was open to the general public.

Several new initiatives were rolled out last year, such as a new electronic application and database with a team from NUS Institute of Systems Science. This helped to facilitate more efficient screening flow and easier access to information across the different modalities. PHS organisers also ensured complete wheelchair access throughout the screening site, making the event more accessible for participants with mobility problems. They also engaged volunteers from SIGNapse, a sign language interest group, to facilitate communication with participants who were hearing impaired. On-site publicity and education was also carried out as Meddy and Neddy - bear mascots of NUS Yong Loo Lin School of Medicine and NUS Nursing - went





**Dental care at PHS 2017**

around Jurong East with volunteers to spread the message of health awareness. The event was graced by Associate Professor Benjamin Ong, Director of Medical Services, Ministry of Health.

Being a cross-faculty student-led project, PHS 2017 involved over 650 student volunteers from different healthcare courses (NUS Medicine, NUS Nursing, NUS Pharmacy, NUS Dentistry, NUS Social Work; NTU Medicine; and Duke-NUS Medicine), as well as more than 250 external volunteers from various partnering organisations. Over the years, PHS has continuously provided a platform to foster inter-healthcare interaction as students across different faculties and different batches come together in this large-scale event to serve the community together.

A week prior to the 2017 health screening event, PHS representatives went door-to-door to spread the message of health awareness and the event. They reached an unprecedented number of over 24,500 households across Yuhua, Bukit Batok East and Jurong Central. Residents were informed about the screening event, and educated

on prevalent health conditions such as Diabetes Mellitus via illustrated cards.

Concurrently, screening participants were updated with their health screening results through the Telehealth Initiative. As PHS works to link up participants with their primary care providers for further professional care if necessary, volunteers will be calling relevant participants over the course of the next few months after the screening event to check up on participants and ensure that they have access to, and have been attending necessary follow-ups. Eligible participants with abnormal screening results are provided with a free GP consultation at a clinic of their choice.

Looking ahead, PHS hopes to continually optimise its health screening while making its health education and follow-up programmes more robust. The service strives to cater to the different needs of the general public and make a sustainable impact on all parties involved – whether it be the participants, volunteers or external partners. Together, PHS looks forward to making Singapore a healthier nation, one community at a time.



## TECHNOLOGY- ENHANCED EDUCATION THE FOCUS FOR 15<sup>TH</sup> APMEC

*By Professor Matthew Gwee,  
Centre for Medical Education*

The Asia Pacific Medical Education Conference (APMEC) series of conferences was initiated in 2003 by the Medical Education Unit (now the Centre for Medical Education (CenMED) in the then Faculty of Medicine (now the Yong Loo Lin School of Medicine), National University of Singapore. There were only about 100-odd participants when the 1st APMEC was launched soon after the MEU was established.

APMEC has grown almost ten-fold since its inception – a clear testimony to its popularity, reflecting the quality of its educational offerings to participants who now come, not only from Asia, but also from across the world. We are of course delighted.

The success (or perhaps the growth rate) can be attributed, firstly, to the vision and firm belief of the organisers that there is a need for Singapore to provide the educational leadership to enhance the status of medical education in

general and, more specifically, to motivate our teachers to “Teach and Flourish” in the spirit of the Scholarship of Teaching and Learning. The organisers are also mindful of the need to share knowledge across Asia and in this context, we are deeply grateful to all our specially invited speakers who so readily share their wisdom, expertise and experience with all participants. We owe a debt of gratitude to all our support staff for the cheerful and conscientious spirit which team members display throughout and, last but certainly not least, we would like to express our deep appreciation to all our participants for their continued support over all these years.

The primary focus of this 15th edition of APMEC (10-14 January 2018) was on technology-enhanced education, in view of the fact that information is now available at the click of a button for both education and healthcare. The two are not separate but are interdependent endeavours. However, we also needed to observe a caveat: patient-care is both a science and an art; the latter will require healthcare students to optimise the development of their interpersonal skills which involve much human communication and interaction. How technology can contribute effectively and efficiently to learning of interpersonal skills must be critically assessed!

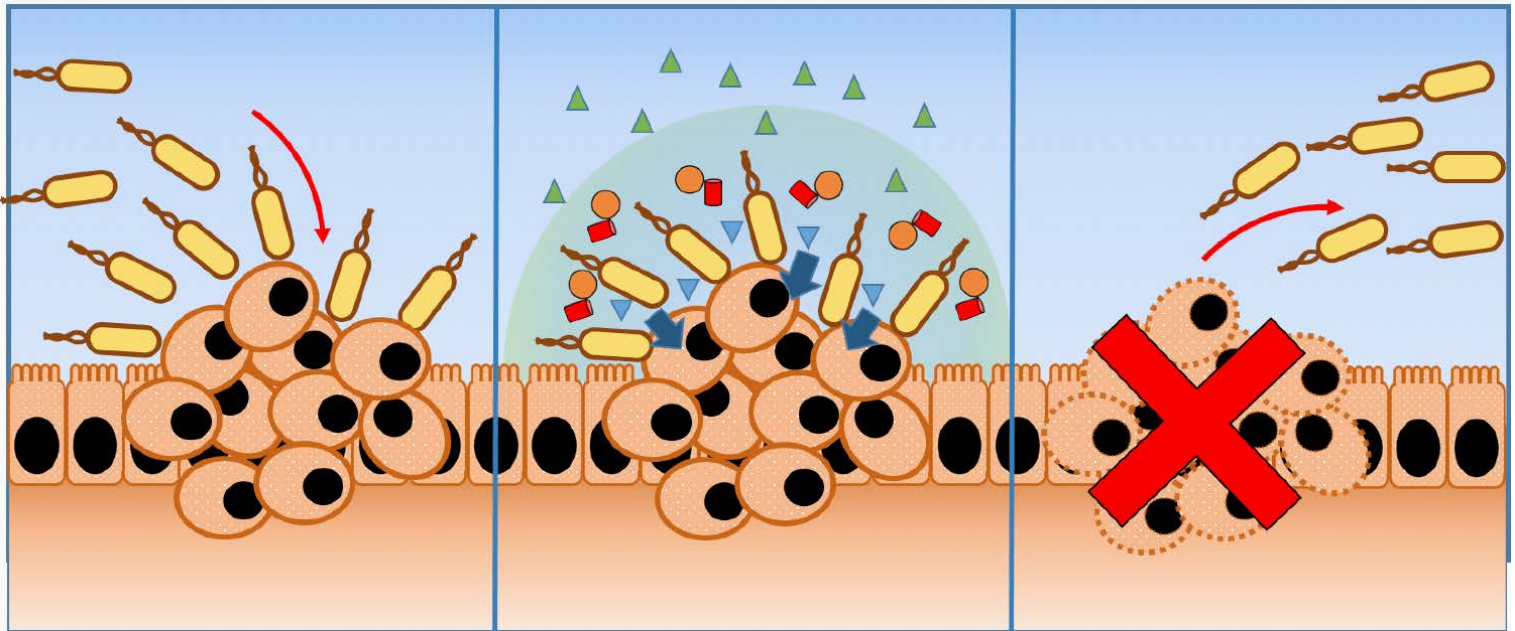
We hope all our participants enjoyed sessions of learning and gaining exciting educational insights that will stimulate them to continue their conversations beyond the conference site and into their respective disciplines in their own institutions.



## **KILLING COLORECTAL CANCER CELLS WITH ENGINEERED BACTERIA AND BROCCOLI EXTRACT COMBO**

Colorectal cancer is one of the most common cancers in the world, especially the developed world. Although the five-year survival rates for earlier stages of this cancer are relatively good, at later stages survival goes down and the risk of cancer recurrence goes up considerably.





Orally administered engineered bacteria bind to the surfaces of colorectal cancer cells (a). Upon binding, the bacteria produce the myrosinase enzyme. Myrosinase converts glucosinolate, a substance found in cruciferous vegetables, into a toxin that specifically kills colorectal cancer cells (b). When the cancer cells are cleared, the engineered bacteria are released from the surface of the intestinal wall (c).

To help address this problem, a team of researchers from the Department of Biochemistry, NUS Medicine, have found a way to turn a humble cocktail of bacteria and vegetables into a targeted system that seeks out and kills colorectal cancer cells. The study, which was led by Dr Chun-Loong Ho, was published online and in the January 2018 issue of *Nature Biomedical Engineering*.

At the heart of this cancer-targeting system is an engineered form of *E.coli* Nissle, a harmless type of bacteria found in the gut. Using genetic techniques, the team engineered the bacteria into a probiotic that attached to the surface of colorectal cancer cells and secreted an enzyme to convert a substance found in cruciferous vegetables (like broccoli) into a potent anticancer agent. The idea was for the cancer cells in the vicinity to take up this anticancer agent and be killed. Normal cells cannot perform this conversion, nor are they affected by the toxin, which targets only colorectal cancer cells.

