

MOH-ESS Essay Competition 2024: Resource Allocation in Singapore's Healthcare System

Essay title: Cheap, fast and good healthcare in Singapore – a pipe dream?

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Essay questions:

(a) How should the government allocate resources in our healthcare system amidst competing needs such as those brought about by an ageing population, as well as Singaporean's desire for high quality medical care?

(b) What are some of the principles the government can adopt to ensure that healthcare resources are allocated in the best way possible to maximise the benefits on health and well-being of Singaporeans?

Summary

This essay presents the challenge of Singapore's modern healthcare system grappling with the competing priorities of providing healthcare for a rapidly ageing population with multimorbidity at low cost, fast access, and high quality, modelled after Kissick's iron triangle. We first outline how the four principles of Beauchamp and Childress – justice, autonomy, beneficence and non-maleficence, the key ethical principles underpinning medical practice, can be applied at the systems level to modulate the way we devise our policies in resource allocation and ensure healthcare stays at its roots even as society evolves. As a preface to the suggested policies, an organisational structure of our healthcare system is proposed to link primary care providers (PCPs), Primary Care Networks (PCNs) and healthcare clusters more seamlessly, so that every PCP and PCN fall under the auspices of a cluster, allowing financial levers to take effect at every segment of the healthcare system by connecting our primary care systems and tertiary healthcare systems fiducially. The essay then delves into supply-side and demand-side policies to achieve the goals of our healthcare system. On the supply-side, three points of focus are examined, namely – (1) maximising economies of scale while leveraging diversification for innovation; (2) improving quality of care provided in primary care to reduce overall costs; (3) improving productivity in the healthcare system with focus on IT infrastructure. On the demand-side, a separate three points of focus are examined – (1) improving preventive care with particular emphasis on primary care and lifestyle interventions; (2) addressing drivers of overconsumption in all-encompassing insurance plans and the culture of defensive medicine; (3) transiting from multidisciplinary and interdisciplinary care models to

transdisciplinary care models. In the final analysis, the proposed policies adhere strongly to the ethical principles framework outlined, while achieving a balance between cost, access and quality for a healthier population.

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Resource allocation is a perennial issue that all healthcare systems grapple with, with Kissick's iron triangle illustrating the tussle between the three priorities of an effective healthcare system: cost, access and quality¹, in other words – cheap, fast and good. With an ageing population and multimorbidity, Singapore's healthcare system will face burgeoning costs²; coupled with rising patient expectations on the backdrop of medical advances and a more educated populace. A balance between cost, access, and quality will need to be struck while adhering to certain key principles to safeguard the “care” in healthcare.

Establishing these principles will help guide the strategies employed to achieve this balance. The four principles of Beauchamp and Childress – justice, autonomy, beneficence and non-maleficence³, have become the tenets by which Medicine is practised. Applying them at the systems level as a framework can modulate the way we devise our policies in resource allocation and ensure healthcare stays at its roots even as society evolves.

First, justice – to ensure equality in access to healthcare. Patients will have differing financial abilities in seeking healthcare, but every patient should have the right to healthcare. Subsidising mainstay investigations and treatments is one example, with an emphasis towards those which are cost-effective and with significant preventive benefits to reduce progression of diseases and complications. Diversity will emerge among healthcare providers and if insidious inequalities emerge because of unhealthy competition, resources will need to be redistributed and appropriate guidance to replicate successful approaches across the system.

Second, autonomy – to respect every patient’s decision for their health choices. Even in clustering of resources, one’s autonomy should be respected, be it in data sharing consent or choosing their own healthcare provider. Most importantly, we need to educate patients, encourage them to make the right lifestyle choices for themselves, and empower them with access to health facilities, with autonomy as the basis of these initiatives.

