

# Medicine

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**Volunteering with  
the Civil Defence  
Auxiliary Unit**

# Dean's Message

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## Hello Everyone,

Welcome to the February issue of our School newsletter. Another interesting and challenging year lies before us and we look forward to sharing milestones and highlights of the year

with you in our subsequent issues.

What a memorable year 2015 has been for Singapore and for all of us here at NUS Medicine! We had much to cheer about, as we celebrated the 110th year of both NUS and the School and joined the nation in celebrating the country's Jubilee year. There was additional good news – NUS had climbed the Times Higher Education World University 2015-2016 rankings ladder to become Asia's top university, and 26th in the world.

Our School did well in the same ranking: NUS Medicine was listed as Asia's Number 1 medical school, and is positioned 32nd globally overall. Additionally, the 2015/2016 QS World University Rankings for Medicine by subject has NUS Medicine at Number 2 in Asia and 21st globally.

Last year, we also chalked more milestones in our key areas of teaching and research, with many colleagues winning awards at University, national and international levels. Hats off to Professor CN Lee, Assoc Prof Tai E Shyong and Assoc Prof James Yip for their wins at

the National Medical Excellence Awards. Congratulations also to Assoc Prof Lee Pyng on being honoured by the American College of Chest Physicians, and Prof David Townsend, the 2015 awardee at the Society of Nuclear Medicine and Molecular Imaging. Congratulations also to the many other colleagues, who were recognised with Young Scientist, University and Faculty Teaching Awards. We are also proud of Prof Lim Pin, who received the Ministry of Social and Family Development's Outstanding Volunteer Award for his service to the community. Once again, our colleagues' winning ways reminded everyone why NUS Medicine is such a unique institution in Singapore.

Our 110th anniversary year was also a signal one for research work done by our scientists in cancer, heart disease, infectious diseases, to name a few. For example, Assoc Prof Allen Yeoh's groundbreaking work on childhood leukaemia led to his developing a gentler chemotherapy protocol for patients. It also meant shorter hospital stays and reduced costs for patients and a high cure rate of more than 80% that is comparable with the best in the world.

And GUSTO researchers found that more than half of gestational diabetes cases in Singapore are undiagnosed, increasing risks of pre-eclampsia and pre-term birth as well as the mothers' risk of developing Type 2 diabetes later. The team has recommended that the Ministry of Health screen all expectant women for GDM and monitor women with GDM for Type 2 diabetes after delivery.

I have often said that our students are our best ambassadors, because of their enthusiasm and admirable sense of civic-mindedness. We saw this demonstrated once again through the two signature student-led community service events – the Neighbourhood Health Service 2015 held at Bukit Merah and Marine Terrace in September, and the Public Health Service 2015, now into its 10th year.

NUS Medicine students are also talented athletes: earlier last year, a few students represented Singapore at the 28th SEA Games, while the School sports team also captured the NUS Inter-Faculty Games trophy. And because we have been consecutive winners for 3 years, we get to keep the trophy for good!

Off the field, our students also took the Gold at last year's NUS Rag Day. They also won The Most Creative Performance and The Best Faculty Performance, all of which was part of national Golden Jubilee Weekend and National Day Parade celebrations held on 7 August at the Float@ Marina Bay.

What will this year bring? Given the quality and calibre of our staff and students and the only constant being change itself, I believe we can look forward to another exciting year here at NUS Medicine!

**Dr Yeoh Khay Guan**  
**Dean**  
**Yong Loo Lin School of Medicine**

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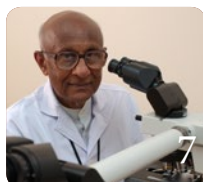
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## Before-I-Die Campaign

WRITE ABOUT IT, TALK ABOUT IT: STUDENTS BRING 'BEFORE-I-DIE' PROJECT TO SINGAPORE

Death is a taboo topic in Singapore. Changing the way our society views death and dying will play a part in advancing understanding and acceptance of palliative care as a way to “add life to days, whether or not days can be added to life”. But if we do not even talk about death, how can we understand the wishes of our loved ones as they approach the end of life? A group of medical students decided that getting people to doodle on chalk boards was a way to start the conversation, and BID@Sg was born.

In partnership with the Singapore Hospice Council, medical students from NUS brought the ‘Before-I-Die’ (BID) Project to Singapore, a global art initiative aimed at engaging members of the community to share their dreams and aspirations on walls or boards in public spaces. The team hopes to inspire Singaporeans to reflect on what’s most important to them in their lives, and to live a meaningful life by placing it in perspective of death. In addition, the team went a step further to capture the voices and wishes of people through short interviews, creating a film in partnership with students from Ngee Ann Polytechnic’s School of Film, Sound and Video. The video also encapsulates pearls of wisdom from several palliative care patients who wanted to share their thoughts on life before death and what living a fulfilled life looks like.