The mixture of engineered probiotics with a broccoli extract or water containing the dietary substance killed more than 95% of colorectal cancer cells in a dish. Strikingly, the probiotics-vegetable combination reduced colorectal cancer tumours by 75%. Also, the tumours that were detected were three times smaller than those in controls which were not given the mixture.

Dr Ho and Associate Professor Matthew Chang, along with colorectal cancer specialist Dr Yong Wei Peng, Associate Director (Research) and Senior Consultant from the

National University Cancer Institute, Singapore (NCIS), envision that these probiotics could be used in two ways: 1) prophylactically, i.e. as prevention, and 2) to mop up cancer cells remaining after surgical removal of tumours.

“The day may come when a weekly dose of the engineered probiotic drink with a healthy diet of cruciferous vegetables would suffice to prevent colorectal cancer or reduce recurrence after surgery,” Dr Ho suggested. He added, “Mothers are right after all – eating vegetables is important.”

A/Prof Chang added, “One exciting aspect of our strategy is that it just capitalises on our lifestyle, potentially transforming our normal diet into a sustainable, low-cost therapeutic regimen. We hope that our strategy can be a useful complement to current cancer therapies.”

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## **MOTHER'S ANTIBODIES MAY WORSEN DENGUE INFECTION IN CHILDREN**

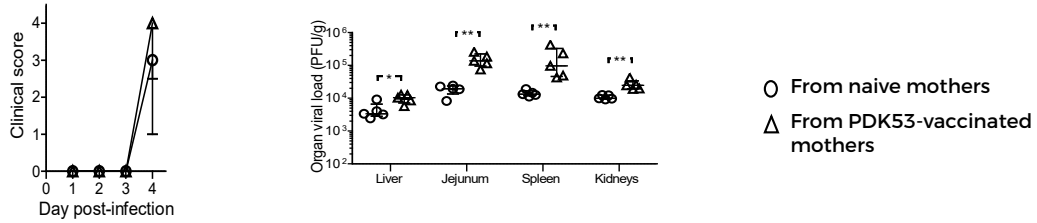
A dengue vaccine that stimulates a strong T cell response in babies has been found to provide better and broader protection than vaccines which induce the production of mainly antibodies. An NUS research team that made this finding also found that a mother's antibodies which help to protect her babies against dengue virus infection can also be detrimental in some situations, as these maternal antibodies can enhance the severity of dengue infection in babies or interfere with their immunisation.

These discoveries were made by a team led by Associate Professor Sylvie Alonso and her team from the Department of Microbiology and Immunology at NUS Medicine. The study was published in the scientific journal JCI Insight in December 2017.

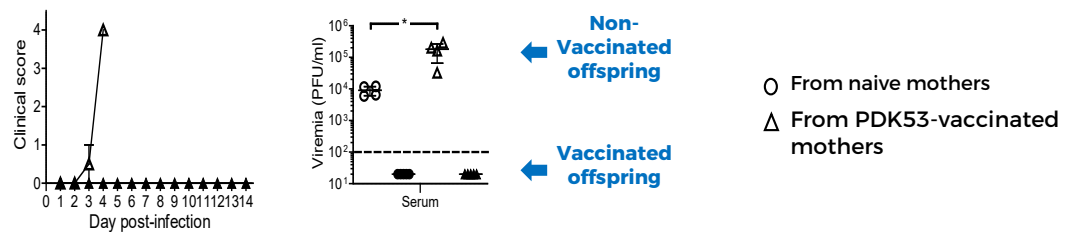


**A protective role of dengue vaccine-induced CD8<sup>+</sup> T cells in the context of enhancing maternal antibodies**

**Enhancement of disease severity (ADE)**



**Full protection**



The researchers’ findings show that maternal antibodies which circulate in babies born to dengue vaccinated mothers can protect against dengue only if the infecting dengue strain is very similar to the strain that is present in the vaccine. However, maternal antibodies will not be able to protect against a dengue strain that is different from the strain used in the vaccine. And in fact, they may make the disease even worse.

In addition, the team has generated experimental evidence which indicates that maternal antibodies can interfere with the baby’s vaccination. That is when antibody production will be completely prevented (a phenomenon known as “maternal antibody interference”).

However, vaccination of babies born to dengue vaccinated mothers will still be able to induce a T cell response, the other arm of our immune system. A/Prof Alonso and her team showed that this T cell response is able to protect against dengue, even when the infecting strain is different from that used in the vaccine.

These findings therefore show that a dengue vaccine which induces an effective killer T cell response could provide better and broader protection for children born to vaccinated mothers, than vaccines which rely mainly on antibodies, such as Dengvaxia, the only dengue vaccine that is currently on the market.

The impact of these findings on vaccination strategies in humans is significant, as more children are born to mothers

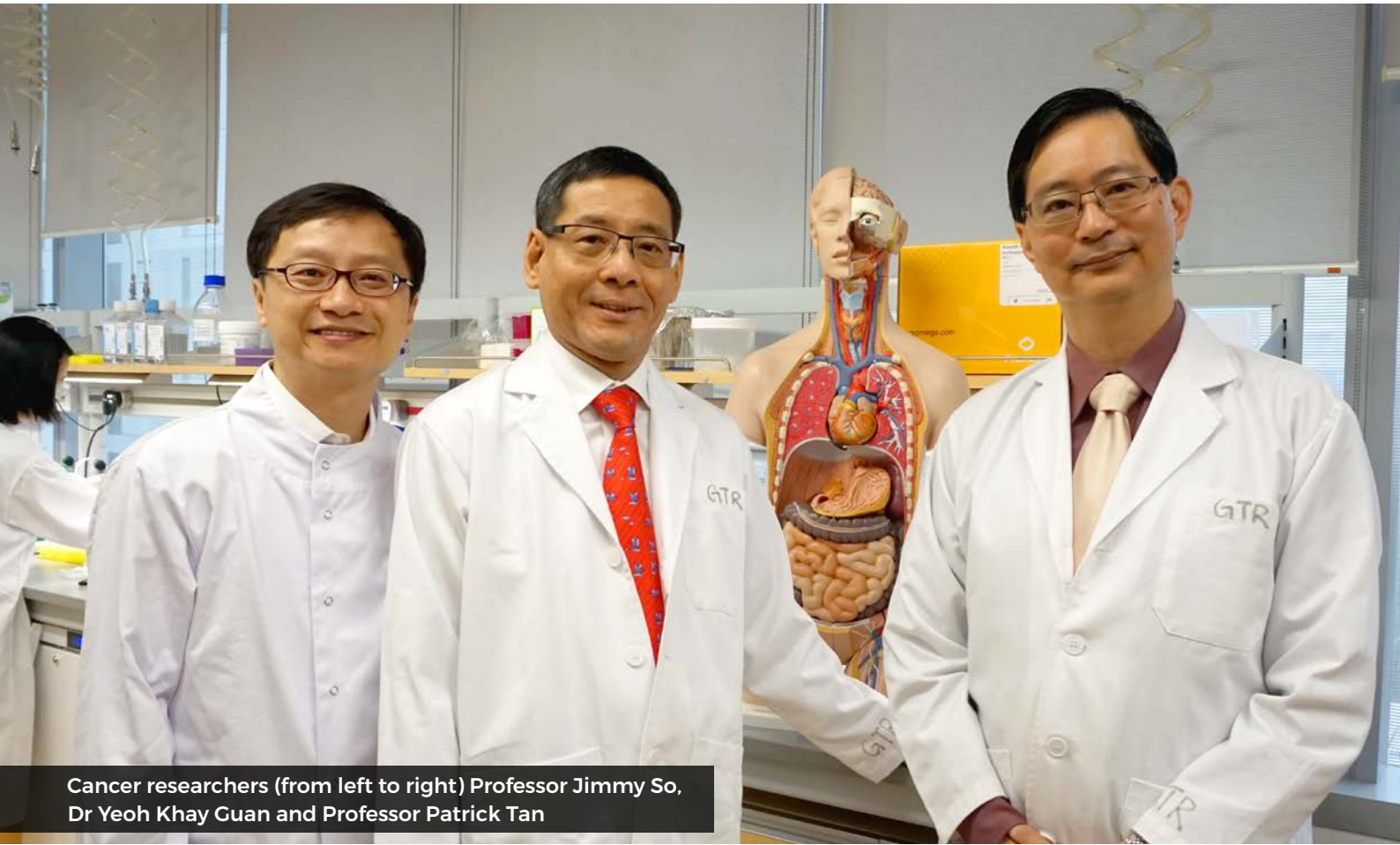
who have been vaccinated against dengue infection.

