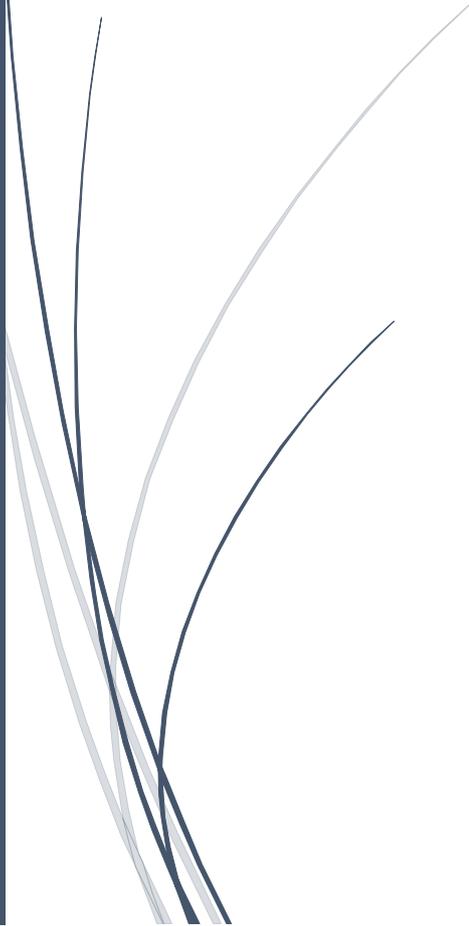




A Viable Universal Healthcare Model



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1. Introduction

Growth Matters:

India has achieved remarkable growth after reforms in the last 25 years driving a quarter of a billion people out of poverty. The health of Indians has been steadily improving in this period adding 10 years to the average life expectancy. Maternal and infant mortality rates were reduced by 70% and 50% respectively. India's GDP has grown seven-fold during this period. Income increases have contributed immensely in improving health outcomes. A billion-plus nation is rising to become a global super power.

However critics pointed out that several health indicators of India remained worse than those of many poorer sub-Saharan African countries despite India's higher per capita income and growth. On the other hand, through rigorous examination, many of these discrepancies were later shown to be the result of flawed analyses.¹ Even with these considerations, many agree that there is an enormous potential for improvement in our health given the wealth we have generated. GDP growth did help hugely in improving the health but not as much as we needed. For example, the compliance rate for DPT vaccine was 70% in 1990, but after 22 years of post-liberalisation development it stayed at 72% in 2012, being worse than many poorer sub-Saharan countries.² This re-emphasises the fact that economic growth, though is the very foundation for human development, cannot by itself make the population healthier. **The 'invisible hand' can make us wealthier but not necessarily as much healthier.** Switching the direction of causality, an unhealthier population can become the Achilles heel of our growth engine. Infectious diseases, malnutrition, accidents and maternity related problems still remain the main causes of mortality and morbidity in India affecting mainly the young and working population, the very foundation of our growth machine. The threat of increasing antibiotic resistance can further worsen the burden of infectious diseases in the near future. Chronic diseases such as asthma, hypertension, diabetes, cardiovascular problems and cancer have been rising to make up the bulk of the disease burden lately³. Most of these diseases are quintessentially preventable and treatable. And now with 2.1 trillion dollars of GDP per year, thanks to the growth, India can easily afford to do so! It just needs smart usage of money whether by the Governments or by the individuals. **It just needs building up intelligent systems whether in the private or public sectors using the best available evidence and experience.** A blue print of some such systems has been described in this document.

2. State of affairs and Root Cause Analysis

State of affairs:

The gap between our potential and the outcomes is very gross in the health sector. Certain examples are outlined though this is by no means a comprehensive list.

Health Profile:

1. 37% of all deaths are caused by mostly preventable communicable diseases, maternal, perinatal and nutritional diseases.
2. 1.6 million under-five year old children die every year
3. 10 million malaria infections happen every year
4. 2 million new cases Tuberculosis are diagnosed every year
5. Only half of the one year old children are being fully immunised
6. Only half of the births are attended by skilled staff

Expenditure Profile:

1. Total expenditure on health stays at 3.9 % of GDP and Government expenditure is 1.2% of the GDP.
2. Out of pocket (OOP) expenditure for health alone forced more than 37 million people below the \$1 poverty line in 1999–2000.⁴
3. OOP drives 3.5% of the population below the poverty line with 5% households suffering catastrophic health expenditures.⁵
4. Drugs constitute the main share (72%) of total OOP payments. This share reaches 82% for outpatient care, compared with 42% for inpatient care.⁵

Inequity: From Bihar to Kerala, from urban to rural, huge variation in all the health outcomes and quality of healthcare facilities is very gross.

