

Singapore Healthcare: Challenges Today and Building a Better Tomorrow

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INTRODUCTION

Healthcare is the focus of many governments around the world today. Our Prime Minister raised the topic at the SMA 50th Anniversary Dinner and in this year's National Day Rally. US President Barack Obama has engaged in an energetic national debate. It is also the subject of ongoing discussion in Britain and many other jurisdictions.

Revamping healthcare is rarely easy. The knowledge, technology and demographics of the past will have shaped today's systems and policies. While the values and ethics of the good physician are timeless, with time, knowledge is superseded and technology turns outdated. It takes half a decade to train a doctor, and another 5 to 10 years to complete postgraduate training: the cutting edge textbook of our pre-clinical years is outdated by the time we qualify as doctors. Thus, all healthcare systems invariably contain elements of legacy, posing challenges for those remaking them to address tomorrow's needs.

In this article I examine some of the dilemmas facing us and present some ideas for the reader's consideration.

INTEGRATING ACROSS DISCIPLINES, AMIDST AN AGEING POPULATION: FROM MOSAIC TO TAPESTRY

Like many populations around the world, we are ageing. In 2005, 16.7% of

the United States population was aged 60 and over; the United Nations projects this proportion to reach 26.4% by 2050. Yet this pales in comparison to Western Europe, where Switzerland and Italy will have 33.7% and 41.3% of their people over the age of 60 by 2050 respectively.¹ In this UN report, over-60s were anticipated to form 38% of Singapore's population in 2050. Our median age was predicted to increase from 37.5 in 2005, to 52.1 in 2050.

Even as populations grey, medicine has become increasingly sub-specialised with the proliferation of knowledge and the diversification of therapies. These two trends pose conjoint challenges as well as opportunities to improve healthcare.

Amid specialisation, the role of a primary physician. Like many First World countries, Singapore's healthcare system has become increasingly specialised. While this has improved care delivery within the respective specialty domains, we must also beware the fragmentation of care. A patient may have a cardiologist for his heart, pulmonologist for his lungs, neurologist for his brain, endocrinologist for his thyroid, spine surgeon for his cervical spondylosis, and so on. But who then takes ownership of the patient in his entirety? For are we not more than the sum of our parts, more than the enumeration of our medical conditions?

I have had the privilege of working with master physicians, surgeons and family doctors whose breadth spanned the holistic spectrum of the human body – but I worry that modern medicine may inadvertently militate against this. The UK has a culture of patients following up with the same GP (or GP practice); this promotes continuity of care and is in line with the concept of a primary physician. We might wish to explore how this can be achieved in Singapore while still preserving patient choice.

Combined physician-surgeon teams. With an ageing population, patients will be older, and present with more co-morbidities. Imagine the elderly patient who has fallen and broken her hip. The fracture may be technically straightforward from an orthopaedic standpoint. But what of the co-morbidities? What if the patient has ischaemic heart disease, old rheumatic heart valves, scar epilepsy from an old stroke and poorly controlled diabetes with renal impairment?

Such patients are a reality today. They are not few in number, and their management has given rise to anxiety among physicians, surgeons and administrators. For example, whom should a patient with an open long bone fracture and multiple co-morbidities be admitted under? An open fracture requires surgical exploration and

debridement, but it would be unfair to expect an orthopaedic surgeon to manage brittle diabetes, renal failure and atrial fibrillation. Neither would it be appropriate for the physician to manage an open fracture with an external fixator *in situ*.

Perhaps the answer is to look beyond the traditional boundaries of departments and medical disciplines. Could there be a role for embedding a physician in the surgical team, to help manage the medical co-morbidities? For example, the physician could be a medical registrar on temporary secondment just before exiting specialist training. We already have gastroenterologists doing combined ward rounds with hepatobiliary surgeons for the post-operative liver transplant recipient. In addition to the care quality improvements of integrated multi-disciplinary care, it would also provide additional education for both sides: the surgeon learning more about how the physician approaches a problem, and the physician acquiring a better understanding of the surgical dimension.

Thus, amidst sub-specialisation, we may still find a more perfect union. We must seek to be an interwoven tapestry, not a fragmented mosaic.