“We hope that our work will further convince the dengue vaccine community that it is of utmost importance to include a protective T cell response in their vaccine design. Too many efforts are currently being devoted to looking at an antibody-mediated protection while the T-cell responses are being overlooked,” said A/Prof Alonso.

She added, “We hope that the team currently taking care of the clinical development of the DENVax candidate will measure the T cell responses in the vaccines. Lastly, we hope that our work will entice clinical trial teams to include monitoring of children born to vaccinated mothers as well as vaccination efficacy in these children.”

Commenting on the importance of these findings, Professor Paul Anantharajah Tambyah, Senior Consultant at the National University Hospital’s Division of Infectious Diseases said, “These findings are very interesting because they help us to better understand the role that the different parts of our immune system play in our response to dengue and other viral infections. They emphasise the fact that we cannot just look at one measure (for example the antibody levels) but need to comprehensively ensure that individuals who are vaccinated by any candidate vaccine are truly protected from infection. It would be unfortunate if a vaccine actually made the situation worse by triggering off one part of the immune system to over-react instead of completely eliminating the virus.”





Cancer researchers (from left to right) Professor Jimmy So, Dr Yeoh Khay Guan and Professor Patrick Tan

# LANDMARK GENETIC STUDY BETTER PREDICTS STOMACH CANCER

NEW FINDINGS OFFER POTENTIAL TO DEVELOP MORE EFFECTIVE SCREENING FOR STOMACH CANCER, ENABLING TIMELY AND BETTER EARLY-STAGE TREATMENTS FOR PATIENTS

A research team led by National University Health System (NUHS) and Duke-NUS Medical School has used genomic technologies to better understand intestinal metaplasia (IM), a known risk factor for gastric (stomach) cancer. Patients with IM are six times more likely to develop stomach cancer than those without. This study is an important part of an ambitious investigation to understand why some people develop stomach cancer, while others do not. The research, which was published in one of the top cancer research journals, *Cancer Cell*, could also help detect patients who are infected with the *Helicobacter pylori* bacteria, which is also linked to the disease.

Stomach cancer is the third deadliest cancer in the world according to World Health Organization (WHO) statistics<sup>1</sup>, and claims more than 300 lives yearly in Singapore. The disease is believed to be caused by infection with *Helicobacter pylori* but is potentially treatable if detected early. Unfortunately, more than two-thirds of stomach cancer patients are only diagnosed at an advanced stage<sup>2</sup>.

“Previous genetic studies on IM have mainly focused on patients who were already diagnosed with stomach cancer but these are limited in their ability to predict who are likely to develop the disease and how the disease will progress,” said Professor Patrick Tan, co-lead investigator and Professor, Duke-NUS Medical School. Professor Tan is also Deputy Executive Director, Biomedical Research Council, Agency for Science, Technology, and Research, and a Senior Principal Investigator at the Cancer Science Institute of Singapore. “This new study is the first to comprehensively map out the genetic changes in IM in a cohort of stomach cancer-free subjects, which helps us better predict the possible occurrence and progression of the disease.”

Dr Yeoh Khay Guan, co-lead investigator and Deputy Chief Executive, NUHS as well as Dean, NUS Yong Loo Lin School of Medicine added, “Our study is the largest series of IM to be studied in detail by genetic analysis. These new findings help us understand why some people have a higher risk of



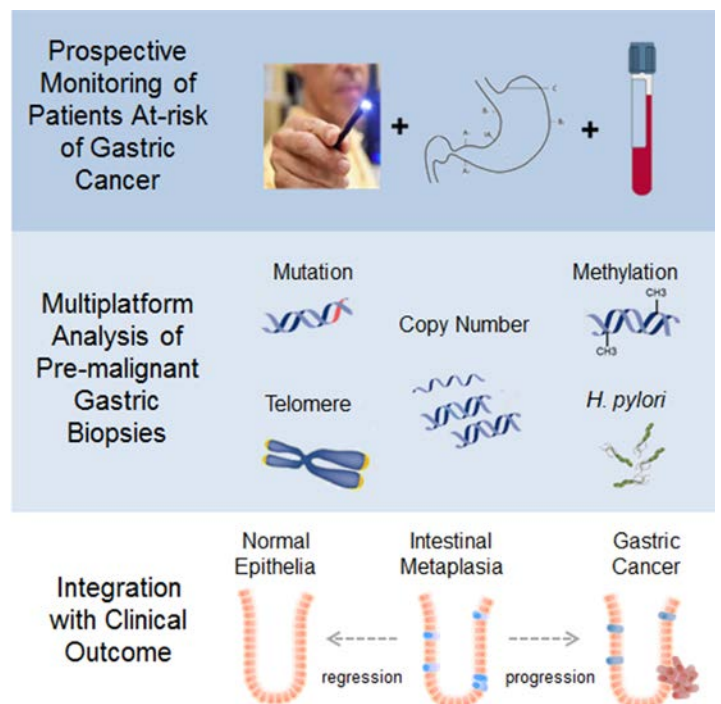
progression to stomach cancer, and identify those who may benefit from closer follow-up to prevent cancer or to detect it early so that it can be cured.”

The researchers leveraged the near 3,000 participants-strong Gastric Cancer Epidemiology Programme (GCEP) cohort, recruited with the support of patients and doctors from four local public hospitals (National University Hospital, Tan Tock Seng Hospital, Singapore General Hospital, Changi General Hospital), to show that a comprehensive analysis of the genetic patterns of IM can predict its subsequent progression towards stomach cancer. The genetic analysis of IM helps to identify those with a higher risk of progression to stomach cancer, adding further information to what is available by microscopic examination alone.

The research team is using this new information to identify biomarkers that can be applied in future in the clinic to identify people who have a high risk of progression to stomach cancer.

The research was primarily supported by the National Research Foundation Singapore under its Translational and Clinical Research (TCR) Flagship Programme (TCR/009-NUHS/2013) which was administered by the Singapore Ministry of Health’s National Medical Research Council (NMRC), as well as by NMRC’s Singapore Translational Research (STaR) Investigator Award (NMRC/STaR/0026/2015).

The GCEP project is the cardinal study of the Singapore Gastric Cancer Consortium (SGCC), which is a translational research group comprising clinicians and scientists from NUHS, Duke-NUS Medical School and other academic medical centres, universities, hospitals and research institutes working in stomach cancer research. The study aims to find more effective ways to treat stomach cancer and produce better patient outcomes, including targeted screening and early detection of the disease. Since its inception in 2007, SGCC has published more than 220 papers and filed 47 invention disclosures and patent applications, and has attracted more than S\$23million in funding from 17 industry partners.



**The new findings from the genomic studies could help better detect those at higher risk of stomach cancer much earlier, a crucial factor in treating the disease.**

Image credit:  
Lee Jia Wei (NUS Yong Loo Lin School of Medicine) and  
Huang Kie Kyon (Duke-NUS Medical School)

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# TECHNOLOGY'S ROLE IN TRAINING SAFER DOCTORS

*By Dr Ashokka Balakrishnan & Associate Professor Chen Fun Gee, Department of Anaesthesiology, NUHS*

Learning in clinical medicine has evolved over the past century and in leaps and bounds in the past two decades in congruence with advancements in information technology. Gone are those days of experimentation in caring for patients, with the practice largely guided by the dictum, 'see one, do one, teach one'. We have come a long way from there and medical practice is well-established through the structured research, publishing and sharing of lessons learnt.

The art of medicine has evolved from bringing the students from the bench to the bedside through initiatives by pioneers of clinical medicine like William Osler. In Singapore, clinical medicine was taught and learnt through 'cognitive apprenticeship' and 'student internship programs' as early as the 1960s. Learning was opportunistic, limited to the range of clinical case exposure, availability and interest

of faculty and clinical context. This brought in issues with poor generalisability and inadequate preparedness when diseases, people and cultures met, facilitated and hastened by the speed, convenience and ease of global air travel. Information and medical knowledge need to be shared in a time-efficient and succinct way. Students who lack sufficient contact time with patients do not gather adequate core clinical knowledge and skills and this may place them and their patients in dangerous situations.

## **From basic skills training**

The introduction of computers in education in the late 1980s and the advent of the internet revolutionised technology-enabled learning (TEL) and addressed the majority of these lacunae in medical education by facilitating accessibility and increasing options for review of core content. In the basic science years, the educational content is now regrouped into modular themes: for instance, the cardiovascular system includes basic anatomy, functional physiology, relevant pathology and the pharmacology of medications. These



foundational aspects are identified as core concepts and tagged into web based repositories for the clinical years, providing students who interact with patients with a systems-based approach after they have revised the relevant applied basic medical literature.