Many months of hard work bore fruit, with the boards being placed in various spaces within Singapore, such as shopping malls (Star Vista, White Sands, Bugis+) and tertiary universities. This culminated in a final exhibition in October as part of the Best-of-You Exhibition in Marina Square and the Voices for Hospices Concert, in celebration of

World Hospice and Palliative Care Day. Members of the public were invited to share their thoughts and photos of the boards during the concert. ‘To travel the world’, ‘to be able to help people’, ‘to spend time with loved ones’, and ‘be happy’ were some of the recurring themes. Following the screening of the film created by the project, the project directors, Shawn and Mervyn, were invited on stage to share their motivations for starting the project.

The project has been handed over to the next generation of NUS Medicine students who will continue to run with the cause, to raise awareness of palliative care and the necessity of having ‘caring conversations’ that help people live meaningfully to the end. As the project continues to mature, the endeavour remains: to help foster conversations about end-of-life care between loved ones by sharing the stories and the words of wisdom that palliative care patients have to tell the world.

### Links to BID@Sg Instagram and Facebook Page:

<https://instagram.com/beforeidiesg/>

<https://www.facebook.com/beforeidieboardsg?fref=ts>



# Asia Pacific Medical Education Conference (APMEC) 2016

*Trends • Issues • Priorities • Strategies*

In December 2003, the Medical Education Unit (renamed the Centre for Medical Education, CenMED in November 2014), faculty of Medicine (renamed the Yong Loo Lin School of Medicine since 2005), National University of Singapore organised and hosted the 1st Asia Pacific Medical Education Conference (APMEC) under the co-chairmanship of Lee Tzu Hee (then Associate Professor in the department of haematology) and Matthew CE Gwee (then Interim Director of our MEU and Head in the department of pharmacology). Not only was this inaugural conference an important milestone in the history of our faculty of medicine (Yong Loo Lin School of Medicine), but it was also a significant initiative resulting in the birth of APMEC which became the forerunner of our APMEC series. The 13th APMEC was held from 13-17 January 2016 on the NUS campus in the tradition of previous conferences.

The primary aim of initiating the APMEC series was, firstly, to promote our medical school as a centre of excellence in medical education in Asia and beyond, as well as to provide a forum for and encourage all medical educators to update their knowledge and practice in the field of medical education which was undergoing rapid change and causing much disruption in teaching practices and the delivery of healthcare. It was in this context that the MEU launched the APMEC initiative; the principle we adopted was "THINK BIG, start small, Act Now". Indeed, we had humble beginnings with only over just 100 participants in our first conference, but we now have almost 1,100 participants from 35 countries! Perhaps, we can now make the claim that our APMEC series is the premium medical education conference in Asia!

How can we explain the surge of interest in and the popularity of our APMEC series over the years? We would like to attribute this to our sincere concern that conference participants should benefit from the learning experience in the course of participating in all our conferences. Since 2003, the Organising Committee of APMEC will select an appropriate theme in medical (and health professions) education for the conference; we then invite key international speakers to review current trends, issues, priorities and strategies based on the selected theme. In this way, our conference participants benefit from the sharing of expertise, experience and wisdom of our invited speakers to whom we owe a debt of gratitude. The reviews by the international experts provide useful guidance on current topics in medical and health professional education which have important bearing, not only on teaching practices, but also in the delivery of healthcare. Apart from the key invited speakers, conference participants also benefit from discussions in various formats (e.g. Special Interest Groups) with lead participation from Asian medical educators, as well as educators from countries beyond the Asian region. Of course, no conference can succeed without the firm support of conference participants to whom we are most grateful and wish to express our sincere appreciation to.

Themes which the Organising Committees of the APMEC series have selected over the years include the following: Changing Paradigms (2003), Assessment TIPS (2004), Curriculum TIPS (2006), Outcomes in Medical Education (2007), Medical Education in a Flat World (2008), Energising the Educational Mission of Medical Schools (2009), Excellence in Medical Education-Quality in Healthcare (2010),



Continuum of Medical Education: From Undergraduate Learning to Professional Practice (2011), Towards Transformative Education for Healthcare Professionals in the 21st Century: Nurturing Lifelong Habits of Mind, Behaviour and Action (2012), A Celebration of Innovation and Scholarship in Medical and Health Professional Education (2013), Optimising Collaboration in Medical Education – Building Bridges, Connecting Minds (2014), Enhancing Faculty Development at the Workplace – From Theory to Practice (2015), Education To Healthcare – Contextualising Learning Into Practice (2016).

In 2015, our 12th APMEC was jointly organised with the 3rd International Conference on Faculty Development in the Health Professions (ICFDHP). The highlight of this joint activity was in the formulation of the terms and conditions for the award of Excellence in Faculty Development to medical schools around the world. The award is made under the Aspire to Excellence programme of the Association for Medical Education in Europe. Most notably, Professor David Irby from the University of California (San Francisco) skilfully led the discussions to finalise various options offered by members of the group.