OPTIMISING INCENTIVES: FEWER SIDE EFFECTS, MORE PRIME OUTCOMES

Every healthcare system has measurables and incentives. We see them in evidence-based medicine and clinical audit. Yet not all incentives are straightforward. Key performance indicators (KPIs) measure precisely what they are designed to measure, which may not necessarily be identical to the intended outcome. Other indicators cannot easily be measured: for example, what does 'patient satisfaction' mean?

Some difficulties arise as unintended side effects. For example, if we levy a surcharge for trainees in popular

specialties, does this deter applicants, or does it only deter those for whom the quantum is a burden? Even if there is no deterrent, it is important to consider the issue from all angles.

In this section I outline some examples and provide some angles for consideration:

A patient may have a cardiologist for his heart, pulmonologist for his lungs, neurologist for his brain, endocrinologist for his thyroid, spine surgeon for his cervical spondylosis, and so on. But who then takes ownership of the patient in his entirety? For are we not more than the sum of our parts, more than the enumeration of our medical conditions?

Prevention and cures. Many primary care doctors provide outstanding patient care. They bring continuity in getting to know patients and their families. Chronic illnesses such as diabetes, hypertension and hyperlipidemia are controlled, thereby staving off devastating sequelae such as stroke, myocardial infarctions, diabetic retinopathy, renal failure and limb amputations.

But preventive, holistic care does not come easily. One must find the time to build a deep therapeutic bond, to persuade the patient about lifestyle control, to ensure medication compliance, to educate the patient and caregivers about the disease and how to manage it. Systems which provide too little time per consultation (how can this be accomplished in a 5-minute visit?) or make it difficult for doctors to provide such care (what if the manager

asks, "why have you seen so few patients this clinic session?") should be relooked and reconsidered.

Outcomes, not just volumes. In certain countries, GPs receive subvention from the government, some of which is linked to outcomes such as HbA1c control and blood pressure, or whether a smoker has kicked the habit. This recognises that preventive medicine, while taking more time, has value.

Demand-induced demand. Paradoxically, a crowded clinic list can perpetuate more crowding in the same clinic or elsewhere – what might be termed "demand-induced demand".

For example, short consultation times increase the number of referrals. If the problem cannot be solved in the allotted minutes, the patient has to be sent to a specialist or A&E, even if the condition could be adequately managed in primary care with additional time.

Likewise, an over-busy doctor in the specialist clinic may not have the time to perfectly optimise chronic illness control. Thus, it becomes easier to give a repeat consult in 3 months, rather than discharging to the GP and doing a detailed handover of a patient who could be equally well looked after in primary care.

At the A&E, admitting many patients might be one solution to a long queue but this would in turn fill up many inpatient beds and cause overcrowding.

Thankfully, the vast majority of doctors resist the easy way out. However, we should not make it more difficult than necessary to do the right thing.

Beyond revenue: transcending departmental boundaries. To promote cost savings, departments come under budgetary scrutiny, so that public money is well spent. However we must be mindful of the externalities that come with it.

For example, is the department of lesser revenue necessarily one of lesser value to the patients, hospital and society? Infectious Diseases is not the most glamorous of specialties, but the ID doctor plays an

important role. Beyond the saving of lives and limbs, infection management pays for itself if one looks beyond the lens of a single department: for example, a prosthetic joint infection can result in economic costs of US\$30,000 to US\$50,000 per patient². Likewise, the geriatrician, by optimising the condition of an elderly patient, can keep the patient active in the community and less likely to have falls and accidents – thus staving off the downward spiral of repeated admissions and debilitation that afflicts too many elderly patients around the world.

There is always a need for good budgeting and financial prudence but we must be mindful of how we define success and value for money.

Beyond hospital-centric care. At a systems level, we can also explore the role of our 3Ms – Medisave, MediShield and Medifund. Historically the Medisave system was tied to inpatient care. However this may provide an incentive for patients to admit themselves or remain admitted, even though they could be treated as outpatients, away from the risk of nosocomial infections – for while Medisave remains the patient's own money, some patients will face cash flow difficulties. The extension of Medisave use to outpatient management of chronic diseases is a welcome move.