Primary care: Absence of qualified primary care physicians and facilities in the rural areas either in the public sector or private sector is the gross anomaly in India.⁶ In the private sector, unqualified people cater the primary care needs. Though the reason can be claimed to be on the supply side due to lack of training for general practitioners (lack of such a specialty in the formal medical postgraduate training itself) and low number of doctors per population, the basic problem lies on the demand side; general practice in rural areas is neither financially viable nor associated with pride, rural areas are not attractive for living (mostly agriculture dependent areas with no obvious potential for future economic development) and public's expectations from a general practitioner are limited.

Private health industry – growth: Private healthcare is catering to 70%-80% of the health needs of India. The growth rate of private health industry has been around 15% and projected to be 21% in the future. Unfortunately this growth has been celebrated without analysing how much value it is adding for the money spent. Private healthcare lacks incentive for preventive care. The standards in the private care have been extremely variable. Different tiers of private care emerged with different standards based on the affordability of the consumer. However the standards even in the most expensive hospitals have been uncertain with widespread prevalence of over diagnosis and over treatment.^{7,8} Information asymmetry i.e. differential information between the seller (health care provider) and the consumer (patient) leads to a failure of effective functioning of the free markets in health care services. In the absence of robust institutions to protect the citizens and the lack of a culture of accountability, added to this information asymmetry, the whole private health sector in India is dominantly placed to increase the costs of healthcare and even to work against the best interests of the citizen. The very idea of allowing illnesses to develop, spending excessively to treat them and then celebrating that raise in the GDP is the absurdity in the prevalent thinking.

Root causes of poor health outcomes:

The proximate causes of poor health outcomes are low incomes, low levels of education inflating the effects of information asymmetry in the health market, low professionalism, corruption, lack of deterrence for malpractice, lack of a requisite number of professionals, poor quality of training, lack of political will, poor infrastructure, poor transport facilities, poor sanitation, pollution, lack of health education, poor accountability, lack of monitoring and so forth. However the ultimate causes of the major deficiencies in Indian healthcare quality were by and large the results of

- a) lack of robust institutions to maintain rule of law, quality and professionalism
- b) slow and asymmetric economic growth due to inadequate functioning of free markets because of monopolies of both the Govt. (license raj and colonial raj) and private enterprise (collusion of corporates with the Govt. office bearers)
- c) Inadequate functioning of democracy (poor and unenlightened public participation) leading to lack of political will in increasing the quality of citizens' health

Though these root causes are outside the domain of any healthcare plans, certain institutions (e.g. accountability mechanisms) and certain specific economic models (e.g. PPP) fall within the healthcare domain. Moreover this document and GOI's consultation are a part of the essential democratic process.

3. Goals and Strategy

The responsibility of the state towards the health of its citizens is debatable along the lines of different political philosophies. However the primary goal of a Government's health policy must align with the aspirations of its citizens in a democratic nation. Majority of Indians want their Governments to improve the health of its citizens whether that is by funding and provision of the care or by promoting the standards in the private healthcare.

Goal of national health policy of India must be improving the overall health of the citizens of the nation.

This constitutes

- a) Improving the quality of the preventive, primary, secondary and tertiary health care,
- b) maintenance of basic standards in the delivery of such care across the country
- c) increasing accessibility and affordability of such care and
- d) improving the cost-effectiveness of such care based on the best available evidence.

Clearly this goal of the health policy **does not imply** either funding or provision of all or some of such care by the Government. Government as a representative of its people can choose any action or even inaction whichever is effective to achieve this goal. And this goal is not promising some 'absolute state of health' for all citizens, but in fact suggesting setting up specific relative goal posts in all domains of healthcare.

Strategy: Strategy is defining the specific action plans to achieve the above goals utilising the limited resources in a system. Strategy must be derived by critically appraising the best available evidence for improving the quality of health of citizens in different societies and countries including India from research and past experiences and interpreting it to suit the current unique socio-politico-economic situation that India is in.