Like all other conferences and for the benefit of our conference participants, we also include pre-conference workshops in our programme. We wish to highlight, in particular, the Essential Skills in Medical Education workshop conducted by Professor Ronald M Harden together with some local faculty as group facilitators. Due to its popularity and educational value, the workshop series was extended to include research skills (RESME) and assessment strategies and skills (ESMEA). These workshops are highly popular with conference participants and, often, attract a 'full-house' before the closing date for the conference, presumably, because of the possibility of adapting and applying the concepts and principles learned at these

workshops to the 'home' situation.

A key feature of our APMEC series is the presentation of the MILES Award; MILES simply stands for 'Mentorship, Innovation and Leadership in Educational Scholarship'. The award is given to educators who are recognised internationally as leaders in the field of medical education and/or who have contributed significantly to the progress of our APMEC series. No award will be made if no suitable candidate is identified in the year under consideration. Since the inception of the award in 2003, the following have received the MILES Award:

- 3rd APMEC 2006: Prof Ronald Harden (UK)  
Prof Matthew Gwee (Singapore)
- 4th APMEC 2007: Prof Geoffrey Norman (Canada)
- 5th APMEC 2008: Assoc Prof Thomas H Aretz (USA)
- 6th APMEC 2009: Assoc Prof Koh Dow Rhoon (Singapore)
- 8th APMEC 2011: Dr John Norcini (USA)
- 9th APMEC 2012: Assoc Prof Kevin Eva (Canada)
- 11th APMEC 2014: Prof Cees van der Vleuten (The Netherlands)  
Dr Dujeepa D Samarasekera (Singapore)
- 12th APMEC 2015: Prof Brian D Hodges (Canada)  
Assoc Prof Chong Yap Seng (Singapore)

It has been a long and arduous journey for many in MEU-CenMED and we owe much of our success to the hard work and dedication of everyone in the organisation who strongly believe in what they do. Indeed we 'THOUGHT BIG, started small and Acted Then' – long may APMEC flourish!



## **NEW APPOINTMENT OF VICE-DEAN (ACADEMIC MEDICINE), YONG LOO LIN SCHOOL OF MEDICINE**

Associate Professor Chong Yap Seng has been appointed Vice-Dean (Academic Medicine), Dean's Office at the Yong Loo Lin School of Medicine (NUS Medicine).

Assoc Prof Chong is the Executive Director of the Singapore Institute for Clinical Sciences, Agency for Science, Technology and Research (A\*STAR) and an Associate Professor in the Department of Obstetrics & Gynaecology. He is also the Lead Principal Investigator of the National Research Foundation Translational and Clinical Research Flagship Programme on Developmental Origins of Health & Disease, and the founding Director of the A\*STAR-NUS Singapore Centre for Nutritional Sciences, Metabolic Diseases, and Human Development.

Assoc Prof Chong heads the NUHS Leadership in Academic Medicine programme and is actively involved in the promotion of academic medicine. He also led the Medical Education Unit from 2004 to 2014 and his contributions to medical education have been recognised by University and national awards.

As Vice-Dean (Academic Medicine), Assoc Prof Chong will support the School on the strategic recruitment of top faculty, development of research collaborations with other Schools and Faculties in NUS and with external partners including A\*STAR and other universities, as well as the promotion of academic medicine within the National University Health System.

# A Safe Deposit Facility for Patient Specimens

Dr Khor Ing Wei

**A storage facility for blood and tissue specimens seems vaguely ominous at first. Visions of musty cabinets and haphazard freezer boxes may spring to mind. Happily, this image quickly dissipates when you talk to Dr Eng Chon Boon, head of the NUH Tissue Repository (TR).**

When you're dealing with 1.3 million samples and three storage sites, including a warehouse containing more than 40 freezers (with space for 30 more), operations more closely resemble a well-oiled machine than anything else. At this large scale, the TR maintains a high standard by following best practices laid out by the International Society for Biological and Environmental Repositories (ISBER), which promotes high quality standards for global biobanks.

One of ISBER's recommendations is to continuously monitor the environment where samples are stored. Dr Eng uses two apps on his mobile phone to do this. One app connects to the warehouse CCTV system, enabling 24-hour viewing of the facilities. The other app shows the equipment status and alerts the person on call by phone, SMS, and e-mail if conditions veer out of predetermined ranges. These redundant systems reassure TR customers that their samples are being maintained in optimal conditions.

Which brings us to the customers. Who are they? Some are NUHS researchers who engage the TR to collect, process, and store samples for their own clinical studies and archives. These researchers retain full ownership of their samples. Other customers are researchers who want to make use of the TR's large sample collection, obtained through patient donation.

Indeed, the TR does much more than just storing samples. Firstly, it collects samples according to ethical guidelines (see Facts Box). If the sample is blood, medical technologists can extract the white blood cells (the buffy coat) and the cell-free liquid (serum or plasma) for storage. If tissue, the in-house pathologist examines it and selects only high-quality samples for storage. RNA and DNA are often extracted

from the tissue and stored as well. Samples are then de-identified and labelled with a code corresponding to patient information in the TR database.

