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Title: Allocative Efficiency in Healthcare – A Lofty Goal, or a Distant Reality?

Abstract:
The rising healthcare costs in Singapore is of significant concern, and this is largely due to an ageing population and increased demand for healthcare services. To address these concerns, a comprehensive review of resource allocation within the healthcare system is necessary. Key issues addressed in this essay include the inadequacies of tertiary healthcare capacity, inefficiencies in the healthcare financing model, and overconsumption of healthcare resources.

The SARS-CoV-2 pandemic highlighted gaps in tertiary healthcare, underscoring the need for enhanced primary healthcare. Strengthening primary care can improve overall health outcomes and reduce hospitalizations, alleviating pressure on tertiary services.

Analysing Singapore's healthcare financing model, it is clear that the involvement of private integrated shield plans (IPs) has led to inefficiencies and increased costs. A nationalised insurance model and adjustments to Medishield Life could streamline processes and reduce profit-driven pricing.

The IPs policy structure has also resulted in overconsumption of healthcare services, leading to unnecessary procedures and poor health seeking behaviours. Implementing usage based insurance models, which adjust premiums based on healthy behaviours tracked through wearables, could mitigate these issues and address moral hazard.

Improving primary care, enhancing mental health services, and promoting social well-being are keys to unlocking a more efficient healthcare system. Educational initiatives aimed at empowering citizens to make informed healthcare decisions can further reduce unnecessary medical visits and improve system efficiency. A holistic approach that integrates these strategies can achieve allocative efficiency while adhering to ethical healthcare principles, ultimately leading to a more effective and sustainable healthcare system in Singapore.

Rising healthcare costs have been a growing concern for Singaporeans and the Singapore government alike in recent years. Despite having one of the lowest healthcare expenditures among developed countries at just under 5% of her GDP, they are projected to rise amidst an ageing population and the consequent increased demand for healthcare services[1]. To ensure the sustainability of Singapore's healthcare system, there is a critical need to evaluate some gaps in resource allocations in the healthcare sector. By addressing the inadequacy of tertiary healthcare capacity, leakages in the healthcare financing model and the overconsumption of healthcare resources, healthcare resources will be more efficiently allocated to maximise public benefit.

Inadequacy of tertiary healthcare capacity

During the SARS-CoV-2 outbreak in Singapore, the inability to accommodate the rapid demand for healthcare was apparent, demonstrated by the long wait times in the Emergency departments of various public hospitals, necessitating tertiary healthcare workers to work for weeks on end. Although attrition rates have largely remained stable, more can be done to stem the outflow of healthcare workers from the public sector. Burnout in the healthcare sector remains a huge problem, with self-reported burnout in categories comprising emotional exhaustion, depersonalisation and personal accomplishment at 71.3%[2] as a result of the increase in demand for healthcare services, resulting in a reduction in motivation and productivity. While the SARS-CoV-2 situation has since stabilised from the outbreak, the healthcare workload remain burdened by the need to clear the backlog of cases from the postponement of non-emergency planned hospital care due to prioritisation of SARS-CoV-2 cases[3].

Moreover, these patients tend to present sicker due to the delayed care, leading to increased morbidity and mortality[4].

While the knee-jerk solution may be to inject more tertiary healthcare personnel to meet the mismatch in demand and supply of essential tertiary healthcare, the wiser approach is the strengthening of the primary healthcare system in Singapore. Primary health-oriented care has been shown to result in better health outcomes[5], improved equity in the distribution of healthcare[6], and reduction in the number of hospitalisations and emergency department visits. The emphasis on preventative medicine in primary care also serves to hasten the identification and early management of conditions, treating illnesses before they require specialist care[6].

Combining long-term follow-up and building of rapport over the years primary healthcare doctors are well-positioned to manage their patients holistically[7], addressing both their acute presentations as well as managing their chronic diseases. Strong doctor-patient relationships also facilitate the promotion of health-seeking behaviours such as regular health screenings and vaccinations. Hence, the long-term solution would be to build up a robust primary healthcare sector, thereby reducing the demand for essential tertiary healthcare services.