Envisioning a radical change is not possible without having system's intelligence and comprehensive understanding. The long process chain with multiple arms and links involved starting from the proposal of a plan by the Government to the delivery of health services to that poor patient in a remote corner of the country needs to be envisioned for making any idea practical. Expecting corruption and inefficiency at every link and an ignorant consumer at the end point are essential considerations for such a thought process in devising a strategy.

The rest of this document discusses different action plans that constitute this **strategy**, discussing concomitantly the available evidence, rationale and the possible challenges.

4. Public Spending

(Why, What and How)

The amount of spending the Government needs to do must depend on the best available evidence to reach its goal of improving health of its citizens cost-effectively rather than mere comparisons with the other countries. We need to assess how the citizens can get the best value for their money, whether by spending privately for the healthcare or by paying taxes towards the Government funded healthcare. On examining different **healthcare funding models** in developing and developed nations, the following patterns emerge.

Developed countries spend anywhere between 7%-9% of their GDP for health except the USA which spends up to 18%. The majority of the total health expenditure in the United States is privately funded by the citizens mainly through insurance models. Whereas in the UK and many European countries, Government-funded and sometimes Government-provided services cater to most of the health needs of their citizens. The UK has been maintaining international standards in healthcare at 35% of the costs that the USA spends. Despite the exorbitant overall spending, the health indicators of poor socioeconomic groups in the USA have been lagging behind many poorer nations.² Spiralling costs in the private funded-insurance models such as those of the USA are due to cream skinning and adverse selection. Information asymmetry and insurer's inability to monitor adequately can result in over-diagnosis, overtreatment and unethical practice culture that has become a menace in the USA despite the existence of robust institutions and culture of accountability. In addition, collusion of insurer with the provider can transfer excessive premium burden on the patients. Cost-effectiveness of the public funded healthcare models in the developed countries is clear. However culture of accountability developed by nurturing robust institutions and rule law for many centuries has allowed the public funded and provided models to run efficiently in these countries.

It is also very important to note that despite being the most capitalist developed economy, the US government spends 8% of the GDP on the healthcare for public and preventive health and for comprehensive health care of the underprivileged (Medicare, Medicaid etc.). This has immensely supported its growth engine over the last century.

Many developing countries have poor health infrastructure with poor overall spending on the health. Within those India spends minimal - 1.3% of the GDP compared to 3% by China, 3.2% by Mexico, 3.8% by Russia and 4.3% by Brazil.²

Public health and preventive care: Even the libertarians who despise public spending for health accept that public health cannot be effectively catered to by the free markets. Positive externality effects of public health spending increase the overall health of the communities enormously. Only a collective effort of a community through the Government can tackle the public and preventive health problems such as sanitation, pollution, road safety, immunisation, epidemic control, vector control etc. In addition, the cost-effectiveness of expenditure on public and preventive health by collective action is immense compared to the costs of treating these preventable diseases.

Primary Care: Positive externalities occur in the primary care as well. Treating an infectious disease in the community by the primary care provider can reduce the risk of disease spread and thereby having a strong positive externality effect. Though the preventive care hitherto has been considered to consist of immunisations mainly, with the increase in chronic disease burden such as hypertension, diabetes, cardiovascular diseases etc., primary care of these diseases itself will be preventive care for their complications such as stroke, heart attack, infections etc. This demonstrates the immense cost-effectiveness of primary care in promoting the health compared with the secondary and tertiary care services. In addition, spread of health education in the community by the patients who were screened and treated for these chronic diseases is a positive externality effect.

Secondary and Tertiary care:

These services are very expensive even for maintaining a basic standard. Though the effectiveness of funding and/or provision of these services by the state is evident in the experience of the developed countries, lack of mechanisms for accountability and finding a right economic model suitable for the Indian context will be the main challenges. These issues are discussed in the next chapter.

However, the semi-independent public funded tertiary referral hospitals linked with educational institutions such as AIIMS, PGIMER, JIPMER etc. have shown great cost-effectiveness in delivering high quality services compared to their equivalent private providers. They have also produced a great number of highly qualified professionals in addition to their India-specific research output. The experience of these centres of excellence can be cherished and replicated across the country.