These de-identified samples are supplied to the researcher, along with basic patient data like age, gender, race, and tumour stage. Researchers can obtain additional data by contacting TR staff. Cancer researchers are also able to tap into the Hospital-based Cancer Registry, which collects data for all NUH cancer patients.

Not content with being the largest biobank in Singapore, the TR is continually upgrading its equipment and services. For example, it recently purchased a robot to quadruple the number of liquid samples processed at one time. The next big goal is to achieve College of American Pathologists (CAP) accreditation for repositories when it is available outside the United States.

## Ethics of Storing Patient Samples and Data

TR follows ethical guidelines, such as those of the Bioethics Advisory Committee, to protect patients' privacy and rights:

- Consent nurses explain biobanking procedures and answer questions before obtaining informed consent from patients to collect samples, following the new human biomedical research bill.
- Services are only provided for research projects with proper ethical approval, e.g., from an institutional review board (IRB).
- Identifiable patient data are released only to researchers with appropriate IRB approval.

## Resources

1. International Society for Biological and Environmental Repositories. 2012 Best Practices for Repositories, 3rd ed. Available at: [http://c.yimcdn.com/sites/www.isber.org/resource/resmgr/Files/ISBER\\_Best\\_Practices\\_3rd\\_Edi.pdf](http://c.yimcdn.com/sites/www.isber.org/resource/resmgr/Files/ISBER_Best_Practices_3rd_Edi.pdf).
2. Bioethics Advisory Committee, Singapore. <http://www.bioethics-singapore.org/>.
3. Hassan NJ. Human Biomedical Research Bill Passed to Protect Research Subjects, Tissue Donors. Channel NewsAsia. Available at: <http://www.channelnewsasia.com/news/singapore/human-biomedical-research/2058862.html>. Accessed 13 November 2015.

# Running Against Resistance: The SPRINT-TB Research Programme

Dr Khor Ing Wei

“Her pale, yellow, wasted face dropped back, her mouth fell open, her leg moved convulsively, she gave a deep, deep sigh and died.”

- Crime and Punishment,  
Fyodor Dostoevsky

This passage could have described many people suffering from tuberculosis (TB) up to the 1940s, when the antibiotic streptomycin was discovered. Despite more TB drugs being available today, TB remains a leading cause of death from infection. This is mostly because of the long and inefficient courses of treatment that are hard to administer and difficult for patients to stick to. Moreover, about 500,000 TB cases each year are resistant to commonly used drugs. Drug-resistant TB requires even longer (up to 2 years), more complicated, and much more expensive treatment. It also has a higher risk of death.

The Singapore Programme of Research Investigating New Approaches to Treatment of Tuberculosis (SPRINT-TB) was formed in July 2015 to research and develop better ways to treat TB. Led by NUS Medicine Professor Nick Paton, SPRINT-TB spans NUS Medicine, the Saw Swee Hock School of Public Health (SSHSPH), A\*STAR's Experimental Therapeutics Centre, and other collaborators in Singapore and overseas.

One approach to tackling drug resistance is to discover new targets and develop drugs to them. Associate Professor Thomas Dick and team have patented a new molecule active against TB. Their May 2015 article in *MBio* describes how they used a novel screening method to find that a multiple myeloma drug, bortezomib (Velcade®), can kill TB and in a different way than other drugs. Dr. Dick's team, Professor Alex Matter's team at A\*STAR and Prof Brian Dymock at NUS Pharmacy, are tweaking bortezomib to make it safer for people but still able to kill TB effectively.

Effective TB drugs have to overcome two big obstacles: 1) they must pass through the thick outer covering of the TB bacterium, and 2) they must penetrate the lesions frequently present in the lungs of TB patients. These lesions, consisting of bacteria surrounded by a wall of immune cells, cause many of the disease's symptoms and are difficult to treat. Substances called “fragments” that are small (low molecular

weight) and water-loving, vs traditional fat-soluble drugs, appear to overcome both obstacles. Assoc Prof Dick is testing these substances against TB.

After a patient starts treatment, doctors must find out whether the treatment is working and make changes as needed. It turns out that chest X-rays are not very sensitive for this purpose. Prof Nick Paton and team have found that new imaging techniques, PET/MRI and PET/CT, may be more sensitive than X-rays, enabling doctors to detect a response earlier. The imaging methods may also differentiate between truly latent infections and the small subset that could progress to active infections.

To address resistance before it develops, Prof Paton's team is examining the type and duration of treatment for non-resistant TB. Patients with this type of TB must take several drugs, some causing severe side effects, for 6 months. Thus, many patients stop treatment prematurely, which can cause drug resistance. Prof Paton is leading the TRUNCATE-TB clinical trial, which aims to reduce treatment time to 2 months for most patients. Patients will be treated with new drug combinations for 2 months. At that time, only those who still have disease will receive the standard 6-month treatment.