Third, beneficence – to create the most benefit for patients. Quality medical expertise and treatments are essential, and our healthcare system must keep pace with rising standards. In a free market, producers are incentivised to engage in self-improvement to differentiate themselves to provide superior products for the consumer. However, in healthcare, this effect is greatly diminished by information asymmetry, where patients place their trust in the medical professional who wields medical knowledge. The flaw of such a relationship is particularly pronounced in a skills-based trade, as it is based on one’s intrinsic motivation to seek self-improvement. If we are to see system-wide upskilling, we must go beyond altruism and institute systems in ensuring the improvement of knowledge and skills of our healthcare providers.

Fourth, non-maleficence – to do no harm to patients. Suffice to say, guidelines should be in place to safeguard patient safety amidst competing priorities.

These four principles are key to navigating competing priorities in resource allocation, and strategies employed should adhere to these principles. We will now outline a proposed structure for our healthcare system, and subsequently address both supply and demand factors as part of this strategy.

To allow financial levers to take effect at every segment of the healthcare system, our primary care and tertiary healthcare systems must be connected fiducially. With the speed of medical advancements, healthcare costs will continue to grow unbridled if we continue to function on a pure fee-for-service model⁴. A capitation model on the other hand would allow healthcare clusters to self-mitigate cost pressures. However, for this to happen from the first instance of the patient journey, every primary care provider (PCP) must be linked to the clusters to enable feedback through measured outcomes at the patient level and allocate resources where needed. We can leverage on the Healthier SG initiative where every patient is encouraged to enrol with a PCP to establish long term care. Ideally, every PCP should be part of a Primary Care Network (PCN), and every PCN should function under the auspices of a cluster. Outcomes should be measured at the patient level and aggregated at the PCP level to determine preventive care effectiveness. For instance, a patient may be admitted at a different hospital from that of his assigned PCP's cluster, but if his/her measured outcomes are poor (e.g. suboptimal HbA1c^A, blood pressure, LDL^B targets as primary outcomes for diabetes, hypertension and hyperlipidaemia control; secondary outcomes of disease such as admission rates, heart disease, stroke, dialysis and amputation rates), the cluster which the patient's PCP is a part of should be motivated to provide resources to support the PCP responsible for the patient. A portion of cluster funding or incentives should be dependent on such outcome measures to drive preventive care at the primary care level, whereas a separate funding component should be provided based on

^A The HbA1c test is used to evaluate level of glucose control by showing an average of the blood sugar level over three months.

^B The LDL test is used as a marker to evaluate one's cholesterol levels.

the traditional matrix of a hospital's cost effectiveness. We cannot restrict a patient's hospital or healthcare provider choice, to ensure expedient care and preserve patient autonomy. Therefore, measuring preventive care outcomes at the patient level instead of the hospital is more feasible. Secondary outcomes of the PCPs' patients should be measured and reported as part of a cluster's performance regardless of where the patient seeks care.

We will now examine supply-side policies with particular emphasis on economies of scale, innovation, quality, and productivity.

First, we must maximise economies of scale while leveraging diversification for innovation. Akin to utilising the cluster system to achieve this, we must expand this to consolidate care at the primary care level as well as to integrate care between the community and tertiary settings. Family doctors in the private sector form 80% of our primary care⁵ and often function with less accessible radiological and nursing services such as those in the polyclinic. If we are to see seamless care provided throughout the primary care system regardless of affiliation to uphold justice and beneficence, PCNs should be empowered to provide geographically convenient services. Clusters can bridge gaps unfilled by PCNs through existing community nurse posts⁶ for patients who find it more convenient, allowing regular check-ins with nurses for lifestyle counselling, achieving intrinsic gradual lifestyle changes. Clusters can also examine effectiveness of PCN-led services, engage in research, implement pilots in select PCNs before rolling out new schemes and services throughout their PCNs, such as mobile X-rays⁷, mobile counselling, phlebotomy services, and mobile investigations like diabetic retinopathy and foot screening services. There may be considerable overlap in the initial stages of implementation, but when every PCN is

functioning under a cluster, an equilibrium between all cluster-led and PCN-led community services will be reached for optimal resource allocation in a free market, allaying worries of service cannibalisation.

