Medical Education in Singapore: Where Do We Go From Here?

By Prof John E L Wong

INTRODUCTION

This is a proud year for the medical profession in Singapore as we celebrate 100 years of medical education. A centennial should force us to ponder whether we are producing a doctor that meets Singapore's future needs. Are we prepared for the challenges facing us? Although science and technology have fuelled wondrous medical advances, have we produced a better doctor?

CHALLENGES IN MEDICAL EDUCATION

As we commence our second century of medical education in Singapore, let me reflect on some of the issues that we face.

1. **The Importance of Teaching**
   This question may sound unusual to ask of a medical school, but given the competing demands of patient care and high-impact research, how much time can staff allocate to quality teaching? Teaching medicine well is time-consuming, involves small groups, and requires credible staff. It is difficult to overcome these problems given the demands on time and finite staff numbers.

2. **The Need for Good Role Models**
   Good students need good mentors. This is especially so in medicine, which is acknowledged to be an art as much as a science. An art requires people with experience and wisdom to provide inspiration and perform as role models.

   The National University of Singapore (NUS) has seen a continued loss of many of the best senior clinical staff in all the teaching hospitals over the last decade. This shortage of senior staff has become a critical issue in providing students with good role models.

3. **The Explosion of Knowledge**
   Medical knowledge and advances continue at a breathless pace in shorter and shorter intervals. If one were to look at the number of new medical journals as an index of the amount of new information generated, the medical profession must reconsider what, and how, it teaches its members. How does one separate the gems from the chaff?

4. **The Failure of Effective Translation**
   On the opposite side of the coin, how do we incorporate all these wonderful advances in medicine into standard practice? In the United States, McGlynn et al's[1] showed that only half of Americans in major metropolitan areas receive appropriate healthcare. This is sobering in the country that leads the world in medical research and development. The same appears to be true in the United Kingdom, and almost certainly is the case in Singapore.

   Despite clear evidence that pneumococcal and influenza vaccination is beneficial in people over the age 65, as well as patients with chronic illnesses, most eligible Singaporeans are unlikely to meet this recommendation. Despite clear evidence that glycosylated haemoglobin levels below 7.0% reduces the risk of complications in diabetics, most affected Singaporeans do not meet this recommendation. Multiple reasons for this exist, but it is an issue that needs a coherent strategy as we pump even more funds into biomedical research.

5. **The Integration of Issues, such as Patient Safety and Effective Communication, into the Medical Curriculum**
   There are several issues which affect all medical specialties. These include patient safety, medical error, the inability to translate medical advances into routine practice, and effective doctor-patient communication. Such complex issues are not the domain of any single department, and require not only multidisciplinary champions but creating effective amounts of time in a curriculum which is already overcrowded with traditional topics.

6. **The Cost of Medical Education**
   Attempting to get a true cost of medical education in any country is a complex issue. In Singapore, medical education is provided by staff and in facilities from both the Ministries of Education and Health. It would be difficult to come up with optimal means of managing costs if these cannot be better understood and resolved. As Singapore's economy matures, and single-digit GDP growth becomes the norm, how much are we going to subsidise medical education? And from whose budget?

7. **The Shift from Acute to Chronic Care**
   Chronic disease has replaced acute disease in leading causes of mortality, hospitalisation, and presentation to primary care physicians. In the United States in 2004, chronic diseases will consume 78% of the sum spent on healthcare.[2]

   Yet undergraduate medical education is still very much centred on acute admissions to the hospitals. We still regard the five general hospitals, the Kandang Kerbau Women and Children's Hospital, and the Institute of Mental Health, as the sites for most clinical undergraduate education. Again, this is not unique to Singapore. Stanford University medical students receive most of their medical postings in hospitals, where length of stay is becoming shorter due to the pressures of diagnosis-related group (DRG) reimbursement. Ambulatory care exposure is two to four weeks.[2] One could almost substitute Stanford for Singapore in this respect.

STRATEGY FOR THE NEXT 100 YEARS

What is our strategy to meet the demands of the next 100 years of medical education? These can be outlined under how we choose applicants, the content of the curriculum, how it is taught, the way it is assessed, and the creation of the second Medical School. Lastly, we address means to recruit and retain role models in academic medicine.

1. **Admissions**
   More than 3000 people competed for 230 places to read medicine at NUS in 2004. 650 people were shortlisted for

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consideration based largely on their academic results and co-curricular activities. Medicine in Singapore has the enviable reputation of still attracting more than what it can accept of the brightest students from schools in Singapore and the region.

Yet, it is increasingly apparent that scholastic achievements are but one of several qualities required of a good doctor. Equally important are humanistic qualities, the ability to communicate well, a commitment to lifelong learning, and the ability to work as part of a team. It is also apparent that 'A' Level scores, while fairly predictive of whether students are able to successfully complete the medical course, are not predictive of their competence as doctors, nor of the ability to pass specialty exams.[3,4]

The Medical School has piloted several new initiatives to try and select people with the best chances of becoming good doctors.

These include working with the schools and increasing the number of interviews with specifically selected interviewers who are briefed and given a template to score on. Interviewers not only consist of full-time academic staff, but also members of the top quartile of the public sector, the private sector as chosen by the Academy of Medicine, the College of Family Physicians, the Singapore Medical Association, the Military Medical Corps, and the nursing profession. We have introduced the writing of a 45-minute essay on a topic, which is only revealed when the candidates are assembled, in an attempt to evaluate clarity of thought, legibility, and uniqueness while under time constraints in a "high-stakes" condition. A psychometric test was also introduced in 2004 but will not form part of the selection process until it has been validated.

