

Approach to Indian Health Sector Reform

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Healthcare system is complex, dynamic and adaptive.¹ It does not seem to follow deterministic pathways and degree of control is low. Healthcare system also has a discernable trajectory with a speed and a direction which are a result of many forces. Given the many stabilizing feedback forces (loops), it may seem hard to alter the trajectory of a healthcare system from the default end state. However, a careful examination of forces involved may provide a way to alter the trajectory of the system so that it is able to move towards a more desired end state. Since the notion of systems thinking first originated in Physics, continuing with the use of language from that field, these forces may be characterized as:

- **Atomic forces** (high power required, potential for high impact in near term) are very powerful and focused and provide the system with its core strength. Breaking these atomic and subatomic bonds is possible and sometimes essential, but requires an equally powerful force to do so. Example: Increasing government spending on health from 1 per cent to 2.5 per cent of GDP.

¹ While the System Dynamics was born at MIT Sloan in the 1950s and developed by Prof. Emeritus Jay W. Forrester, this article lays down a practitioner's perspective of change levers in a dynamic adaptive system.

- **Gravitational forces** (sustained effort resulting in gradual change over time) are also strong but diffused and draw strength from the shared knowledge, attitudes, and beliefs of participants in the system. These forces may sometimes become essential to alter, but require a great deal of patience and perseverance to succeed. Example: Improving performance of human resources in health through mentoring and training.
- **Magnetic forces** (feasible, short-term small impact with potential for a large impact in long term) have the strength and focus that lies somewhere between atomic and gravitational forces. These forces draw their power not as much from their intrinsic strength but their ability to trigger reinforcing feedback loops which over time gather momentum and build sufficient power to break atomic bonds and counter gravitational forces. Example: Set up a strong MTAB (Medical technology Assessment Board) to improve efficiency of healthcare spending

Reformers often fall into the trap of focusing their attention exclusively on altering atomic or gravitational forces because they seem to be the most 'logical' and visible pathways to desired outcomes, but may often be unsuccessful because of the magnitude of the effort needed in the short and medium term. Magnetic forces, on the other hand, may reveal a near-term path forward for reform, especially when the system seems 'stuck'. Magnetic forces are harder to identify, operate

in oblique ways, and require a deep understanding of the inherent characteristics, structure and dynamics of the whole system. However, a careful study may reveal them and they could trigger powerful long-term waves of change.

The Indian healthcare sector is not moving along a trajectory that leads to achieving the desired goals². Even the best state level systems are stuck in a low-quality equilibrium. The arguments most often advanced on why this is so, are that the poor are not able to afford healthcare, and that there is a shortage of human and financial resources available for health—which requires atomic/gravitational forces and are hard to change in short term.

While, there is undoubtedly a great deal of truth to these arguments, even if more resources were added to health it is not clear that it would lead to the desired outcomes. Many countries, such as Sri Lanka, Ghana, and Thailand, with comparable or lower health spending, have better health outcomes than India³ and even within India it is not always the case that the states with the highest per-capita health expenditures necessarily have the best outcomes⁴. Altering the very structure and dynamics of the system, and not merely the amounts of money involved, is key to the achievement of the desired health system goals. To do this, it is critical to understand the characteristics of the health system within India

² Desired goals of a good health system is good health outcomes, equity, financial protection and responsiveness as described by Roberts, Reich, Berman and Hsiao <https://global.oup.com/academic/product/getting-health-reform-right-9780195371505?cc=in&lang=en&>