Even a perfect TB treatment is only useful if it reaches patients and they take it. Prof Richard Coker from SSHSPH is leading research to find better ways of delivering treatment and to overcome barriers in the regulatory and healthcare systems, especially in Asia.

By harnessing innovative ideas and crossing disciplines, SPRINT-TB is keeping up in the race against the hardy and resourceful TB bacterium.

## Additional Reading and Resources

1. World Health Organization. Global Tuberculosis Report 2015. 20th ed. Geneva, Switzerland: World Health Organization; 2015. Available at: [http://apps.who.int/iris/bitstream/10665/191102/1/9789241565059\\_eng.pdf?ua=1](http://apps.who.int/iris/bitstream/10665/191102/1/9789241565059_eng.pdf?ua=1)
2. Marks SA, Flood J, Seaworth B, et al.; and the TB Epidemiologic Studies Consortium. Treatment Practices, Outcomes, and Costs of Multidrug-Resistant and Extensively Drug-Resistant Tuberculosis, United States, 2005-2007. Centers for Disease Control and Prevention. *Emerg Infect Dis* [Internet]. 2014 May. Available at: [http://wwwnc.cdc.gov/eid/article/20/5/13-1037\\_article](http://wwwnc.cdc.gov/eid/article/20/5/13-1037_article).





## Histopathology

Pathologist, educator, mentor, Prof K Shanmugaratnam is happiest working quietly in his room at the Department of Pathology. He doesn't like interviews, but consented to a quick chat with MediCine.

What is histopathology? How has this discipline evolved through the years?

**KS:** Histopathology is a branch or division of Pathology. It is a medical specialty in which diseases are diagnosed by the microscopic examination of tissue samples.

Fifty years ago histopathology was based on the examination of tissue sections and the use of simple histochemistry. Since then, the introduction of new techniques like electron microscopy, immunohistochemistry and molecular analysis has enabled histopathologists to adopt a combined histomorphologic, immunohistologic and molecular approach to tissue diagnosis.

What makes a good histopathologist? What attributes should he/she possess?

**KS:** A histopathologist should have the visual capacity to identify and recognize microscopic tissue abnormalities and, more importantly, he/she should have the knowledge and intellectual capacity to interpret these abnormalities in terms that are clinically relevant.

What do histopathology and pathology have to teach today's medical students and young doctors?

**KS:** Pathology, as a subject in the medical school curriculum, is not limited to the study of structural tissue abnormalities. It deals with the causes and mechanisms of diseases, and correlates them with their biochemical and functional effects. Pathology, as studied by medical students, provides a scientific basis for the practice of medicine.

You once told The Straits Times, "There are, however, some basics in medical education that technology has not changed. There are operational skills that have to be learnt through experience and actual practice. And there are lessons on behavior that are most effectively taught by setting an example." What are these operational skills? What are the behavioural lessons that are best taught by example?

**KS:** The operational skills to be acquired through practice are the manual skills involved in surgical procedures. All forms of professional and ethical behavior are best taught by setting an example. A lecture on the harmful effects of smoking would not be effective if it is given by a habitual smoker.

The practice of medicine today incorporates extensive use of technology, from disease prevention to detection and on to treatment. Do you think doctors have become too dependent on technology?

**KS:** Some doctors may have become overly dependent on technology. There is no question that technology has enormously improved the quality of medical care. But it should be used judiciously and selectively, with a holistic understanding of the natural history of diseases and of the needs and circumstances of individual patients.

What do you enjoy more – teaching, or investigating?

**KS:** It is teaching that gives me greater pleasure.



# Home Care in Singapore

**Associate Professor Gerald Koh**

In the article, “Bring back house calls”, published in The Straits Times on Oct 17, Dr Sandeep Jauhar lamented that only less than 1 per cent of all doctor-patient encounters in the United States were house calls, resulting in doctors being ignorant of patients’ home situations, and unplanned readmissions within a month in a fifth of Medicare patients, at a cost of US\$17 billion (S\$24 billion) a year.

The situation in Singapore is not so bleak. Dr Jauhar rightly pointed out that the main reason why house calls are rare nowadays is cost.

Based on the Singapore Medical Association’s old consultation fee guidelines, (before it was deemed uncompetitive by Competition Commission of Singapore), the recommended cost of routine home visits was already eight times higher than clinic consultations. It is challenging for family physicians to do home visits as the opportunity cost of leaving their clinic unattended, and not being able to see any patients while travelling to and from a patient’s home, is high.

It is even harder for hospital specialists to do house calls because their opportunity cost is higher, and there is an acute shortage of them in our public hospitals.

Doctors are also not the only healthcare professionals who need to do house calls. Patients who benefit from house calls, such as frail, housebound elderly folk with multiple illnesses and medications,

are complex cases and need other members of the multidisciplinary healthcare team to care for them.