To offset the lack of time and opportunity for students to practice basic skills like history and structured examinations, learning in early years in medicine now features history taking sessions with standardised patients, who are trained volunteers that are able to provide structured feedback to learners. Web-based virtual patient platforms are now in vogue. These feature patient profiles, with options to trigger the appropriate history, emotions and clinical information pertinent to the case chosen and in response to learners' decisions and actions. These offer offline learning with personalised feedback, where students practice adequately in their own time to achieve a level of expertise that would deem them fit to meet patients in the clinical years.

### **To immersive, acute scenarios that test and hone clinical skills**

While to 'err is human', it is fatal in the context of caring for the acutely ill. Learning the science of acute care requires the right knowledge, dynamic decision making, initiating timely

interventions and a stoic frame of mind. Necessary skills can now be developed through part-task trainers such as the airway trainer, CPR, cannulations and procedural trainers. These allow 'deliberate adequate practice' to provide the level of skills and confidence enabling learners to focus on clinical data interpretation, critical thinking and decision-making. Not all learners develop the necessary skills and acquire applied core knowledge in conventional didactic teaching sessions. Hence, the need for better platforms featuring a safe learning environment that would benefit the learner and eventually, the patient.

The introduction of high-technology, full-scale simulations have enhanced team-based participatory learning in acute care with near-real pathophysiological transitions and interventions, such as needle decompressions and surgical airway access. These have enabled learners to feel empowered to deploy these skills in safe reproducible ways without any patient harm and facilitate higher-order learning, such as demonstrations in a congenial atmosphere of peer-assisted learning with structured formative feedback.

### **Simulation training helps save lives**

There is now evidence to show that introduction of simulation-based structured teaching programmes has





enhanced the safety of clinical procedures, resulting in fewer complications. Technology-enabled learning however does not adequately address the bewilderment and helplessness that newly graduated healthcare professionals grapple with when they are thrown into the turbulent ocean of clinical medicine, with the need to make prompt, on-the-ground decisions independently while they acclimatise themselves to concepts of working with fellow nursing and allied health care teams. All these, as they also seek to understand and navigate hierarchical structures as newbie house officers.

Hospital sentinel event data has consistently shown that preventable errors are chiefly in the category of 'delayed recognition and absence of early escalation' of deteriorating situations. While high-technology manikin-based simulations prepared them reasonably well in team decision-making, interns and junior doctors are discovering that they need to make independent decisions in most instances. In response, virtual simulation offers training scenarios on a range of interactive platforms.

Such simulation can be computer/tablet-based, with two or three-dimensional scenarios offering positive feedback incentives and 'punishment' for mishaps or losses and missed cues. App or game-based scenarios have revolutionised the learning of basic and applied clinical concepts in an amazingly engaging and interactive way.

With the learners being digital natives, simulation and education have embraced wearable technology such as virtual reality (VR) where the learners enter an imaginary scenario through an 'avatar' and perform appropriate calibrated tasks with inbuilt feedback upon completion.

The promise of augmented reality (AR) is in overlaying advanced basic and clinical situations onto learners' own clinical environments with a blend of virtual and high-technology simulations.

The AR and VR platforms could be a promise of the future in which learners independently participate in clinical scenarios and repeat these exercise in their own time, to practice their decision-making skills to the level of expected standards, thereby developing 'cognitive dexterity' or the ability to think and act smart when exposed to grave situations with rapid pattern recognition skills. Preparing them to handle such states 'offline', we hope, would help young doctors to practice safely.

It is imperative that we understand the needs of our learners, choose the appropriate platforms for the right content, provide the optimal exposure and adequate time on task and finally, give structured timely constructive feedback so that they are current and well-equipped to be better practitioners of compassionate, state-of-the art healthcare.





## NO ONE LEFT BEHIND UNIVERSAL HEALTH COVERAGE AS AN EQUITABLE ENTERPRISE

By Dr Calvin Wai-Loon Ho,  
*Centre for Biomedical Ethics*

The Centre for Biomedical Ethics (CBmE) of the Yong Loo Lin School of Medicine (NUS Medicine) is the first collaborating centre for bioethics to be designated within Asia by the World Health Organization (WHO) in March 2014. Since then, CBmE has supported WHO and its partners (including the Asian Development Bank, the World Bank and UNICEF) in advancing universal health coverage (UHC) across Asia and the Pacific. In this paper, UHC as an equitable enterprise is discussed in terms of the past contributions of CBmE and future challenges ahead.

### **Universal Health Coverage**

Broadly speaking, UHC is concerned with equitable access to quality health services (including medicines and health products) without undue financial hardship, and it was first adopted by all member states of the WHO in 2005.<sup>1</sup> With the launch of the Sustainable Development Goals (SDGs) by the United Nations in 2016 as a roadmap for investments in development over the next 15 years, UHC remains a central concern and is identified as a specific target. At its very core, UHC is a bioethical enterprise with a clear focus on equity and for its emphasis that no one should be left behind in the realisation of the SDGs. However, there are many challenges confronting health

systems. These include known and emerging infectious diseases, a growing number of high cost interventions and an increasing prevalence of non-communicable diseases faced by a number of countries. This includes Singapore, with a rapidly ageing population. How health systems meet these challenges will depend on the extent that equity is conceptualised and applied.

### **Conceptualising Equity**

Equity is difficult to define simply, but it is regarded as a cornerstone not only of policy decisions, but also of ethically legitimate social institutions. In the context of the healthcare financing aspect of UHC, the CBmE has been involved in explicating a notion of equity (taken to be synonymous with fairness) in two reports of the WHO.<sup>2</sup>

In working towards UHC, equitable policies should be optimal both from the perspectives of fairness and benefit maximisation. Drawing from an essentially Rawlsian framework of distributive justice, fairness gives emphasis to pro-poor policies, in terms of both distribution and contribution. Fair distribution requires coverage and use of services to be based on need, and priority should be given to policies benefitting the worst off groups. In contrast, fair contributions to the health system should be based on ability to pay, and not by need. Fair distribution and fair contribution, along with cost-effectiveness, are identified



as three concrete guiding considerations for making policy decisions on the path to UHC. Within such a framework, certain trade-offs could be assessed to be ethically more defensible than others.<sup>3</sup>

Health insurance schemes constitute a crucial component to UHC in ensuring that people most in need of healthcare, especially the poor, are not left behind. Schemes that prioritise advantaged groups (basically those who are able to pay) or otherwise impose a heavy burden on groups already disadvantaged by need (such as a pre-existing medical condition) were identified as a barrier to UHC. Important policy changes have since been made by countries that are committed to UHC, including Singapore.

### **Universal Health Coverage in Singapore**

On 29 January 2015, Singapore's Parliament passed a law that introduced (from November that year) universal lifelong health insurance coverage in the form of MediShield Life. With this change, the benefits package has been enhanced in terms of an increase in pay-out in order to reduce out-of-pocket payment. Coverage would be for life in order to allay concerns over healthcare affordability, especially for the elderly, and applies to all Singaporeans and eligible permanent residents, including those who are living overseas.

Higher claim limits have also been established while co-payments have been lowered. For a large number of patients receiving inpatient care for serious illnesses, they will not be expected to pay more than S\$3,000 a year. Co-payment has been reduced from between 10% and 20%, to a lower level of between 3% and 10%. In order to keep premiums affordable, co-payment has not been completely removed, and no change has been proposed to deductibles, which currently range from S\$1,500 to S\$3,000. The annual claim limit has been raised from S\$70,000 to S\$100,000, and the lifetime limit on medical claims of S\$300,000 has been removed, so that there is no limit to medical claims over the lifetime of an insured person.

In addition, coverage has been widened to cover the medical claims of an insured person throughout the entire course of her or his life (but subject to an annual limit). A critical inclusion has been the extension of MediShield Life coverage to HIV carriers and AIDS patients. These individuals may be unable to get insurance coverage, while those already insured fear that their insurance policies will be voided if they make a claim.

Premiums are comparatively high among the insured who are young and healthy, as part of the contributions is intended to offset the even higher premiums that they will need to pay when they get older. However, this increase is considered to be affordable, as premiums are fully payable

within Medisave withdrawal limits and contributions. In other words, no additional cash outlay should be necessary for most insured households. The financial cost of including those with pre-existing conditions (including HIV carriers) into MediShield Life is higher, as these individuals are likely to make claims from the moment they enter the insurance plan. Consequently, it has been deemed fair for these insured to pay a higher premium. However, their increased contributions is not enough to cover what they will cost to the insurance scheme in claims. At the present time, different cost-sharing arrangements and government subsidies are relied on to keep premiums affordable. For the insured who are 65 to 79 years of age in 2014 (the "Pioneer Generation"), public subsidy for their premiums has been provided, regardless of their income levels.

