Keeping Singapore Medicine Ahead of the Curve

– Interview with Prof Tan Chorh Chuan

Photos by National University of Singapore

Prof Tan Chorh Chuan, currently President of the National University of Singapore (NUS) and a renal physician by training, will be delivering the upcoming SMA Lecture on 1 November. He tells *SMA News* why the key to keeping local healthcare ahead of the competition lies in innovation – in terms of medical training and research. (To sign up for the lecture, turn to page 16.)

SMA Lecture 2014

SMA: The upcoming SMA Lecture is titled "Innovating for Future Health". Why did you choose this topic?

Prof Tan Chorh Chuan – TCC: I would like to share my thoughts on some major looming issues in health and healthcare. Many of these issues are well known and usually characterised as challenges or problems, which may not be wholly unfounded. However, these circumstances may also provide important opportunities for us to make fundamental enhancements to health promotion and care delivery, which could potentially put Singapore in a strong position for the future. In order to make the best of these opportunities, the key is innovation – not only at the individual and institutional levels, but also at the systems level.

Innovating medical training

SMA: How has medical training changed since you were a medical student? Are these changes for the better? What have we lost?

TCC: Medical education in Singapore has undergone major transformations since my time in medical school. The curriculum then was very traditional – we spent the first two years learning masses of basic science knowledge, with relatively little understanding of the clinical relevance or

Left Prof Tan feels that student-led community health initiatives, like Project Lokun, would expose students to regional health systems
Right Prof Tan (centre) visited Japan with his schoolmates in 1982

application. Hence, during our clinical years, many of us had to relearn these fundamentals, this time in the context of diseases and their treatment.

Medical education today is better structured, with clearly defined learning objectives and outcomes. There is greater horizontal integration of learning across traditional subjects like anatomy, physiology, biochemistry and other basic science disciplines, as well as stronger integration between medical science and clinical practice. Medical students today are exposed to patients and clinical settings from their first year, and there is also a well-defined focus throughout the entire medical programme to help students develop critical skills such as effective communication and professionalism. Given the changes in medical practice, there is also an appropriate increase in emphasis on inter-professional team training and safety.

There have also been significant advances in pedagogy. In the NUS Yong Loo Lin School of Medicine (YLLSoM), for example, problem-based learning and extensive use of advanced simulation training have enabled students to enter clinical training with a higher degree of preparedness. YLLSoM has also continued to place a powerful focus on excellent clinical training. Besides that, Duke-NUS Graduate Medical School is among the first in the world to pioneer a unique team-based educational system that promotes peer-to-peer learning in a dynamic learning environment. Both schools have gained strong international reputations as innovative centres for medical education.

All these changes in undergraduate medical training and parallel enhancements in postgraduate programmes have been for the better. On the downside, changes in medical training have also resulted in the loss of generalists with excellent clinical experience and acumen across a broad range of fields. When I was a medical student, generalists played an important role in the clinical practice landscape, not only in care delivery, but also as superb role models and mentors. However, over the intervening years, with greater specialisation and subspecialisation, this has waned. In some sense, we are coming full circle because many of our patients today are elderly and have a multitude of clinical conditions that require the attention of such excellent generalists, particularly in acute hospitals.

SMA: Do you think local medical training has equipped students with the relevant skill sets to excel once they exit, so that they can eventually move on to become global clinicians, teachers and researchers in cross-cultural settings?

TCC: Definitely. Our students are prepared to work in global environments through formal elective programmes, as well as a myriad of overseas attachments and community involvement projects. YLLSoM is also starting a global health and leadership track for its students in the next academic year. Beyond these initiatives, there are many indicators that reflect the high regard in which our medical graduates are held both locally and internationally.

SMA: If the local healthcare delivery model changes from highly intense clinic-based hospital-centric systems to population-based community-centric self-care systems, how should medical education and training adjust to adapt to this shift?

TCC: I agree that this is an important shift that requires medical schools to keep up with the changes by making appropriate adjustments to medical education in a balanced manner. I say this because our medical schools would still need to ensure that medical graduates are well trained in acute Medicine and able to safely practise as Postgraduate Year 1 trainees in the hospitals. In addition, those who wish to specialise in hospital Medicine must have sufficiently solid academic and clinical foundations in order to do so.