2. Content

It is unrealistic for medical schools to aim for a fully trained and competent specialist upon graduation. The current MBBS course lasts five years, and this period should serve as a gestational period. The product should be someone equipped with the skills to function as a good intern, and have enough core knowledge to then pursue further training in fields such as primary care, hospital-based specialties, biomedical sciences, or medical administration.

What should a modern curriculum contain? The Accreditation Council for Graduate Medical Education (ACGME) has outlined six core competencies of a practising doctor.[5] He/She should possess:

- the ability to provide compassionate, effective, and appropriate patient care;
- medical knowledge about established and evolving clinical, biomedical, and cognate science, and the application of this knowledge to patient care;
- the ability to do practice-based learning and improvement;
- effective interpersonal and communication skills;
- professionalism; and
- an understanding that medicine is part of a systems-based practice.

All six areas are equally important and must be covered effectively in the five years that the student spends with us.

3. Process

How we teach students is critical.

Problem-based learning was introduced in 1999, but much more needs to be done. The basic sciences are still largely taught in the first two years, and the clinical sciences, in the last three years. Students still struggle with the relevance of what they learn. Clinical teaching is still largely done in the inpatient setting, when the bulk of clinical practice as a doctor is in the ambulatory setting.

To tackle these issues, the Faculty is looking at teaching medicine based largely, but not exclusively, on themes. These will include the leading causes of mortality, hospitalisation, and conditions presenting to primary care physicians in Singapore. Each will be taught by a multidisciplinary team of scientists and doctors working together to ensure continuity of process and relevance.

We are looking at further reducing the number of formal lectures and increasing the amount of time for electives. Lectures have been shown to correlate poorly with the ability to deliver quality care. Learning is best done when interactive and involving practice, reinforced at the bedside or in the clinic, and easily accessible. For this to be done well, we need many more experienced, dedicated, and committed staff.

4. Assessment

Attempts at educational reform will only be successful if we ensure that the assessment system reinforces what we aim to achieve.

Currently, assessment is too heavily biased towards medical knowledge. There is not enough emphasis on assessing whether candidates are able to deliver appropriate patient care as defined by the ability to communicate effectively; make informed, evidence-based decisions; develop and carry out management plans; educate patients and their families; competently perform all medical and invasive procedures required of a house officer; and use medical information technology optimally.

There are even fewer attempts at assessing professionalism, how graduates interact with the rest of the medical system, interpersonal skills, and being able to develop practice-based learning for lifelong improvement.

How do we plan to start addressing these issues?

We will be implementing a compulsory Student Internship Programme in Internal Medicine, whereby two final-year students will be assigned the tasks of a house officer for four weeks. Although done before, implementation across all hospitals, as well as assessment of students, was variable. We propose that they will be full-time members of the team, with the expectations of clerking, formulation of diagnoses, order investigations and management plans, perform procedures, as well as interact with the patient's family, all under the close supervision of the entire ward team. Their assessment will be done jointly by the ward Consultant, Registrar, Resident, and Nursing Officer. This programme will evaluate whether the student has acquired the necessary skills to be a competent House Officer after passing the final MBBS examination.

We are also planning to test specific skills in the final year, such as how to break bad news, obtain informed consent, and administer effective advanced cardiac life support.

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5. Recruitment and Retention of Staff

We must recruit and retain sufficient motivated and trained clinical staff in the University and teaching hospitals. No amount of educational reform can get past the starting blocks without the right staff to implement, refine, and adapt the changes to best suit Singapore's needs. Although we have managed to stabilise and grow our basic science faculty, we have lost more senior clinical staff than we have been able to recruit over the last 15 years.

6. The Second Medical School

As we enter the second century of medical education in Singapore, plans are well underway for the opening of the country's second medical school on the grounds of the Singapore General Hospital. Many of us in the profession have argued for a graduate entry school, based on the North American model, as it pre-selects a more mature student. The second medical school will have its own Dean and administrative structure, and be autonomous from the current school at Kent Ridge. Both will be under the umbrella of NUS, but the final relationship between the two schools is still being discussed. We hope that both will complement each other and lead to synergies, rather than competition. Medical education is far too expensive and important to have the two publicly funded schools compete for the limited human and financial resources in such a small country.

CONCLUSION

These are challenging times, but not more than what our predecessors faced in 1905 when starting the Medical School. Recognition of the issues allows a diagnosis and management plan to be formulated and implemented. This affirmation of how we should train ourselves is a hallmark of why we are a profession, and a most noble one at that. Our colleagues would be proud of us. ■

REFERENCES:

1. McGlynn EA, Asch SM, Adams J, Keesey J, Hicks J, DeCristofaro A, Kerr EA. The quality of health care delivered to adults in the United States. N Engl J Med 2003; 348:2635-45.
2. Holman H. Chronic disease – the need for a new clinical education. JAMA 2004; 292:1057-59.
3. Ferguson E, James D, Madeley L. Factors associated with success in medical school: systemic review of the literature. BMJ 2002; 324:952-57.
4. Salvatori P. Reliability and validity of admissions tools used to select students for the health professions. Health Sci Educ Theory Pract 2001;6:159-75.
5. http://www.acgme.org/outcome/comp