### **Advancing and Sustaining Equity**

The introduction of MediShield Life is a crucial step forward for Singapore in its progress towards UHC. Expectedly, pay-out in claims under MediShield Life has increased by 66 per cent after about a year since it came into operation, given the scheme's increased coverage and enhanced benefits package.<sup>4</sup> Annual healthcare expenditure is also expected to grow from around S\$4 billion in 2011 to S\$13 billion in 2020.<sup>5</sup> These development makes clear that equity remains central to MediShield Life in at least two respects: in the distribution of responsibilities and in balancing between benefits and premiums. Continuous monitoring, evaluation, deliberation and dialogue are necessary to ensure that the scheme remains viable for Singaporeans, through guarding against inadvertent over-consumption or over-provision of healthcare services, and through the articulation of ethically-grounded roles and responsibilities of the different stakeholders involved.

However, reliable and timely information that is needed to support equitable decision-making and actions may not be readily available, whether in Singapore or elsewhere. For many health systems in Asia and the Pacific, there is as yet inadequate information on whether coverage meets the healthcare needs of their populations, and how they ensure that patients receive appropriate services at affordable costs. There are challenges in obtaining data for some of the new health issues included in the SDGs (particularly a number of non-communicable diseases) and disaggregated information is especially sparse. In addition, there are difficulties in obtaining data for health system inputs and outputs, as very limited data exist to measure availability and readiness, quality and people-centredness of health facilities.<sup>6</sup>

Advancing and sustaining equity through UHC will require health systems to step up on a range of surveillance and related activities. A WHO guidance on the ethical underpinnings of such activities has been a recent project



which involved the CBmE.<sup>7</sup> Further investments in health management information systems are necessary to obtain information that is needed to refine policies and programmes that could help reduce inequities in service access, coverage and delivery. To be sure, building capacity for equity-focused analysis of information is not confined to the level of health systems, but must be an intricate part of the training and continuing education of the health workforce. In this respect, the Yong Loo Lin School of Medicine will have a crucial role to play in the foreseeable future. Under a whole-of-society approach, UHC must be

an initiative that every individual should take ownership of in terms of their health and well-being. Reflecting on Singapore's experience, its capacity to achieve UHC could perhaps be attributed to its focus on wider social determinants that have no direct link to health.<sup>8</sup> Early national priorities were on political unity, developing a prosperous economy and an efficient and corruption-free government, although equity has been a central value to them all.

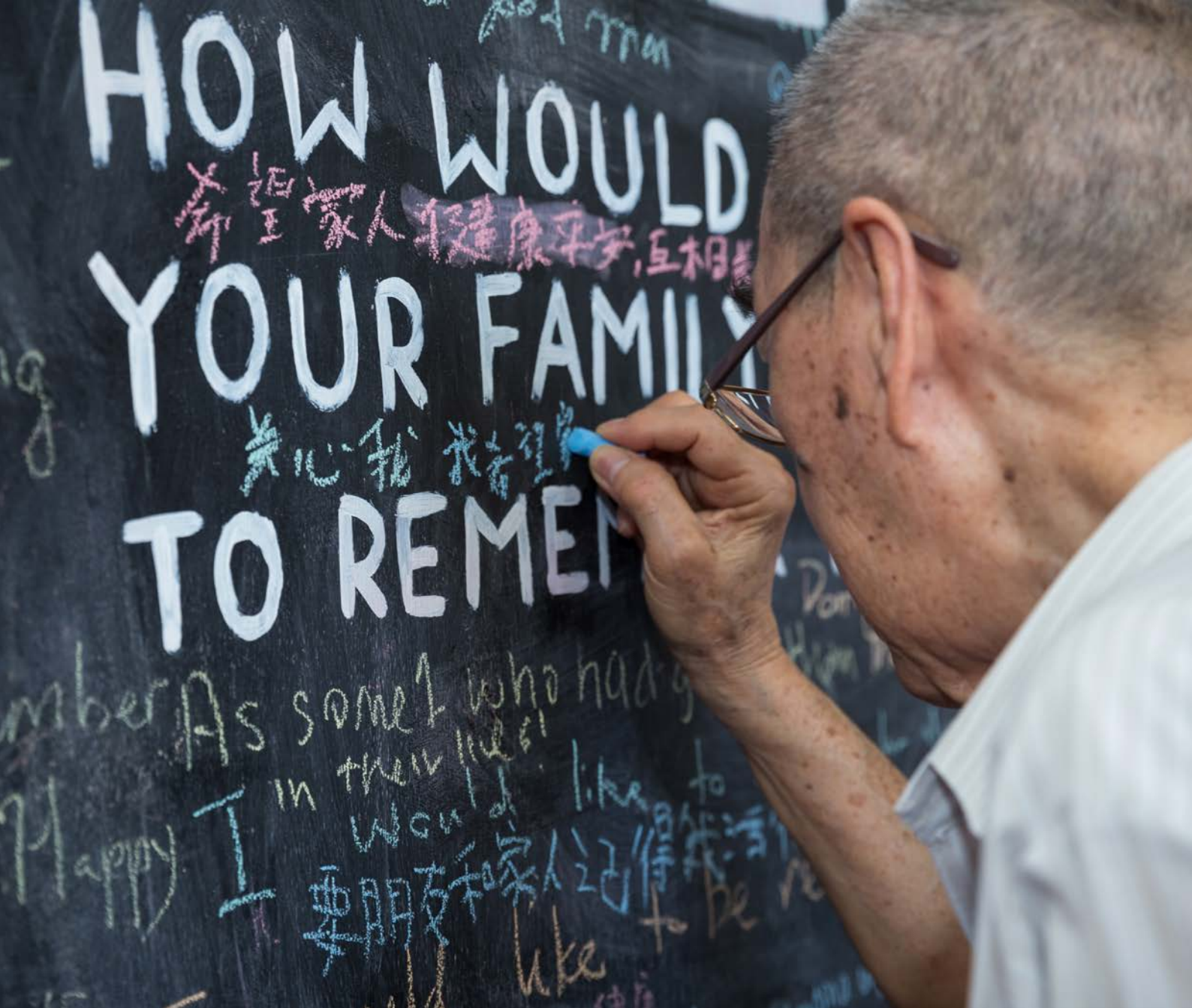
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### **So what do students get out of PHA?**

In October 2017, PHA ran a major public event at Toa Payoh Hub called **Life Stories Exhibition** which was attended not only by the PHA co-founders (who are now residents), but also by previous years' student volunteers. One can only surmise that PHA means something significant to them.

The PHA volunteers are mostly in their second year at medical school, which means they would not have had formal teaching in Palliative care. Many of them come into the project full of curiosity, hoping to learn about Palliative care and how to interact with patients, but I would argue they come away with rather more. But don't take my word for it, here are the some of the students' impressions:

### **Zowie Khoo - Head of Volunteer Management**

It has been a fulfilling journey with Project Happy Apples, though not without its ups and downs. But there's not a thing I would change about the past year. Although my assigned role in the core committee was volunteer management, I'm thankful that I got the opportunity to do and experience much more.

One of my greatest worries was not being able to gather enough volunteers for the Life Stories Exhibition. Luckily, the response was good and we managed to have a capable bunch of volunteers to help us. Despite lacking background knowledge, they were able to pick up fast. Something that I realised was that the awareness of palliative care amongst the younger generation is still pretty low as it was their first time hearing about palliative care - even among medical students. It was a heartening experience to have my committee members and volunteers come together to serve a common cause of reaching out to the community to raise awareness about palliative care. Talking about palliative care not only requires knowledge but also sensitivity and a caring heart.

It was a novel experience for me to interact with people from different walks of life. The life stories that were shared inspired me to fight harder for my dream and to serve the community wholeheartedly. Besides that, it highlighted the importance of spreading the understanding of palliative care to allow the community know that there are many resources that they can turn to.





"MEDICINE IS BOTH AN ART AND A SCIENCE"

### Philip Ong - Head of Research & Initiatives

We started the year full of energy, ready to make so many changes to our befriending programme, to ensure that our volunteers have the most enriching and memorable experience. However, our seniors quickly redirected us and patiently worked with us to refine our ideas. It was only later that we realised, in our eagerness to beef up the programme, we'd missed the big picture - there was beauty in the simple befriending experience.

As I headed on to the clinical years, I realised that this same thread holds true - it was so easy to be caught up in our many plans when talking to patients: learning more about the presentation of a disease, understanding the associated complications, or doing a physical examination. But, there were times when the patient just needed a listening ear, to share about something that was bothering them, and PHA has made me more aware and willing to explore these concerns with them, armed with the belief that a simple but heartfelt conversation can mean so much to them.

### Benedix Sim - Head of Public Outreach

"Medicine is both an art and a science" - a commonly touted phrase within our field. But more often than not, a much greater emphasis is placed upon the scientific rigor of the subject and many of us get lost at sea, with our minds focused on finding a cure or diagnosing a disease. But as the saying goes "to cure sometimes, treat often but to comfort always."