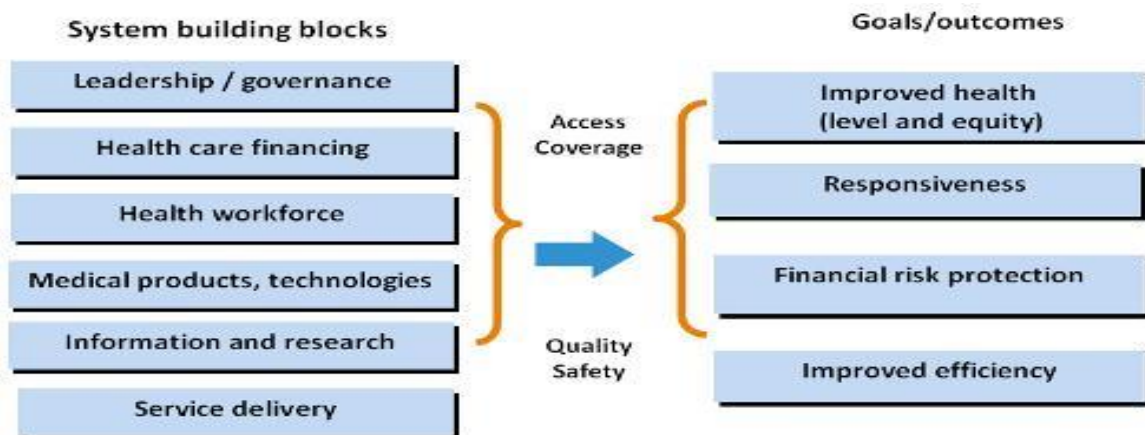
³ <http://www.thehindu.com/todays-paper/tp-opinion/framing-the-right-prescription/article17547852.ece>

⁴ <https://www.brookings.edu/events/book-launch-india-transformed-25-years-of-economic-reforms/>

and to explore all the atomic, gravitational, and magnetic forces that govern its behaviour, both within and outside the traditional boundaries of health systems. In the following sections, we address these and through this we hope to start a debate on ways to initiate a health reform in India.

Healthcare system and its inherent characteristics

The healthcare system can be divided into component subsystems. Following WHO, the goals and subsystems of healthcare are traditionally specified as follows⁵:



Source: WHO

However, these traditional boundaries of the healthcare system could be expanded to include other systems such as agriculture, food systems, roads, sanitation, clean water, financial system, telecom and education (typical social determinants of health and more). Each of these systems and

⁵ http://www.wpro.who.int/health_services/health_systems_framework/en/

subsystems interact with each other and within each there are various forces at play. Creativity needs to be applied both to determine the boundary of the system as well as to identify tractable subsystems that the reformer-designer chooses to work with, to alter the direction and speed with which the system is naturally moving towards a desired one.

Within the traditional boundaries of healthcare system, there are three key inherent and unchanging characteristics⁶ relating to healthcare system that any systems design will need to consider and are the key reasons why the system does not self-organize using market forces⁷:

- **Variability:** A high degree of variability in healthcare expenditures both across time for the same individual and between different individuals. Some variability is driven by random factors, but a lot of it can be traced back to genetic and environmental influences that individuals are subjected to, which are often out of their control.
- **Gaps in understanding:** Large and unbridgeable gaps in the patients' understanding of their own health, between doctors and patients on understanding of health issues, and the gaps in understanding of even well-trained doctors⁸. The gap in understanding is compounded by the nature of need

⁶ as described by Arrow, Dixon and Hsiao

https://web.stanford.edu/~jay/health_class/Readings/Lecture01/arrow.pdf

⁷ http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2649347

⁸ <http://www.telegraph.co.uk/news/health/10501959/Half-of-GPs-dont-refer-cancer-patients-urgently-first-league-tables-show.html>

in acute care situations and the resulting power imbalance between the patient and the provider.

- **Distorted perceptions and behaviors:** A tendency for all human beings to be less mindful than they should be to the possibility of adverse outcomes in the future.

In poorly designed healthcare systems, in both rich and poor populations, these three inalienable characteristics tend to produce high levels of waste, high levels of impoverishment, poor wellness levels, and low demand (and therefore supply) for preventive and primary care combined with high demand (and therefore supply) of hospital based care. Based on experience of most countries, the only way to address the issue of variability is to ensure that health expenditures are pooled, and directed in a deliberate and forceful way to address the other two issues (gaps in understanding and distorted perceptions/behaviours). The challenge that most health system designers grapple with is how best to accomplish these goals given the realities that they find on the ground.