At the same time, however, it is very important for students to acquire population- and systems-based competencies. In YLLSoM, for example, these skills are taught at Year 1 and reinforced in later years.

The Longitudinal Patient Experience programme, which begins in Year 1 at YLLSoM, gives students a perspective of how patients navigate healthcare systems while managing their disease. This patient perspective is reinforced later through a variety of programmes delivered in collaboration with the Saw Swee Hock School of Public Health, polyclinics, community hospitals, and other agencies involved in delivering care. Another key element is the Community Health Project, which begins in Year 2 with identification of a health need within a community and ends with a capstone project at the end of Year 4. Students will present their projects to the class and then collectively learn key principles of population- and community-based systems of care.

Student-led community health initiatives, such as the Neighbourhood Health Screening programme, provide students with opportunities to interact with regional health systems to promote and maintain health in the communities. Through these programmes, students learn how to identify and prioritise needs in the community, design and implement care, and evaluate the effectiveness of their interventions. This form of experiential learning has been evaluated and proven to be effective.

SMA: How can NUS, or any other academic institution, cultivate a sense of belonging among current students and continue to engage alumni?

TCC: The key is to create a rich and memorable student experience, as well as build strong bonds among medical students, the faculty and student mentors.

With regard to YLLSoM's student engagement efforts, the school supports diverse student-led initiatives that build camaraderie and collective memories, involving sports, arts and drama, community projects, and peer mentoring programmes. As the YLLSoM medical student intake has increased, ten "houses" have been established to allow undergraduates to engage and interact within their cohort and across different undergraduate years. Over the past two years, more than 100 graduates have become mentors to juniors from their respective houses.

In 2011, YLLSoM moved to a grade-free system for the first two years of undergraduate study. This has not only reduced the stress of peer competition (cited by students as the number one source of stress, prior to this initiative), but also fostered a more collaborative and supportive culture among students. For instance, more students have taken the initiative to tutor their peers, often obtaining training in educational pedagogy and developing teaching materials before embarking on their tutoring.

Innovating medical research

SMA: How do you think the Singapore medical research landscape measures up to the rest of the world?

TCC: In general, Singapore's biomedical research is highly regarded in Asia, as reflected by bibliometric analyses and academic reputational surveys, such as the Quacquarelli Symonds and Times Higher Education World University rankings. We have attained several peaks of excellence across basic, translational and clinical disciplines.

Local research programmes have gone from strength to strength, particularly through multidisciplinary collaborations within and among institutions. Internationally, we are differentiating ourselves through our distinctive research contributions on the Asian phenotype and diseases more commonly seen in the region, as well as in conditions where the biology, progression and treatment responses differ significantly from those of Caucasian populations, on which most existing research is based.

I expect that, over time, Singapore's research will be distinguished by multidisciplinary research strengths involving biomedical sciences, engineering and computing. While we have made great progress thus far, I believe more could be done to broaden and deepen our strengths in clinical research, as well as increase our pool of well-trained and highly competitive clinician-scientists and clinical investigators.

SMA: What is one innovation that will positively impact and improve local research processes within the next five years?

TCC: Over the past 15 years, we have built up many highly competitive biomedical research programmes, centres and institutes in Singapore. I believe that we should create more multidisciplinary research programmes that draw on the best research groups across institutions, and strive to achieve greater synergy of complementary expertise in Singapore.

A good example of such a multidisciplinary approach is the Translational and Clinical Research (TCR) Flagship Programme launched by the National Medical Research Council in 2007. It has catalysed the establishment of outstanding research programmes, spanning from basic science to clinical research in selected disease areas that are of strategic importance to Singapore. The numerous TCR flagship programmes today have generated excellent science, and produced discoveries and results that have the potential to significantly improve clinical care and outcomes. Some of these initiatives are also attracting strong industry partnerships and research and development investments.

Furthermore, I believe that we should develop a broader range of cooperative grant schemes that aim to bring together the best mix of complementary and highly competitive research expertise, so as to create fresh peaks that have greater potential for positive outcomes in health and economic development. ■