Working with patients undergoing palliative care was an eye-opener to say the least. Not every patient was like Morrie in Tuesdays with Morrie. Each had their own values and particularities. It was challenging at first, learning to adapt to each individual and discovering that there was never a one-size-fits-all approach that was described in our texts to help us. We often found ourselves at a loss, wanting to value-add and attempting to emulate a good doctor and to contribute to that patient. But more often than not, some company, a good listening ear and a kind word from time to time is all that our patients need.



The Project Happy Apples team (from left to right) Zowie Khoo, Benedix Sim, Tay Kuang Teck and Philip Ong

Through organising Project Happy Apples, we aspire to bring forward the messages and stories that we learnt from these patients and to advocate for the public to learn to live life to the fullest. Life is short, and should never be taken for granted. We also hope that all our juniors going through the programme will reflect upon their values that guide them as future healthcare professionals, so as to develop better skills in providing holistic care for their patients and to finally understand what we mean when we say that "Medicine is both an art and a science."

### **Tay Kuang Teck - Head of Volunteer Training**

It was truly a blessing to be a part of Project Happy Apples - a platform to grow as a person, understand myself better, and develop new skills. I can still remember how motivated I was to make a positive change to the project at the beginning of the year. Back then, I thought I was clear about what I wanted to do for the project. Soon after, I began to realise how little I knew about befriending, the project and more importantly, about palliative care.

I learnt the most from the patient I befriended this year. Initially, I came in with the mindset of trying to do my best for the patient. Gradually, I began appreciating the meaning of befriending, which is about the rapport and friendship between us, enjoying each other's company. It was a great privilege to be a part of her journey, understanding the patient behind the disease. I will remind myself not to be fixated on managing the illness only, but also do my best to promote the well-being of the patient.

My befriending experience had also been a source of motivation for me when I was helping with the running of public outreach events. I became more open-minded to new perspectives and learning opportunities. Every interaction with the public became an opportunity to understand them better and offer differing perspectives about end-of-life care. Ultimately, everyone is unique and we should not educate others on how to live life. We are there to provide a supportive platform for them to consider how they want to live their lives to the fullest.





## SHOULD MEDICINE GO “ALL IN” ON AGEING?

*By Professor Brian Kennedy, Director, Centre for Healthy Ageing, National University Health System*

Perceptions of ageing are changing radically. In historic times, when an elder was a rarity, the tradition was often to show great respect and rely on the wisdom and experience that someone who lived through many challenges acquired.

In the 20th century, however, the advent of many healthcare and societal changes led to a dramatic decline in age-extrinsic causes of mortality. The number of elders (that is those over 65) in the population has grown dramatically.

Today, even centenarians are not a rarity. In fact, they are among the fastest growing segments of the Singapore population. Yet, modern societies, whether Eastern- or Western-based, have turned toward a youth revolution, and elders are not consulted as much as in the past. With as much as 30% of the population over the age of 65 in the near future, it is time for societies to re-evaluate

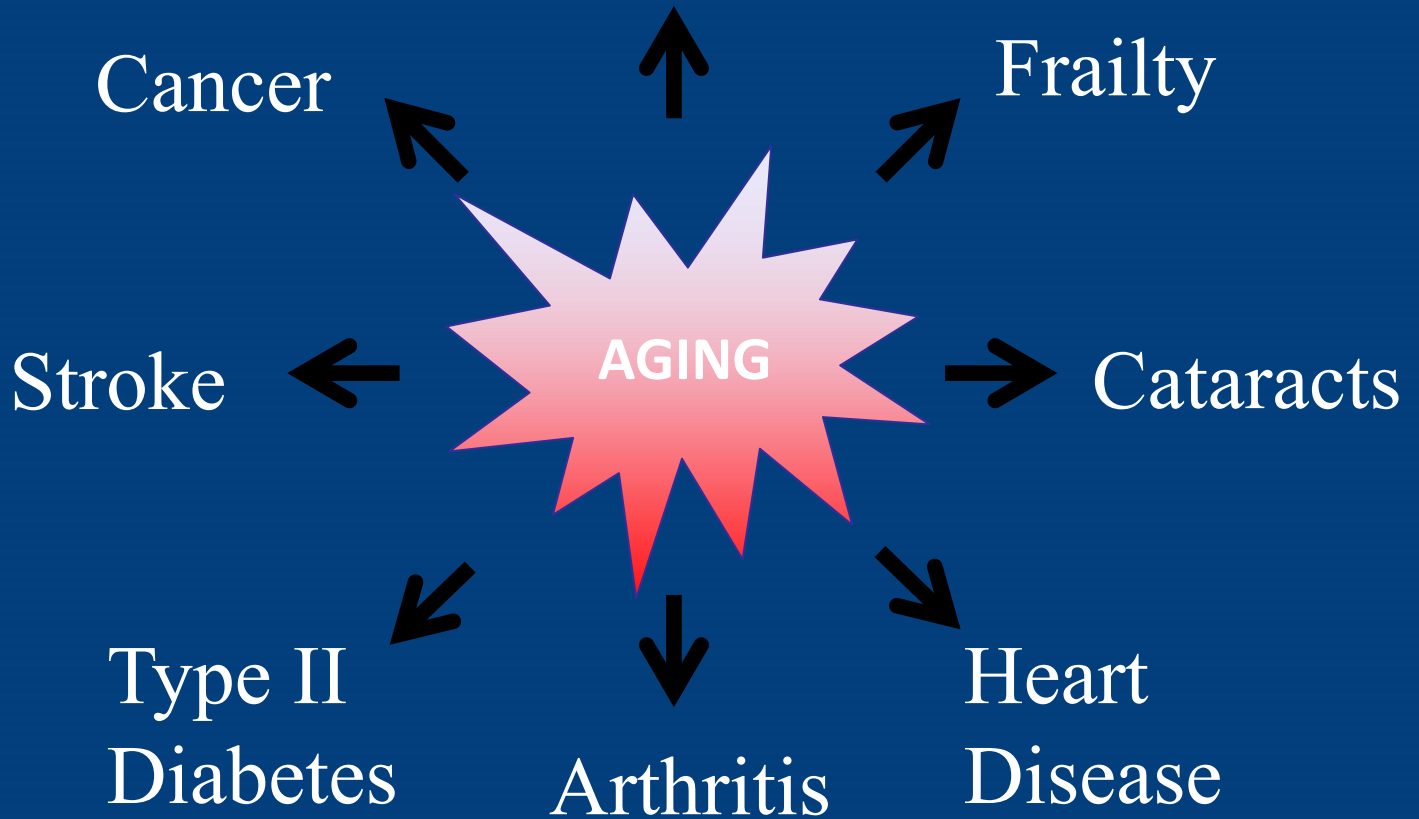
ageing and the aged. How will Singapore, a progressive-minded country, find ways to keep elders healthy and empowered to contribute?

In medicine, ageing is also treated differently, or put more directly, mostly ignored. This stems from a perception that ageing is unalterable. Everybody ages and nothing is to be done. Compare that to someone who diagnosed with cancer. Say “cancer”, and doctors pull out all the stops. If successful, a person is said to “beat cancer.” Rather, if a largely healthy older person says that they are trying to live longer, they are attempting to “cheat ageing.” By way of another illustration, there are more oncologists than gerontologists in Singapore, even though cancer rates are way below ageing rates.

Nothing illustrates the point better than the Framingham risk score, which predicts the likelihood of coronary heart disease. Points are assessed (or taken away) based on a number of variables, with higher points indicating more risk.

Most of us know that high cholesterol is a major player. Take the example of a 44-year-old unhealthy woman. She has moderately high cholesterol (200-239mg/dL; +6 points), smokes (+7 points), low HDL (<40mg/dL; +2 points), and has high untreated systolic blood pressure of

# Neurodegeneration



(>160mm Hg; +4 points). That is a total of 19 points, giving her an 8% chance of being diagnosed with coronary heart disease in 10 years.

Compare her score to that of a relatively healthy 75-year-old woman, who has relatively normal total cholesterol levels (160-199mg/dL; +1 point), doesn't smoke (0 points), has normal HDL (50-59mg/dL), and has untreated systolic blood pressure between 130 and 139 mm Hg (+2 points). It looks great, but she gets +16 points based on her age alone, for a total of +19 and an identical 10 year risk. Physicians would mobilise with the younger woman, recommending lifestyle interventions and pharmacologic interventions. With the older woman, they would say she is doing ok, with perhaps minor recommendations about diet and exercise.

Why ignore the biggest risk factor for CHD (age) and treat the lesser ones? One could argue that the older woman has lived her life and the younger one has many years left, although this is really ageism. Everyone should get best of care. A second argument brings us back to the beginning – ageing is not alterable. But all evidence points otherwise. In animal models, ageing researchers have found a range of strategies to slow ageing, from lifestyle interventions to supplements to drugs, and limited studies in humans suggest that some of these interventions will translate well. Put simply, it is now possible to extend not

only lifespan in animals, but also healthspan, the disease-free and functional period of life. The time has come to test this strategy in humans, since successful extension of healthspan will have extensive economic benefits in Singapore and dramatically improve life quality with age.