Second, we must improve the quality of care provided in primary care to reduce our overall costs. Expenditures in tertiary care far exceeds that in primary care and having a strong primary care system will reduce overall costs⁸. In primary care where there is less reliance on radiological and laboratory investigations and a stronger emphasis on clinical skills⁹, quality of care depends significantly on knowledge and skills, directly impacting beneficence and non-maleficence. This is usually not a contentious issue in tertiary care where specialists are comfortable operating within their domain of expertise with a wide range of investigations available. Apart from a basic medical qualification and accumulating continuing medical education (CME) points as a proxy for keeping up with medical advancements, doctors with full license registration are free to practise locally in primary care with varying levels of training, experience and qualifications, resulting in patients receiving different levels of care. There is thus a greater need to empower PCPs in the private sector to manage chronic disease, especially with increasing load¹⁰. Doctors gain valuable experience through practice under supervision by a senior, commonly done in the public sector, but this may not always be available in the private sector for an independent clinician. With an increasing trend of junior doctors exiting the system earlier¹¹, quality of care in the private sector will be impacted if sufficient experience has not been gained. More will need to be done to ensure adequate postgraduate training of doctors, in the form of providing every junior doctor the opportunity to work in a polyclinic at the primary care setting,

improving public sector working conditions to retain manpower for training before transiting to the private sector, to making resources accessible to PCPs like tertiary clinic attachments, post-graduate diplomas, CME sessions by PCNs/clusters, sharing of public sector guidelines, to enhance one's clinical practice. Our healthcare talent needs to be nurtured for a healthier population and lower costs in the long run.

Third, we must improve productivity in the healthcare system. Much of a healthcare worker's job revolves around their institution's information technology (IT) system – from viewing medical records before the consult, documenting the consult, to ordering medications and arranging the next appointment. Although transitioning to an IT system can lead to greater efficiency and data sharing among providers on the same system, user time has also increased anecdotally due to inefficient user interface of the newly adopted Epic IT systems¹², alongside security enhancements following security breaches¹³. Documentation time is also more time-consuming than actual patient care¹⁴, especially in an increasingly litigious environment, with the colloquial saying “if it was not documented, it was not done”. Every public healthcare worker should be equipped with a laptop with intranet access, especially with the introduction of Internet surfing separation¹⁵, and to aid staff moving across wards during calls or rounds, instead of booting up a new computer in each ward. Real clinicians should also be involved in IT user interface design to reduce click time, documentation time, and grasp key patient information within the same screen. The impact of such productivity measures would be felt most keenly in the primary care setting where there is only around 10 minutes per consultation and every second matters.

Now, we shall examine demand-side factors. Consumption of healthcare services is not necessarily unwelcome if the right services are consumed, especially if intended to reduce the overall healthcare needs of a population.

First, we must reduce consumption of healthcare services by addressing the root cause of poor health, and that is to focus on preventive care to prevent disease from developing in the first place; and if they do develop, secondary prevention to detect disease early, and tertiary prevention to minimise complications. This needs to be a multipronged approach to address all aspects of preventive health. From empowering PCPs to manage patients competently, to empowering patients to make healthier choices, respecting their autonomy and maximising beneficence. We need to nudge residents to make healthier choices at every level, from their diet and exercise, to reducing unhealthy behaviours such as smoking and alcohol. We must work tirelessly in ensuring these choices are accessible, such as ensuring every food establishment has plain water and a healthier choice meal option; ensuring every estate has exercise facilities and parks; and ensuring every family is educated and empowered to make these choices regardless of socioeconomic background. To create a healthy population involves a whole of government approach, beyond just the Ministry of Health.