Trajectory

For most Indian states, the best possible 'natural' (default) end-state is potentially likely to be the one in which state of Kerala finds itself. While Kerala has had success in addressing the infant and maternal health challenges, it is not clear that it has

an overall robust health system⁹. This likely best possible ‘natural’ (default) end state is very different from desired end state for healthcare systems—overall good health outcomes with reduced aggregate disease burden and low morbidity, no households falling into poverty because of health expenditures¹⁰ and high level of patient satisfaction across key parameters.

Most countries have achieved the desired end state for healthcare through multiple pathways based on their social, economic and healthcare legacy context. India will have to work towards its own pathway given the local realities, and this will most likely vary across states. Health systems in states such as Bihar and Uttar Pradesh will need to accelerate their progress on their infant and maternal death rates, and all states, including Kerala, will need to alter their direction to increase the likelihood of the desired end state being realized. This will need work across multiple health subsystems.

In the following paragraphs, as an illustration, we discuss in some detail, one subsystem of healthcare financing and explore possible pathways for reform.

⁹ Kerala is at an adequate level of total health expenditure (6.5% of GSDP), low infant and maternal death rates driven by social determinants of health and a largely private healthcare service delivery architecture⁹; C-Section rates in excess of 30% in both the public and private sectors; a very high burden of suicide mortality, mental illness, blood pressure, cholesterol, and diabetes; and over 85% of expenditure being incurred by patients when they seek care, from their own pockets. Source: HMIS, <http://www.thehindu.com/news/national/kerala/kerala-achieves-single-digit-imr/article17388542.ece>.

¹⁰ In China, 42% of those falling into poverty are because of health expenditure; Source: Based on survey done by The State Council Leading Group Office of Poverty Alleviation and Development in 2015, China

Healthcare Financing: Levers for change

At its most basic, the health financing subsystem may further be subdivided into three categories of health expenditures, which would include expenditures which are:

- High-cost, low-frequency
- Low-cost, high-frequency
- Unnecessary or wasteful

Currently, these expenditures are largely¹¹ being financed by the government, by the people themselves, or may even not be incurred because they are out of reach for most people as care is simply not available nearby or it is unaffordable.

High-Cost, Low-Frequency Expenditures

High-cost, low-frequency expenditures on issues such as cancer, C-Sections, and bypass surgery, are the result of the inherent variability associated with health status of all human beings. The only way to manage the variability is by pooling small contributions from each individual and making the pool available to pay for these expenditures. Dealing with the variability through pooling is critical to protect households from financial risks associated with severe health shocks¹². It also

¹¹ Employer contributions to health through CHGS, ESIS and voluntary insurance is small share (<5%) of the overall healthcare expenditure of the country

¹² [http://www.thelancet.com/journals/lancet/article/PIIS0140-6736\(10\)61894-6/abstract](http://www.thelancet.com/journals/lancet/article/PIIS0140-6736(10)61894-6/abstract)

protects households from the financial barriers of upfront fees at the point of seeking care.

Pooling can be accomplished either by the government exercising some form of mandate such as income tax and compulsory health-related contributions, or by allowing people to voluntarily purchase some form of insurance. Most countries are a mix of all three mechanisms of pooling. Historically, India has not been able to apply these levers, with out-of-pocket health expenditures continuing to be greater than 60 per cent of total health expenditure over the last 20 years. Below, we explore the three mechanisms and opportunities they present for India.