For example, they may need nurses to provide wound and tube care, physiotherapists for rehabilitation to help them regain independence and retard physical decline, and occupational therapists to arrange appropriate modifications and repairs to improve patient safety and prevent falls at home.

## FROM HOSPITAL TO HOME

Unlike the US, improving such integrative, transitional and home-care services is a priority for the Ministry of Health, which has been working closely with acute service hospitals and intermediate and long-term care providers in preparation for our ageing population. The national Agency for Integrated Care (AIC) has set up Aged Care Transition (Action) teams of care coordinators, and they are stationed at all five public general hospitals to arrange appropriate community services for patients and caregivers prior to discharge.

These Action teams improve patients’ physical functions, safety and quality of life, and reduce unnecessary emergency room visits by 20 per cent, and avoidable readmissions by 50 per cent.

Transitional care services, such as Khoo Teck Puat Hospital’s Ageing-in-Place Programme, help recently discharged patients with complex conditions transition smoothly from hospital to home through comprehensive assessment and complication prevention by a team of doctors, nurses and therapists.

“Frequent fliers”, patients who are unnecessarily readmitted to acute hospitals multiple times, utilise disproportionately more scarce resources, and are costly.

Besides unstable medical conditions, other addressable reasons for repeated admissions include financial difficulties, not-yet-confident caregivers, non-adherence to medications, and unsafe homes. In fact, research suggests that seven out of the 10 factors that cause readmissions are preventable through holistic post-discharge care.

Kho Teck Puat Hospital's Community Nurse Home Visit Programme, which adopts a "high touch" approach for these frequent fliers, first builds trust with patients and caregivers at their homes, then holistically assesses their clinical, social and environmental needs, and jointly develops individualised care plans to keep them well at home.

These community nurses become the patients' point of contact for navigation and access to available assistance schemes and services. If needed, pharmacists, dietitians, physiotherapists and even doctors will conduct home visits with the community nurses.

This innovative and cost-effective programme reduced readmission rates of frequent fliers by two-thirds, and won the first prize in the 2014 United Nations Public Service Award for the category of "Improving the Delivery of Public Services".

To help patients cope at home, there is multidisciplinary long-term home care for medically stable, housebound elderly people provided by services such as Tsao Foundation's Hua Mei Mobile Clinic, and the Care for the Elderly Foundation's COFE 4 Home Care.

To improve medication compliance, there are existing strategies such as medication delivery services, and medicines pre-packaged in convenient by-time-of-the-day blister packs.

Caregivers are increasingly recognised as important home-care partners and support is available to them in the form of Caregivers Training Grants, which offer \$200 annually for training courses and planned respite services.

### COMMUNICATION IS KEY

Dr Jauhar also pointed out that one factor in the breakdown in the continuity of care after hospital discharge in the US is a lack of



communication with primary care physicians when following up on patients after discharge. There is also a shortage of such physicians.

In Singapore, the new National Electronic Health Records system is linked with the polyclinics, and there are plans to link GPs to the system too, so that communication between hospital teams and Singaporeans' primary care physicians will be easier and faster.

There have been forward steps in making primary care a more attractive career for newly graduated doctors, such as the recent recognition of family medicine as a specialty by the Academy of Medicine Singapore, and expanding the roles of family physicians in Singapore's acute and community hospitals, and intermediate and long-term care.

To train future doctors in home care, the National University of Singapore's Yong Loo Lin School of Medicine has been exposing medical and nursing students to home care early in their formal curriculum through the Longitudinal Patient Experience programme, where students – mentored by doctors and nurses – learn through home visits how patients cope with their health conditions after discharge.

NUS' medicine students also learn home care informally through the faculty-supported but student-led Neighbourhood Health Service, where students offer health screening to low-income families living in rental flats, and follow-up those newly diagnosed or with uncontrolled chronic conditions via three-monthly home visits under the guidance of doctors and nurses, until they seek regular care from the public healthcare system.

Although Singapore's home-care system is in a much better state than the US, there is still room for improvement. For example, more can be done to incentivise regional healthcare systems to provide transitional and home-support schemes more comprehensively, through alignment of remuneration. What is needed is a shift from a hospital bed-occupancy model to a community-based model that rewards prevention of unnecessary readmissions and quality home care.

Traditional house calls by doctors need to be replaced by a multidisciplinary approach to home care, and home-care needs to be viewed as a spectrum of services from discharge planning to transitional, frequent flier, long-term home and caregiver care. While Singapore's home-care ecosystem is developing well, we should not rest on our laurels but continue to strive to make it better.