Second, we must aim to reduce overconsumption of healthcare services beyond what is medically required. There are two main drivers of overconsumption in today's context – all-encompassing insurance coverage¹⁶ and the rise of defensive medicine¹⁷. Having good insurance is important in keeping healthcare affordable for all, but when coupled with medical advances and the prospect of rising future costs, an all-encompassing insurance

plan absolving patients of any copayment will lead to buffet syndrome and skyrocketing premiums. Insurers are incentivised to provide such plans amidst heavy competition, but regulators aware of the consequences should mandate a degree of copayment at a capped amount to keep expenditures bridled while ensuring fair coverage in the event of catastrophic bills. On the other hand, defensive medicine is a culture that needs to be abhorred. Doing what is medically reasonable instead of what is medically available, should be sufficient to invalidate concerns of medical negligence. Curating a culture is challenging but important if we are to avoid a healthcare system becoming overwhelmed and maintain justice in the system. Investigation-driven practice leads to rising costs through extensive tests and anxiety to patients, bringing harm which far outweigh the benefits if deemed clinically unnecessary but done to reduce medicolegal risks. Instead, clinical assessment should be key to deciding what investigations to perform. Oftentimes, the same patient with the same condition but seen at different settings will receive vastly different levels of investigations. This is largely due to different investigations available at the PCP, Emergency Department, or inpatient setting; but also due to pretest probability, where risk and priorities differ at each setting. For instance, the Emergency Department is responsible for ruling out all dangerous causes for even the simplest of symptoms, leading to more investigations than routinely performed at the outpatient setting. This is why right-siting of care is crucial, through patient education and healthcare training to avoid unnecessary referrals.

Third, this brings us to the point of achieving transdisciplinary care to reduce healthcare services demand. To enhance the right-siting of care, we must ensure patients visit the right setting for care, but also ensure that care within each setting is sufficiently

comprehensive. This means care will need to become transdisciplinary to reduce the need for referrals within the system. Most healthcare teams are now multidisciplinary or interdisciplinary, where various occupations and specialties perform their individual roles at the multidisciplinary level and communicate with one another to achieve common goals at the interdisciplinary level. However, to achieve transdisciplinary care, a higher level of independence must be achieved by each provider. Broadening knowledge and skills beyond one's traditional scope by learning the basics of related fields can reduce referrals, escalation and inefficiency within the system, leading to a less convoluted patient journey, reducing overall healthcare consumption. This goes beyond allied health professionals learning from one another, but also for doctors in assessing the need for allied health referrals. Shared care will therefore become increasingly important, and doctors will need to be empowered to provide care beyond their traditional fields safely. The role of phone consults, memos and a shared electronic record can break boundaries and create new paradigms of specialist care in the community without the need for referrals. A simple version of this is already in action for dermatology at polyclinics, where clinicians can seek a hospital dermatologist's suggested plan within the same visit with just a photo of the patient's skin condition without a referral¹⁸. Feedback can be given to the referring physician in the form of memos for mutual learning and communication, leading to continuous improvement within the system.

In the final analysis, achieving cheap, fast and good healthcare may seem like a pipe dream, but maintaining this balance as Medicine advances is the true challenge. If we focus on the fundamental principles of what makes good healthcare, be meticulous in addressing

supply and demand factors at every level through a whole of government approach, we can achieve better health for our population and ensure that healthcare remains at its roots as it evolves.