Tax financed pooling as the dominant source is common in many countries e.g. UK, Spain, Canada. In the Indian context, a continuing low-tax-to-GDP ratio at 16.6 per cent¹³ (gravitational force); and low willingness of central and state governments to allocate a higher proportion from their tax pools for healthcare¹⁴ (atomic force) currently makes it impossible to achieve all the necessary pooling through taxation alone. The low-tax-to-GDP ratio has a diffused causality and will change only very slowly. For the second aspect (tax allocation to healthcare), while also hard to change, a sufficiently powerful reformer could find a way to break through the political reluctance as those who were driving NREGA and Food Security

¹³ India tax to GDP ratio in 2015-2016 was <10%; most developed countries are at tax to GDP ratio of 30%+ <http://indiabudget.nic.in/es2015-16/echapvol1-07.pdf>; <https://ourworldindata.org/taxation/>

¹⁴ Central budget allocation to health is ~3.8%, most state budget allocation to health is <5%; Other countries typically allocate 8-10% of budget to healthcare

Act were able to do. While this will not fully address the challenge of pooling, it could go a long way in addressing many health system challenges.

While it is important to reduce out-of-pocket health spending and increase pooling, it is also important to use the pooled funds effectively. The small, fragmented and underfunded government health insurance schemes which represent between 0.01 per cent to 0.02 per cent of the GDP of any state, unsurprisingly, have not had any discernable impact on the extent of out-of-pocket expenditure or level of impoverishment, and at this level of funding, nor are they likely to in the future. However, these schemes, despite their low level of funding, could be offered to every citizen of the state, even with a minimal tertiary-care-focused basic benefits package, like the Tamil Nadu KKT scheme¹⁵, with a strong health informatics strategy underpinning it, along with a wide range of top-up products available for purchase by those who can afford to pay. While most states in India have some schemes, both the effectiveness (and design) of the schemes as well as the coverage needs to be strengthened substantially. A well-functioning purchasing scheme would be a first step in engaging the entire population and all the providers in the mechanism of pooling and strategic purchasing with a focus on tracking quality and outcomes. This could be a magnetic force that has good political and popular support, and costs very little. It would be self-reinforcing through several feedback loops, and would include:

¹⁵ <https://www.cmchistn.com/>

- The inclusion of standard protocols and pricing for every procedure that is determined by MTAB (Medical Technology Assessment Board¹⁶) and made visible to the entire population.
- The possibility of risk-based primary care¹⁷ (being offered through public and privately run authorized health and wellness centers).
- As the confidence and familiarity of people with insurance grows, the (atomic) resistance to mandatory purchase of one or more comprehensive ‘top-up’ packages would reduce.
- Strong contracting and other mechanisms to drive accountability for providers, e.g. criteria for minimum and improving standards for quality and outcomes over time.
- Payment methods moving away from fee for service/line item budget to paying for output and outcome.
- The introduction of electronic health records and health management systems which allow tracking of both the patient’s wellness as well as the provider’s performance.

As the benefits of the provision of good and responsive government organized healthcare grows, the political attractiveness of allocating a higher proportion of resources to health would also grow, along with the willingness to pay taxes

¹⁶ A Health Technology Assessment (HTA) Body being set up within Department of Health Research (DHR) in India <http://www.dhr.gov.in/mtab>

¹⁷ Simple algorithms (e.g. Cambridge Risk Score <https://www.ncbi.nlm.nih.gov/pubmed/18515811>) could be developed to identify people at high risk for hypertension, diabetes and many other life style diseases and could be targeted with primary care benefits package

to pay for these services—creating a positive feedback loop. National Health Protection Mission (NHPM), under Ayushman Bharat, is a good platform to start building some of the features mentioned over time, and to eventually make them available to all citizens.

Many countries have mandated social health insurance as the dominant source of pooling, e.g. Germany, South Korea and Japan. Most countries with dominant social health insurance have expanded it through the formal sector by mandated employer and employee contribution. Collecting mandatory contributions from all individuals for healthcare is a strong atomic force which is very hard to change. Switzerland could get it done only after much national debate¹⁸ and is now the norm in most countries but the United States is still struggling to ensure this, despite having the enabling legislation in place¹⁹. The Employee State Insurance Scheme is already a long-established scheme in India—a mandated social health insurance which covers only ‘blue-collar’ workers and at 50 per cent payout (vs. 85 per cent for Obamacare). It has one of the lowest payout ratio for such schemes globally, thus denying much of the benefit of the scheme to the very people who contribute to it. Improving the effective benefits of the scheme by implementing strategic purchasing from the private and public providers and subsequently expanding the coverage of ESI is another magnetic force that has the potential to alter the speed and direction of the entire health sector.