Zan with the two individuals who inspired and encouraged her to join the CDAU. From left: CPL Sam Teo (NSF), who is currently pursuing a degree in Paramedicine at the Auckland University of Technology; CPL (V) Zan Ng and SSG Tan Woon Te, a full time paramedic with the SCDF

# Volunteering with the Civil Defence Auxiliary Unit

**Zan Ng Zhe Yan (Phase V medical student)**

A strident siren shatters the stillness that permeates the fire station, as a computerised voice announces the call text of yet another 995 call. Dropping everything we are doing, I grab my stethoscope and the medic his walkie-talkie, and we scurry after our paramedic who has already hopped onto the alpha. The ambulance door slams shut, I swiftly pull on my blue latex gloves while muttering a quick prayer that I will be competent enough to contribute more to this case than the last, and we are on our way. Adrenaline coursed through my veins and a list of differential diagnoses ran through my mind as the ambulance hurtled towards our destination – it is all in a day's work volunteering with the Civil Defence Auxiliary Unit's (CDAU) Emergency Medical Services (EMS).

The CDAU was launched in 2006 to provide an avenue for civilians to volunteer with the Singapore Civil Defence Force (SCDF). Comprising six vocations including EMS, firefighting and rescue, and public education, CDAU officers complement the SCDF workforce by performing frontline duties alongside regular officers while donning the SCDF uniform. During my ambulance attachment as part of the Phase IV Emergency Medicine rotation, I immediately fell in love with the nature of frontline duties performed by the SCDF first-responders. The paramedic and medic whom I was attached to introduced me to CDAU and strongly encouraged me to volunteer with EMS and develop my interest for pre-hospital care further. I did just that, sans hesitation. In order to qualify as an auxiliary paramedic, I underwent a six-week training course alongside 28 others from all walks of life, picking up skills in pre-hospital care, which is not taught in medical school.

Equipped with these skills and a passion to serve, I jumped right into volunteering at the fire station that I was deployed to for the required minimum of 16 hours per month.

Looking back, my journey in the CDAU has been challenging but fulfilling. Pre-hospital care is extremely different from hospital care which I have been trained by the medical school to provide, and I was initially excited at the chance to translate my passion in emergency care into a meaningful volunteering endeavor. Meaningful it was indeed, and I learnt more than what I could give. I witnessed firsthand how the maxim of "to cure sometimes, to relieve often, to comfort always" was exemplified by the paramedics in each case we attended to, and how small gestures make a huge difference in alleviating the suffering of patients. I got a rare glimpse into the myriad home environments of patients and gained a better understanding of what may precipitate their presentations—something I can only picture in my head while taking histories from patients in the ward. I also had the invaluable opportunity to make clinical assessments of undifferentiated patients at their most acute presentation, oftentimes without the luxury of access to past medical records.

However, it has not been an easy task juggling my CDAU duties with the rigors of the final year curriculum, for there is always the perennial problem of insufficient time. It was always a struggle to attend each training session after finishing a grueling day of Student Internship Program (SIP) in General Surgery, and to slot in half to full shifts between lectures on the weekends. During such trying moments when the struggle between studying for my MBBS and volunteering



CDAU (EMS) volunteers from the batch of 2015, the largest batch of volunteers to graduate from the course to date

for CDAU shifts is made real, I try to strategise shifts right after lectures, and to maximise the lull time during shifts by bringing study materials to the fire station and discussing cases with my paramedic. Moreover, treating each patient encounter as a learning experience motivated me to think through differentials and revise the pre-hospital and hospital managements of each condition. Most importantly, keeping my reasons for joining the CDAU front and centre in my mind helped spur me on.

At the recently concluded Home Team Festival 2015, a biennale public showcase of the Home Team's capabilities, I had the pleasure of meeting up with COL (Dr) Ng Yih Yng, Chief Medical Officer of the SCDF and Emergency Medicine consultant at the Singapore General Hospital. When asked what he would like to share with NUS Medicine students, he had the following to say, "As medical students, volunteering on SCDF ambulances can be a very fulfilling experience because it allows you to walk an additional mile in the footsteps of the patient. Medical emergencies can happen to anyone, at any time; it is a humbling and rewarding experience to enter someone's home and be able to comfort and help them." He also added that since most of the clinical training in medical school is ward-based with patients who are already in stable condition, "responding to actual incidents where patients are in their greatest need allows you to appreciate experientially what patients are talking about". Moreover, the volunteer's journey can extend beyond medical school, where "as doctors, you can work with us in your professional capacity, to help teach paramedics or even develop new clinical protocols to improve patients' lives." As such, I would unreservedly encourage fellow medical students to consider volunteering with the CDAU, and seize a precious opportunity to serve the society, save lives, embark on a learning journey and improve one's clinical skills and acumen all at once.

It is an immense privilege to be able to help others in their greatest times of need, and also a humbling experience when patients completely put their trust in us as first responders to render the best care possible. Each call has been a diagnostic challenge and learning opportunity thus far, and I really enjoyed learning from the paramedics, and teaching the paramedic trainees and medics whom I go on shift with. I believe that my experiences in the CDAU will shape me to become a better doctor, and hope that my medical training allows me to positively contribute to the pre-hospital care of the patients that I attend to. All in all, I am thankful for this opportunity, and look forward to serving society both as a doctor and as a volunteer with the CDAU in the many years to come.