The National University Health System recently established the Centre for Healthy Ageing to develop a multi-faceted approach to ageing in Singapore. It will oversee clinical trials with interventions hypothesised to slow ageing, validating their efficacy and ensuring safety. The Centre will perform research to redefine state-of-the-art geriatric care for elders, promoting the prevention of age-related decline and managing life quality after the onset of morbidity. It will also promote education in healthy ageing and, as part of this goal, look for more reports in coming months about the interventions linked to longevity and what it means for our life choices today.

Ageing is arguably the biggest medical challenge of the first half of the 21st century and with resources and effort, the challenge can be successfully met in Singapore. Imagine a goal of being “healthy at 100.” It may sound a bit far-fetched, but it could be possible for most people alive today. With a fallback strategic outcome of “not bad at 90,” it seems clear that we should be “all in” when it comes to healthy ageing.



# FROM SWORDS TO PLOUGHSHARES

The Afghanistan that much of the world pictures is that of a struggling country in a constant state of emergency: a land of dusty village houses, hostile, bearded men in turbans, fields of opium poppies, and all the while, a raging insurgency. Convinced that his medical knowledge should be the means to help alleviate suffering, Dr Wee Teck Young left his medical practice here in 2002 to join an NGO that was looking after Afghan refugees in Quetta, Pakistan. The experience showed him an Afghanistan that news reports failed to present – a land where people endure lives of hardship, sometimes with stoic humour, amidst the daily threat of violence and death. These days, medical practice takes a back seat as he serves with the NGO that he helped set up. It aims to help Afghans regain their dignity and find peace and restoration through various social enterprises.





Home for the year-end holidays, Dr Wee (above) marvels at the frowning concentration of fellow train and bus passengers as they scroll and swipe their way through digital pages on their personal devices.

The NUS alumnus (MBBS Class of 1993) who in 2005 started and still works with the award-winning NGO, Afghan Peace Volunteers (APV) in Kabul, finds the fixation with mobile phones disturbing because it obstructs real human-to-human conversations – and relationships are best built and forged when there is actual interpersonal interaction. Relationships, he reasons, cannot be possible when people are cocooned in their own digital worlds, their real lives uninhabited and disintermediated by technology.

“There’s something in Singapore that I noticed over the years. In the MRT, besides people staring at their smartphones – which is a global phenomenon now – we have this idea that the phone makes my life more fulfilling and meaningful. How did we get to this, how did we believe that machines that we manufacture could do that, getting stuck in their phones in the MRT, not talking to one another, even at meal times in restaurants?”

### **Technology alienates and de-humanises**

It is a totally different experience in Afghanistan, he says, because life is unfettered and uncluttered. The

conspicuous consumption and pursuit of material wealth is absent over there because the focus of most Afghans is – to put it plainly – staying alive and finding the means to get back on their feet again. Here, “there’s too much of everything... we think we can go on living this way and not suffer its consequences, we think that if the consequences come to us because we eat and buy, we can solve it,” he says, eyes furrowed in exasperation and bewilderment.

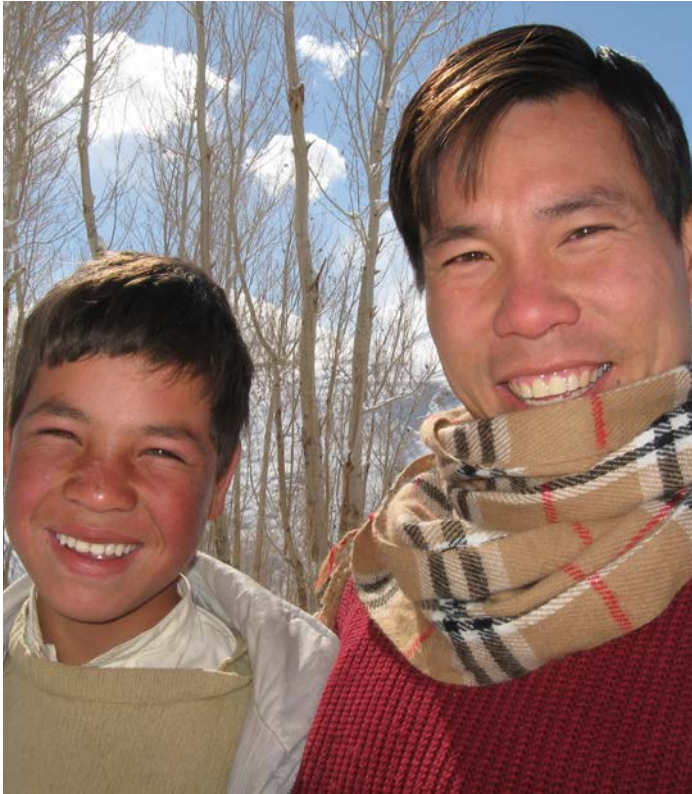
### **War cannot usher in the peace**

The 13 years that he has lived in Afghanistan, where he had planned to use his medical skills to serve locals there as part of an international public health NGO, made him acutely aware of the desperate conditions that the Afghan people endured, the poverty, illiteracy and daily violence that was just a bomb away. His journey and transformation from medical volunteer to peace advocate and self-sustaining social entrepreneurial champion is well-documented in numerous articles and news reports, including one in The Straits Times in July last year.

All recount how the doctor from Singapore travelled to a war-ravaged land to become a mentor to the Afghan Peace Volunteers, an inter-ethnic group of young Afghans dedicated to building non-violent alternatives to war. Kindness, mutual respect and recognition, courtesy – these are the fundamental ingredients to building lasting



## ALUMNI VOICES



relationships; they are the key to resolving conflict, says Dr Wee, 48 and a fluent speaker of Dari, one of two main Afghan languages. He is also conversant in Pashtun, the other lingua franca.

Think of all the blood and treasure that the US and NATO have expended in trying to bring the insurgency to heel, or the attempts to destroy the opium trade. “The general approach of international governments is to wage war. Most recently, NATO’s head said we’re going to increase the war on drugs. There’s more drugs now than when we first started off. And the same applies to Mexico, Columbia, and many other things. There’s a global drug commission, it’s a body made up of five ex-presidents mainly from the South American countries.

“And for the past 10 years they have issued reports to say that the war on drugs has failed, we need to shift our method. These are not moral statements, these are statements of science that it doesn’t work, it’s not effective, so let’s try to change the approach.” What Dr Wee has in mind is a deliberate emphasis on non-violence in the work and programmes of the Afghan Peace Volunteers. It is a repudiation of the seemingly endless cycle of violence and the grinding insurgent warfare that has gone on in the country since US troops invaded Afghanistan in the aftermath of the 2001 September 11 attacks in New York City.

### **Instead of guns, try saffron**

“If these huge apparatus and machineries would think a little, question, then they would follow the path of many

NGOs, in replacing opium with saffron (in encouraging people to explore agriculture to make a living). We have such great technologies nowadays, right?” It is the path that is being advocated by the Afghan Peace Volunteers and it harkens back to a recurring theme that Dr Wee, who was given the Afghan moniker, Hakim (meaning “doctor”), hammers away at throughout our conversation. He is convinced about the APV way to helping Afghan people be self-sufficient economically, with agriculture a possible lifeline for growth, and growth leading to self-sufficiency, pride and dignity.

“There is a story I can tell with regard to relationships: this was when I was working as a medical officer in a hospital in Singapore. I think it was close to midnight that I finally got some time to go see a patient in his room who was in his last days. He wanted to tell me something, which he indicated through a piece of paper and a pen. In those few moments he wrote a message for me – and I regret not having kept that piece of paper. The message was about relationships.

“He wrote, ‘I have enough wealth to last me a lifetime, and that of my next two generations. Yet all that is not very meaningful now. Please, please, please don’t, don’t pursue money; pursue relationships.’” The note continued, “You will not regret another hour earning another \$1,000; you will regret that you didn’t spend more time with your families or your friends.”

### **Transformational relationships**

“Relationships with people have changed my life, have changed the group, and I believe can change the whole world,” Dr Wee says. One relationship that he has not embarked upon thus far however, doesn’t bother him. “I don’t plan to be single. I didn’t plan for either marriage or singlehood. I think if it comes, it comes, if it doesn’t... it doesn’t”.

It is the AFV that has got his wholehearted attention. “Our doors are open to any Afghan, both male and female, who is interested in joining the activities that promote nonviolence. We also have been deliberate in including the most vulnerable segments of Afghan society, the women who are illiterate, the impoverished, and the street kids. We want to continue to allow any person who wants to engage in the practice of non-violence, to be a member of the Afghan Peace Volunteers.”