Leakages in the healthcare financing model

Singapore's healthcare financing model comprises four levels: Subsidies, Medisave, Medishield and Medifund. Healthcare costs incurred by Singaporean citizens are

subsidised by the government with essential healthcare services being even more subsidised. The remaining costs are then covered by both **Medishield Life and Medisave** of an individual. Medisave is a compulsory Central Provident Fund (CPF) health savings scheme, with its use subjected to strict guidelines[8]. Medishield Life is a mandatory basic health insurance scheme underwritten by CPF, aiming to defray the cost of larger healthcare bills[9]. Individuals are able to purchase **integrated shield plans (IPs)** from private insurers, which widens the healthcare coverage beyond what Medishield Life offers, and allow individuals to opt for private hospital treatments. Additionally, **Riders** can be purchased to cover the cost of co-payments. Premiums for these insurance plans can be paid for by Medisave. Finally, **Medifund** is a public endowment fund, which serves as a safety net for Singaporeans with outstanding payments despite Medishield Life and Medisave.

Having both CPF and private IP providers as key players in the medical insurance markets has undoubtedly led to increased healthcare costs. Ultimately, IP providers are profit-maximising entities who will ensure that the profit generated from insurance premiums exceed the projected insurance payouts. Moreover, insurance agents receive a commission proportional to the price of the IP sold with an additional yearly service fee. There are thus “leakages” of the premiums paid to IP providers’ shareholders and agents which do not directly contribute to a patient’s medical care.

Currently, there are about 70% of Medishield Life policyholders being additionally covered by IPs[10], of which over 57% of them chose to stay in subsidised public B2/C-class wards during their hospitalisation[11] despite an option for private hospital care.

This reflects an overestimation of the need for additional medical insurance in a significant population of Singaporeans.

To address the address the leakages in the premium pricings, nationalisation of healthcare insurance can be considered. This eliminates the flawed premium pricing to account for profit-maximisation by private providers and streamlines the process of policy claims, service efforts and actuarial work. A tiered coverage structure can also be added to Medishield Life, which provides policyholders with the option of choosing a higher level of insurance coverage should they require them.

Overconsumption of healthcare resources

In July 2024, Singapore's Health Minister termed the overconsumption of healthcare services a "buffet syndrome". The extensive coverage of insurance has perversely resulted in overconsumption of "unnecessary" medical investigations and procedures, as well as poorer health-seeking behaviours such as poorer dietary habits and reduced exercise frequency[12]. Co-payment, one of the founding principles of Singapore's healthcare system, was instituted to emphasise personal responsibility for health and discourage the overconsumption of healthcare resources[13]. The resulting moral hazard of these individuals' health-seeking behaviour has to be borne by the wider society.

A comprehensive solution that aims to reduce the cost of healthcare premiums, encourage policyholders to seek timely treatment, and internalise the problem of moral hazard borrows the concept of usage-based insurance (UBI) programmes[14] from automobile insurance. Insurance premiums are influenced by how well a policyholder drives, monitored by a device attached to the car. Similarly, healthcare insurance premiums could have a modifiable price component determined by the lifestyles of policyholders. Indicators of a healthy lifestyle such as "at least 150 minutes of moderate-intensity exercise a week"[15] recommended by MOH could be used to decide whether a policyholder pays above, below or at the median premium pricing. Insurance providers can leverage on the use of wearable to track these indicators, thereby closing the asymmetric information gap and reducing the problem of adverse selection. Additionally, policyholders are financially incentivised to adopt more health-seeking behaviours, thereby internalising the moral hazard. While this model has very concerns regarding privacy and accuracy of tracked data, the potential benefits arguably outweigh the drawbacks.

A discussion on resource allocation in Singapore's healthcare system will not be complete without setting out some undergirding principles to guide decision making at both a policy-making level as well as a personal, individual level. While there are many yardsticks of measurement for healthcare outcomes, the World Health Organisation (WHO) defines health as "a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity"[16]. Two principles among others which underpins the Constitution of the WHO are of particular relevance to this essay's discussion. Firstly, "the extension to all peoples of the benefits of medical, psychological and related knowledge is essential to the fullest attainment of health"

and secondly, “informed opinion and active co-operation on the part of the public are of the utmost importance in the improvement of the health of the people.”[17]

Three P’illars of Healthcare: Preventive, Primary, Personalised care

As an adage goes, “prevention is better than cure.” The importance of early disease prevention cannot be understated, as there are both personal and societal benefits. On an individual level, the financial and mental turmoil of a diseased state can be extremely taxing. On a societal level, a reduction in incidences of full-blown chronic disease course reduces overall healthcare expenditure on treatment. For example, since the identification of “pre-diabetes” as a state of disease evolution in diabetes mellitus, the march toward an uncontrolled disease state with multiple complications can be slowed. Movements incentivising healthy behaviour such as the National Steps Challenge have also encouraged Singaporeans to engage in activities such as walks and runs, which are in turn beneficial in health for the long run.