¹⁸ <https://www.eda.admin.ch/missions/mission-onu-geneve/en/home/manual-regime-privileges-and-immunities/introduction/manual-insurance/manual-insurance.html>

¹⁹ <https://www.healthcare.gov/fees/fee-for-not-being-covered/>

Due to the phenomena of distorted perception and behaviours; and gap in understanding that are common to all human beings, not many systems have been able to get a sufficiently large number of people to purchase health insurance voluntarily. India has a small but growing voluntary insurance market. Given the macro constraints on India (high levels of informality) which slow down the potential to provide healthcare coverage through taxation or social health insurance alone, it would be critical to leverage the capacity in the commercial insurance sector—to increase pooling. A strong regulatory framework is required to help develop the voluntary health insurance in the individual market (e.g. Obamacare support to individual health insurance market).

Low-Cost, High Frequency Expenditures

Low-cost, high-frequency expenditures are those that need to be undertaken for common illnesses that occur periodically or those for the prevention and early treatment of conditions such as chronic kidney disease, cervical cancer, pre-eclampsia, suicide mortality, and damage due to glaucoma. These represent small expenditures that are affordable to most people but are often not incurred by individuals either because of the twin phenomena of distorted perception and behaviour, and a gap in understanding about what they need, or because of gaps in health services delivery or access to basic financial services. Changing these preferences of individuals, which are akin to a gravitational force, through improved health

education could prove to be extremely difficult and time-consuming²⁰, if not impossible. Delay in seeking care and diagnosis has also been found to be a key barrier to care and reduction of India's overall disease burden. For tuberculosis²¹, a study conducted in Mumbai found that the average delay in the first care-seeking for TB patients was 24 days, mostly due to the patient's assessments of their own symptoms.

Many successful health systems, with United Kingdom being an important example, have sought to address this issue through the tool of prepayment in which significant sums additional to those required for pooling to prevent catastrophic health expenditure, are made available to the health system to fully provide comprehensive primary care. The amounts for such care are small at an individual level, and have a highly beneficial impact on the health, well-being, and productivity of populations. However, given their frequency of consumption, in terms of total cost, it can amount to greater than 50 per cent of total health expenditures²². Given the low level of public financing for health, this makes such prepayment strategies to support free and universal primary care unaffordable for most, if not all, state governments of India.

Even without resources available for a comprehensive primary care package, there are a number of magnetic forces that may be deployed which can alter the trajectory of the health

²⁰ <https://academic.oup.com/ije/article/30/2/201/713761/Exporting-failure-Coronary-heart-disease-and>

²¹ <http://journals.plos.org/plosone/article?id=10.1371/journal.pone.0152287>

²² http://planningcommission.nic.in/reports/genrep/rep_uhc0812.pdf, pages 18, 108

system. Adding a highly targeted risk-based primary care²³ benefits package becomes possible on top of even a thinly financed Universal Health Insurance and Employee State Insurance Schemes, if there are strong electronic health records and analytics deployed on top of them²⁴. As more money becomes available to the health system, these services can easily be expanded. However, in the interim, several targeted low-cost campaigns can be launched. China followed this approach by enrolling all population into a thin catastrophic coverage and then expanding the benefits to an outpatient package as more money became available²⁵.