Zan and COL (Dr) Ng Yih Yng, Chief Medical Officer of the Singapore Civil Defence Force



CPL (V) Seah Pei Zhen (left), an NUS Medicine Phase I student who also volunteers at CDAU

## My greatest takeaways:

1. Emergencies are unprejudiced to age, race, religion and social status; they can strike anyone, anywhere, at the least expected moment. We should cherish every day with our loved ones, for the vicissitudes of life may make any moment anyone's last.
2. Healthcare professionals of today operate in a world where cameras and other recording devices are ubiquitous, and every move recorded may become medicolegal material. Instead of decrying this, we need to learn to adapt to operating in a world where this is a sine qua non, and deliver the best care we can.
3. Regardless of a patient's appearance or how poorly they treat you, try to look beyond that as you are seeing them at their worst, and aim to treat every patient as if they are your family member.
4. Be a good listener; never brush aside a patient's complaints as insignificant.
5. Never stop asking yourself, "What else could this be?" Strive to be the best you can be, and review each patient encounter to evaluate if you could have provided care in a better manner.

**For individuals who are interested to volunteer with the CDAU, do visit this website for more information:**  
<http://www.hometeamvolunteers.gov.sg/htvms/web/civildefenceauxiliaryunit-auxiliaryemergencyambulanceservices>

# Heart and Heritage: NUS Medicine Turns 110

Rounding off the 110th anniversary, the NUS Yong Loo Lin School of Medicine's 110th Commemorative Book features stories on student life, milestones of NUS Medicine history and research discoveries in the recent years. Copies are available at NUS and public libraries.



## *The NUS Medicine Heritage Tie*

Singapore's oldest institution for medical education traces its roots to 1905, starting out as the Straits Settlements and Federated Malay States Government Medical School before being renamed the King Edward VII Medical School and eventually, the NUS Yong Loo Lin School of Medicine.

This tie commemorates the 110th anniversary of the School, which has trained generations of healthcare professionals and the majority of doctors in Singapore.

Handmade by the English tailor and robemaker firm of Ede & Ravenscroft, the tie features the caduceus symbol depicted on the King Edward VII College of Medicine coat of arms. The NUS primary corporate colours of orange and blue feature boldly in this design, expressing the enduring humanistic ideals of Medicine and its continual quest for scientific illumination and application in the service of mankind.

Purchase online at: [http://medicine.nus.edu.sg/corporate/assets/pdf/social/Heritage\\_Tie.pdf](http://medicine.nus.edu.sg/corporate/assets/pdf/social/Heritage_Tie.pdf)

Date	Event & Venue
Feb 22	<p><b>Fundamentals Workshop</b></p> <p>Centre for Healthcare Simulation, Level 3, Centre for Translational Medicine (CeTM), MD6, NUS</p>
Feb 22 - 25	<p><b>Visiting Committee Visit: Cluster 5 (Departments of Ophthalmology, Obstetrics &amp; Gynaecology and Otolaryngology)</b></p>
Feb 23	<p><b>Debriefing Workshop</b></p> <p>Centre for Healthcare Simulation, Level 3, Centre for Translational Medicine (CeTM), MD6, NUS</p>
Feb 25 - 26	<p><b>PSU Distinguished Editors Series: JAMA Masterclass by Dr Howard Bauchner, Editor-in-Chief, JAMA and The JAMA Network</b></p> <p><b>Feb 25</b>  <b>Evening Lecture: "The Future of Medical Journalism"</b>            Peter &amp; Mary Fu Lecture Theatre (LT35), Level 1, Centre for Translational Medicine (CeTM), MD6, NUS</p> <p><b>Feb 26</b>  <b>"Writing for JAMA" Workshop</b>            NUHS Tower Block</p> <p><b>Evening Lecture: "The Influence of Clinical Practice Guidelines"</b>            Auditorium, Level 1, NUHS Tower Block</p>
Mar 9	<p><b>Public Lecture "Diet, Lifestyle, and Maintaining Memory with Aging" by Professor Francine Grodstein</b></p> <p>Peter &amp; Mary Fu Lecture Theatre (LT35), Level 1, Centre for Translational Medicine (CeTM), MD6, NUS</p>
Mar 11	<p><b>Lunchtime Scientific Lecture "The Epidemiology of Nutrition and Brain Aging" by Professor Francine Grodstein</b></p> <p>Peter &amp; Mary Fu Lecture Theatre (LT35), Level 1, Centre for Translational Medicine (CeTM), MD6, NUS</p>
Mar 12	<p><b>NUS Open Day</b></p>
Mar 23	<p><b>NCSP-Residency Oral Presentation</b></p> <p>Staff Lounge, Level 1, NUHS Tower Block</p>

*Details may be subject to change at the discretion of the respective departments without prior notice.*

# MediCine

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