In summary, we must look carefully at our healthcare processes at all levels. Incentives can be powerful forces for change. But like powerful drugs, they can have side effects, and these must be carefully explored as we seek to improve the healthcare ecosystem.

LEVERAGING SCIENCE AND TECHNOLOGY: FROM PRIMARY CARE TO NATIONAL SECURITY

Singapore is one of the more wired up and technologically savvy countries in the world. How do we translate this into better healthcare?

Electronic medical records across primary care. We already have electronic medical records in hospitals and many outpatient clinics. Some hospitals have

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been faster than others, but all are moving towards full computerisation. We must ensure that primary healthcare will not be left behind: ways must be found to better engage GPs and help them where needed.

Computerisation of all primary care will allow faster and more complete epidemiology. By better understanding the patterns of disease in the community, we can formulate better healthcare policy. Privacy, while an understandable concern, can be safeguarded with appropriate software design and audit. If we can computerise a healthcare record, we can also incorporate the patient's preferences about what information can be shared.

Data integration. Even as hospitals and clinics computerise their medical records, we must also minimise barriers to data integration. There are many potential network effect benefits, but they will only be realised if the different databases can talk to each other. One way forward might be to develop a standard but customisable, extensible data structure for healthcare records, just as HTML and XML have provided a standard framework for electronic information sharing on the Internet and across networks. Or to put it differently: imagine needing to use a different computer with a different web browser, depending on which Internet website you wanted to visit. When computerising healthcare, we must avoid falling into such a trap.

Life sciences: an investment in national health. Our national investment in Biopolis is a potent resource: we have many life science experts and world-class technological facilities. One can easily imagine many ways to build additional synergy between basic science and clinical medicine.³

Consider the study of emerging infectious diseases – arguably a national security concern transcending a single Ministry. At the primary care and hospital level, electronic records and epidemiology can facilitate earlier detection. If the possibility of a novel pathogen (or a known pathogen with atypical presentation) is suspected, samples could be analysed *en masse* using the high throughput facilities of Biopolis.

Likewise, by having ongoing research in life sciences, we maintain a pool of trained scientists, technical staff and institutional experience. In a crisis, these may be deployed towards analysing an emerging biothreat – just as in 2003, researchers at the Genome Institute of Singapore facilitated our understanding of the SARS coronavirus.⁴

Singapore is small enough for such detailed data collection and inter-sector integration. Thus we can perform studies and achieve discoveries that larger countries might find more difficult. We should not squander this advantage.

CONCLUSION: LOOKING BACK AND LOOKING FORWARD

From the World Health Organisation's latest statistics^{5,6}, Singapore has come a long way in her 50 years of public healthcare. Despite a 3.3% GDP total expenditure on health, the life expectancy for a Singaporean child born in 2006 is 80 years (compared to the UK's 79 and USA's 78). While the death of any child is a tragedy, we have some small consolation that Singapore's under-5 mortality, at 3 per 1000, is half that of the UK. The USA has it worse, where 7 per 1000 will not live to see their 5th birthday.

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Yet there is room for improvement, for no healthcare system can afford to rest on its laurels. As a profession, neither must we grow complacent. At times it is tempting to ask ourselves if later generations of doctors are as good as those who came before. Tennis aficionados compare Rod Laver, Björn Borg, Pete Sampras and Roger Federer; football fans weigh the merits of Pelé, Maradona, Zidane and Ronaldo. But how meaningful are these comparisons, when each leading light came from a different time in history?

After all, each generation faces its own challenges: there was a time when tuberculosis was treated with plumbage, and sometimes with streptomycin as first-line therapy. We would not do it today but neither would we look askance upon the physician of the 1950s.

We might think the generation who treated TB with their limited therapies was all the greater for such achievement. Does it mean that today's houseman is the lesser? Not necessarily. The hardworking, dedicated, ethical doctor is a blessing to patients, no matter the era, the diagnosis or the available treatment. And I have met many whom I have been proud to work with and to help teach – as a physician with (mostly *ad hoc*) trainees, I feel my educational responsibilities include training my successors to surpass myself.

And likewise, so long as we continue seeking out improvement, questioning with an inquisitive mind and constructive spirit, there are good odds that the next 50 years of Singapore healthcare will be as inspiring an achievement as the first 50. **SMA**

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