There is already a great deal of work in progress to expand access to basic financial services, and even airline access to remote airports²⁶, but the same cannot be said for primary healthcare services. The country needs over 300,000 health-and-wellness-centers to provide comprehensive primary care of the type described earlier. The public sector may not have the financial and supervisory capacity to build and manage all the needed centers. The Ministry of Health and Family Welfare can use some of the financial resources and knowledge, borrowing ideas from the ministry of civil aviation, to incentivize and support the creation of such centers by the private sector, in addition to those being built by the public sector. The Nikshay

²³ Simple algorithms (e.g. Cambridge Risk Score <https://www.ncbi.nlm.nih.gov/pubmed/18515811>) could be developed to identify people at high risk for hypertension, diabetes and many other life style diseases requiring primary care and then could be targeted with primary care benefits package

²⁴ <https://academic.oup.com/fampra/article-lookup/doi/10.1093/fampra/cmn024>

²⁵ Liang L. and Langenbrunner J, World Bank UNICO series, 2013, Washington DC

²⁶ http://www.pmindia.gov.in/en/news_updates/pm-launches-udan-regional-connectivity-scheme-for-civil-aviation-from-shimla/

scheme of the Ministry of Health and Family Welfare for the management of tuberculosis, which provides access to free advanced diagnostics and TB medicines to registered private doctors²⁷, offer some valuable lessons on how it may be possible to unleash this magnetic force in healthcare sector, by leveraging the vast private sector for overall population health outcomes.

However, even prepayment and pooling may not be sufficient to overcome patients' distorted perceptions. This may require gravitational forces of population awareness and behavioural nudges to mitigate the distorted preferences.

Unnecessary Expenditures

In high and low frequency expenditures, driven by a gap in understanding, there is a considerable degree of wasted expenditure. Few examples are: The high consumption of cough syrups²⁸ across the entire country, the high C-Section rates in states such as Kerala, even in the public sector, the large variation in prices charged by different providers for identical services, and the high concentration of hospitals in large cities while the smaller towns struggle to offer basic emergency care services.

Health systems around the world have grappled with this problem and all successful health systems even in highly

²⁷ <http://pib.nic.in/newsite/PrintRelease.aspx?relid=159932>

²⁸ <http://timesofindia.indiatimes.com/business/india-business/Cough-and-cold-drugs-still-best-sellers/articleshow/4067309.cms>

advanced market-based economies such as Germany, Japan, and Switzerland, have found a way to tightly regulate the prices (atomic force), volume and the nature of all health services offered. In India, such a change, while entirely feasible, particularly given our shared history of 'command and control' and the 'license-permit-raj', would be hard to implement - given the atomic nature of the forces arrayed against such a move.

Within India, the creation of the Medical Technology Assessment Board (MTAB), a powerful feedback loop, within the Directorate of Health Research²⁹ and the gradual adoption of its guidelines by Insurance Regulatory and Development Authority (IRDAI), Employees' State Insurance Scheme (ESIS), National Health Protection Mission (NHPM) and state schemes could start to exert a magnetic influence on the trajectory of the entire health system on this dimension. While this is not easy to do, public sectors in states such as Kerala and Tamil Nadu have been able to set reasonable price-quality benchmarks that are exerting a degree of beneficial influence on the entire private sector.

A strong information technology (IT) system, coupled with a strong purchaser can be a magnetic force in preventing unnecessary care and managing utilization. Taiwan³⁰ has used its National Health Insurance powerful IT to provide near real-time information on expenditures and utilization to prevent

²⁹ <http://www.dhr.gov.in/mtab>

³⁰ <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3960712/>

unnecessary expenditure. There is also a panel review system of medical records to keep healthcare costs down, whilst maintaining the quality of healthcare.

As we look at the healthcare system in India, the problems may seem insurmountable, complex, and intractable. The general tendency is to focus on the atomic and gravitational forces which either take too long or face enormous resistance—so the system seems ‘stuck’. Identifying a few magnetic forces may provide a near-term path forward close to the desired state. These magnetic forces are often not obvious, however a careful study of the key subsystems, feedback loops, flows, and boundaries may reveal them. It is critical to build institutional capacity for careful research on health systems to identify the various forces, to monitor and evaluate impact of any action, and to provide an empirical feedback loop to its design.

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