It is a cause that this NUS Medicine alumnus is determined to serve till the every end. “I think I’ll do it as long as I’m alive. The circumstances may change, and my specific role and job even may change but I am passionately for this journey towards relationships. I feel that I am a relational being and I want to live my very, very short life in relationship with as many people as I can. I don’t have to be close to all of them, it’s not physically possible, but each person has got great value.”



Wen Qi (centre) with fellow trainees.

## ANSWERING MILITARY MEDICINE'S CALL

Martial artist, footballer, soldier, medical student.  
At 22, Chiew Wen Qi lives life con brio.

The 22-year-old Phase III student at NUS Yong Loo Lin School of Medicine is the only girl in her batch to sign on with the Singapore Armed Forces (SAF) under the SAF Medicine Scholarship. There are eight male SAF Medicine scholars in her cohort. The scholarship allows Wen Qi to pursue medical studies locally and embark on a career as a commissioned medical officer in the SAF Medical Corps.

Wen Qi's interest in the military began in secondary school. Her taekwondo instructors, whom she trained twice a week with, were army regulars. They believed in tough training. "We always began with a 2.5-kilometre run as warm up, and my coaches would shout at us when we were tired and wanted to give up. But they would not give up on us, so they kept shouting at us. All the instructors were very passionate. They would motivate you to continue even though training was very tough," she said.

However, the rigorous training was not a turnoff for Wen Qi. In fact, it piqued her interest in the army.

"My instructors always shared stories about their time in the army, and they seem to take a lot of pride in their National Service (NS) days. So through them I got to know more about how it's like in NS, and I slowly got more interested in it."

That interest burned brightly. When Wen Qi attended her junior college's career fair after her first-year preliminary examinations, she spotted the SAF Medicine Scholarship booth and enquired about the scholarship.

"I realised that, apart from being a doctor, the scholarship allows me to be part of the military, and I get to kill two birds with one stone," Wen Qi said.

She signed up soon after, though her mother was not pleased about it. Girls don't become soldiers, that's men's stuff, she sniffed.

"My mother was quite resistant. She asked me why don't I just be a normal doctor, instead of a soldier. But my father is supportive, because he has been through NS, and he thought it is worth the effort. He helped to convince my mum, and eventually she gave in after nagging at me for



## PEOPLE OF NUS MEDICINE



a few weeks,” Wen Qi said. “My mum was very proud of me when I graduated from Basic Military Training (BMT).”

Before entering medical school in 2015, Wen Qi spent nine weeks in BMT and another three months at the SAF Officer Cadet School (OCS). It was an enjoyable time, she said. “The army gave me opportunities to do a lot of things that I would otherwise not be able to do, such as throwing a grenade and shooting a rifle for the first time in BMT, and firing machine guns and an anti-armour weapon system in OCS. You don’t get to do these things in daily life,” she said. During her Phase I and II school holidays, Wen Qi also spent six weeks each attending military leadership, military studies and military technology courses at Nanyang Technological University, learning the workings at the headquarters, and visiting war sites such as Bukit Timah Hill and Kranji War Memorial.

There were also special moments.

“We had a five-day field camp, which was quite tiring with marches and drills. At the end of the third day, after we dug out a place to sleep in, our officers sat us down and gave us letters from our families. They collaborated with our families and asked them to write to us. They kept the letters secret and only gave them to us on the day itself. It was quite memorable because I was very tired, and reading the really nice messages from my brother, mum and dad and three taekwondo coaches – saying how they were so proud of me, how they knew I could do this – I just teared up.”

In spite of Wen Qi’s interest in military life, it was not a breeze for her to cope with military life initially.

“It was not only physical, sometimes it was also mentally and emotionally tough. Part of military training included dedicating time every week to clean up your bunk and ensure it is neat and tidy, with everything placed where they should be. Initially I found this very restrictive, and it was difficult to adjust to the regimentation. It was also emotionally draining because no matter how much you try your best to make everything very tidy, the commanders who came to check your bunk would still be able to find fault and punish you and your team,” she said.

There was once towards the end of Wen Qi’s nine weeks in BMT, where she thought she did a very good job cleaning up her bunk. She wiped everywhere, including under her mattress. But when the commander came in, he lifted a very heavy cabinet and found dust below. Wen Qi and her 11 other bunk mates got punished for that.

“I guess this is a way to test how resilient you are, so you don’t give up easily, and it helps to train up your emotional stability. So in times of toughness, you won’t break down so easily,” Wen Qi said.

In fact, Wen Qi is now a changed person because of her military training.

“During the training, I had a lot of opportunities to be a leader and to hone my leadership skills. I feel that I became





Learning to dig deep with the army.

more outgoing, more authoritative and I have better leadership qualities now," she said.

Upon graduation from medical school, Wen Qi will spend a year as a houseman in a local hospital, before she undergoes a three-month medical officer cadet course which encompasses modules such as casualty management and outfield training to prepare her for life as a medical officer in the military. She will also get to choose a sub specialty – sports medicine with the army, diving medicine with the navy or aviation medicine with the air force.

Being an avid diver, who received her Rescue Diver Certification from scuba diving training organisation PADI in 2017, Wen Qi would like to be trained in diving medicine in future.

"When I finished my GCE O-Level examinations, my friend introduced me to diving. I really liked it. It's a different atmosphere underwater," she said.

With the falling birth rate in Singapore, which affects the number of male soldiers joining NS, Wen Qi hopes that more women can find out more about the military, and hopefully, join the SAF Volunteer Corps (SAFVC).

"My mother doesn't have many opportunities where she can get to know more about the army, so she doesn't understand the concept that having a military is necessary for the protection of the country. Instead, she finds NS a burden. There are many people who always feel that NS is a waste of time," she said.

"I think it is a good start for women to have more knowledge about the military and understand what we do. Perhaps with more publicity efforts, everyone can understand the need for the military, and they will be supportive of the initiatives such as reservist training."

On top of her army commitments, Wen Qi is an active student in medical school – taking part in school activities such as the Medical Grand Challenge 2017, in which her team developed a mobile application called MissiQ to minimise waiting time at specialised outpatient clinics. The application is a chatbot that responds to patient queries, and gives a live update of the waiting time in specialist outpatient clinics. Now, Wen Qi is also involved in plastic surgery-related research work with Associate Professor Lim Thiam Chye at the National University Hospital.

In King Edward VII Hall where Wen Qi lives in, she is part of the women's soccer team, training twice a week for the annual Inter-Hall Games (IHG) every January. She was also the captain when the soccer team won their first gold at IHG 2017.

In addition to soccer, Wen Qi is still heavily involved with her first love – taekwondo. The black-belter trains for two hours, four times a week, and takes part in competitions. In August 2017, she took part in the World University Games in Taipei.

"The key to balancing my time is passion. When you do things that you love, you naturally won't find them to be a burden, and you tend to be more efficient in doing them. If you pursue the things that you love and find joy in doing them, that serves as a strong motivator to excel," she said.



## SCHEDULER

# FEBRUARY

# MARCH

# APRIL

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## 06 - 09 February

16th Asia Pacific Evidence-Based Medicine and Nursing (APEBMN) Workshop & Conference  
Auditorium, NUHS Tower Block

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## 19 February

39th FRCS Orthopaedic Postgraduate Course  
Seminar Room, Level 11, NUHS Tower Block

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## 24 February

4th Annual Lee Kim Tah Lecture: Arts for Mental Health of the Elderly  
Seminar Room, Level 11, NUHS Tower Block

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## 26 February

Overseas Inter-professional Education Expert Visit  
NUS

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## 07 - 09 March

7th International Singapore Lipid Symposium (iSLS 7)  
Auditorium, Centre for Life Sciences (CeLS), NUS

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## 12 March

39th FRCS Orthopaedic Postgraduate Course  
Seminar Room, Level 11, NUHS Tower Block

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## 16 March

The Breast Cancer Meanings Symposium  
Auditorium, NUHS Tower Block

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## 21 - 24 March

Royal College of Obstetricians & Gynaecologists (RCOG) World Congress  
Suntec City Convention and Exhibition Centre

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## 02 April

Oon Chiew Seng Public Lecture:  
Long-living Through Recycling - Did You Remember to Take Out the Garbage? Your Cells Sure Did!  
Auditorium, NUHS Tower Block

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## 04 April

Oon Chiew Seng Lunchtime Scientific Lecture: Targeting Selective Autophagy in Aging and Age-related Disorders  
Auditorium, Centre for Life Sciences (CeLS), NUS

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## 05 - 07 April

Class of 1968 Reunion - 50th Anniversary  
Kent Ridge Guild House, NUS

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*Details are subject to change.*



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Yong Loo Lin  
School of Medicine