Primary healthcare is also a critical prong in the care of the population by ensuring continuity of care, patient centredness and care coordination[17]. As nodes of healthcare in the community, general practitioners and polyclinic family physicians are well-placed to advance holistic patient care, encouraging behavioural change and advocate for disease prevention. Where traditional hospitalisation insurances perversely incentivises the populace to seek tertiary healthcare, an intentional movement to champion primary healthcare in Singapore has the potential to lower overall healthcare costs and improve healthcare access. The Healthier SG initiative by the Singapore government is certainly a step in the right direction, with its key features including the

“fostering strong doctor-patient relationship”, “shifting towards preventive care” and “community support”[18]. However, there remains room for greater thrust in these efforts with regards to personalised healthcare.

One of the greatest drivers of personalised healthcare in the world is the use of artificial intelligence (AI). On top of the current pilot projects championing administrative applications such as clerking a clinical consult to conserve clinician’s time[19], there remains room for greater integration of AI in the healthcare arena. Some applications of AI being explored include advancements in cancer prediction, prognosis and treatment selection[20]. With possibilities such as targeted gene therapy on the horizon, it is of utmost importance to treat the patient, and not the disease.

Mental well-being

Mental illnesses have, until recently, been an under-discussed and often highly stigmatized aspect of health. In Singapore’s context, reasons identified by prior research for such stigmas include cultural issues such as persons living with mental illnesses (PMIs) bringing shame upon the family, being associated with demonic possession and being a danger to society. However, with the lifetime prevalence of a mental health disorder being 13.9%, it is clear that there is a need to increase Singapore’s focus on mental health and literacy.

The current data also points to an increased risk of physical health problems for PMIs. Mood and psychotic disorders have been linked with cardiovascular disorders, and

severe mental illness has been associated with a 13-30 year shortened life expectancy, with about 60% of cases due to associated physical illnesses. Potential reasons for such associations could be due to the reduced access of primary and tertiary care received by PMIs, leading to poor control of their underlying physical diseases.

It is thus clear that with the reduction of prevalence of mental illnesses, it potentiates the possibility that the prevalence of physical illnesses would also reduce. The government thus ought to increase advocacy and education about mental wellness among its citizenry, and encourage PMIs to seek early help and treatment, so as to reduce the morbidity and mortality of not just the mental illness itself, but also its associated diseases, resulting in an increase in its marginal social benefit.

Social well-being

Social well-being is yet another aspect of health that is often neglected and overlooked. While there are many definitions for social well-being, the recurrent idea of a need to form close and meaningful relationships to reach a sense of security of fulfilment is clear. The absence of social well-being, however, predisposes individuals to potentially serious consequences.

Social isolation is a state in which the individual lacks a sense of belonging socially, lacks engagement with others, has a minimal number of social contacts, and they are deficient in fulfilling and quality relationships. While there are clear impacts on social health, there are also spill-over effects into mental as well as physical health. Social

Commented [u1]: https://www.ncbi.nlm.nih.gov/books/NBK537897/#:~:text=Social%20isolation%3A%20A%20state%20in,9

isolation is often associated with loneliness, which in turn could lead to various psychiatric disorders like depression and personality disorders. In addition, social isolation also causes increased risk of neglect in management of an individual's physical health. For example, there are established associations between social isolation and falls, which is even more worrisome if they are undiscovered.

Commented [u2]: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4225959/

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Medical education of the public

As mentioned by the WHO, a medically educated citizenry is a key component of attaining a healthier population. With an active effort to educate the populace, Singaporeans will be more critical in decision making with regards to healthcare choices. While conventional publicity methods like roadshows and fairs may work, the Government can also consider including courses under SkillsFuture Singapore to encourage upskilling. For example, learning to triage family members as a first point of contact will reduce the incidence of unnecessary and wasteful visits to the A&E when the condition can be managed by a primary care physician. Other potential courses that can be considered are ones that encourage individuals to promote well-being not just in the physical sense, but also in the mental and social aspects, in line with WHO's definition of health.

In conclusion, achieving allocative efficiency in healthcare is one that requires multiple solutions from different approaches. We must acknowledge that although the provision of healthcare improves the quality of life for those suffering from illnesses, it delays what is ultimately inevitable - death, and is thus something that will never make sense if analysed only through the lenses of a financial model. It is also vital that in the pursuit

of allocative efficiency, we do not compromise on the ethical pillars of healthcare - to do good, to do no harm, to allow for patient's autonomy and to allocate resources justly.

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