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Bibliography

- ¹ Beauvais, B., Kruse, C. S., Fulton, L., Brooks, M., Mileski, M., Lee, K., Ramamonjiarivelo, Z., & Shanmugam, R. (2021). Testing Kissick's Iron Triangle-Structural Equation Modeling Analysis of a Practical Theory. *Healthcare (Basel, Switzerland)*, 9(12), 1753. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8701057/>
- ² Malhotra, R., Bautista, M. A. C., Müller, A. M., Aw, S., Koh, G. C. H., Theng, Y. L., Hoskins, S. J., Wong, C. H., Miao, C., Lim, W. S., Malhotra, C., & Chan, A. (2019). The Aging of a Young Nation: Population Aging in Singapore. *The Gerontologist*, 59(3), 401–410. <https://academic.oup.com/gerontologist/article/59/3/401/5230750>
- ³ Page K. (2012). The four principles: can they be measured and do they predict ethical decision making?. *BMC medical ethics*, 13, 10. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3528420/>
- ⁴ Ikegami N. (2015). Fee-for-service payment - an evil practice that must be stamped out?. *International journal of health policy and management*, 4(2), 57–59. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4322626/>
- ⁵ Fang, Y., Soljak, M., Tan, S. L. L., Peckham, S., Tan, T. L., & Smith, H. E. (2022). General practitioners' views on retaining Singapore's primary care doctors: a cross-sectional survey and qualitative analysis. *BMC primary care*, 23(1), 168. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC9247956>
- ⁶ Xu, Y., Koh, X. H., Chua, Y. T. S., Tan, C. G. I., Aloweni, F. A. B., Yap, B. E. J., Tan, P. C., Chua, X., Lim, Y. K. S., Oh, H. C., Teo, S. H. S., & Lim, S. F. (2022). The impact of community nursing program on healthcare utilization: A program evaluation. *Geriatric nursing (New York, N.Y.)*, 46, 69–79. <https://pubmed.ncbi.nlm.nih.gov/35609434/>
- ⁷ Andersen, P. A. B., Precht, H., McEntee, M. F., & Pedersen, M. R. V. (2023). How to set up a mobile X-ray unit in the community - Implementation initiatives for patient-centred care. *Radiography (London, England : 1995)*, 29 Suppl 1, S148–S151. <https://pubmed.ncbi.nlm.nih.gov/36907795/>
- ⁸ Shi L. (2012). The impact of primary care: a focused review. *Scientifica*, 2012, 432892. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3820521/>

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- ⁹ Cox, C. L., Miller, B. M., Kuhn, I., & Fritz, Z. (2021). Diagnostic uncertainty in primary care: what is known about its communication, and what are the associated ethical issues?. *Family practice*, 38(5), 654–668. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8463813/>
- ¹⁰ Tan N. C. (2014). PAIR UP for primary care excellence: perspectives from a primary healthcare provider in Singapore. *Singapore medical journal*, 55(3), 110–116. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4293979/>
- ¹¹ Loh, R. (2024). Amid long hours and low pay, junior doctors say more among them are breaking their bonds to move to private sector. *TODAY*. <https://www.todayonline.com/features/amid-long-hours-and-low-pay-junior-doctors-say-more-among-them-are-breaking-their-bonds-move-private-sector-2444831>
- ¹² Synapxe. (n.d.). NGEMR. <https://www.synapxe.sg/healthtech/national-programmes/next-generation-electronic-medical-record-ngemr>
- ¹³ Tham, I. (2018). New measures to strengthen public healthcare systems following SingHealth data breach. *The Straits Times*. <https://www.straitstimes.com/singapore/slew-of-new-measures-to-strengthen-public-healthcare-systems-unveiled-following-singhealth>
- ¹⁴ Lim, M. L., & Ang, S. Y. (2019). A time–motion observation study to measure and analyse clinical nursing workload in an acute care hospital in Singapore. *Proceedings of Singapore Healthcare*, 28(2), 124–128. <https://journals.sagepub.com/doi/full/10.1177/2010105819834569>
- ¹⁵ Lee, M. M., Tang, W. E., Smith, H. E., & Tudor Car, L. (2024). Identifying primary care clinicians' preferences for, barriers to, and facilitators of information-seeking in clinical practice in Singapore: a qualitative study. *BMC primary care*, 25(1), 172. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC11102200/>
- ¹⁶ Baicker, K., Mullainathan, S., & Schwartzstein, J. (2015). BEHAVIORAL HAZARD IN HEALTH INSURANCE. *The quarterly journal of economics*, 130(4), 1623–1667. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC9121790/>
- ¹⁷ Vento, S., Cainelli, F., & Vallone, A. (2018). Defensive medicine: It is time to finally slow down an epidemic. *World journal of clinical cases*, 6(11), 406–409. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6163143/>
- ¹⁸ Chow, A., Teo, S. H., Kong, J. W., Lee, S., Heng, Y. K., van Steensel, M., & Smith, H. (2022). Patients' Experiences of Telemedicine for Their Skin Problems: Qualitative Study. *JMIR dermatology*, 5(1), e24956. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC10334905/>