Private care: Well established private providers across the country will remain the future providers of the primary, secondary and tertiary health care for the middle class/wealthy population of India. The standards even in the most expensive hospitals have been uncertain with widespread prevalence of overdiagnosis and overtreatment. Citizens are strongly wishing for an improvement of standards in these hospitals. Government has the responsibility to spend a reasonable amount of money for monitoring the standards of care, developing the mechanisms of accountability, funding different institutions for checks and balances

and maintaining the standards of professional education and training. Though spiralling costs are a drawback in the private insurance models, risk pooling helps the patient to minimise the individual risk. Evolution and development of health insurance business must not be restricted or discouraged by the Government. However a strong public spending and provision of services can help to achieve the necessary homeostasis in the healthcare sector.

Conclusion: There is a strong case from the growth point of view to increase the public spending. The case for spending for public health is very strong with no other viable alternative. The case for public spending for universal primary care is strong due to its positive externality effects and immense cost-effectiveness. The case for public sector run tertiary referral centres covering the whole nation is strong due their cost-effectiveness. The case for public spending for developing institutions for accountability is very strong with no other alternative available. In essence, there is an unequivocally robust case to increase the Government funding for all these services to get the best value for the money spent by the citizens of India. This document further discusses how these services can be delivered efficiently by increasing the spending to **mere 2% of GDP** to begin with. We certainly need a noble political resolve to reach this very basic expectation of Indian voters.

5. Economical Models

What is an ideal economic model for healthcare delivery through public spending?

Broadly public-funded healthcare systems can be either public sector provided system (existing govt. healthcare system) or PPP (public funded and private provided) system. In the PPP, either the Govt. acts as an insurer or it can pay a third party to insure its citizens.^{9,10,11} Either way, the insurer can purchase healthcare services for its clients (citizens) from the private providers by two methods broadly: usually by 'fee-for-service' payment and sometimes by 'capitation' payments.

Public sector provider model: In case of public sector organisations, there is no incentive to deliver unnecessary services, nor is there an incentive for 'under-provision', except to the degree that they may attempt to provide fewer services – that is, work less – than expected in the contractual arrangement. There is no particular incentive to deliver high quality care, so typically there is a heavy reliance on enforcement of rules and procedures thought to enhance quality. Institutionalisation of corruption and thereby the lack of public trust will hamper any attempts to improve upon the existing system of public providers.

In the Indian experience, there is a broad spectrum of variation in the standards of Government run healthcare providers not only geographically but also based on the type of the care they provide. Primary and secondary care providers face the problems of unfilled posts, absenteeism and massive under provision. In 2010, 10% of posts for doctors at the PHCs and 63% of the specialist posts at the CHCs, and 25% of the nursing posts at PHCs and CHCs combined remained unfilled.¹² The situation for support staff is similar with 27% of pharmacist and 50% of laboratory technician posts also vacant. Though a majority of the district level tertiary care hospitals suffer with lack of funding and lack of accountability, we have exceptions. Premier institutes such as AIIMS, PGI, JIPMER etc. have been providing high quality cost-effective tertiary care. As centres of excellence, they attract the best and bright of the country, thereby driving a culture of pride and accountability. In addition they provide fantastic opportunities for training and teaching while being accessible to the poorer students. Competitive remuneration of the expert doctors would be possible in these organisations unlike in primary or secondary care. Autonomy has further driven innovation and quality in these centres. However enormous costs for building more such institutes can be a big challenge, which can be tackled by a model proposed later in this document.

Fee-for-service PPP model: Private providers are rewarded for providing more services to patients.¹³ This form of payment for services has a powerful incentive for over-provision of services on the part of the 'agent' and therefore necessitates a substantial amount of costly monitoring on the part of the payer, especially when output cannot be easily measured. In some respects, it seems intuitive that more medical care would benefit patients in most cases, and therefore that fee-for-service payments would not have a detrimental impact on quality of care or patient outcomes. However, there is research suggesting that more care does not necessarily imply higher quality or better outcomes. Provider incomes increase whether or not the services they provide are needed, or of dubious worth and a growing literature suggest that there is a risk to patient health associated with 'over-treatment', just as there is with 'under-treatment'. Over treatment in the form of unnecessary operative procedures will amount to putting the patients to unnecessary risks of both morbidity and mortality. To modify the incentives under fee-for-service, arrangements based on payment per episode or, for institutions, payment per admission have been introduced. These approaches bundle services for payment purposes, creating incentives for providers to limit the services they provide in response to a specific event. However, unlike capitation, providers receive more revenue the greater number of events they treat. They are not assigned the responsibility to provide all needed services to a defined population.

Capitation Payment PPP model: Under capitation payment, the private provider agrees to deliver a specified list of health services to a predetermined group of individuals for a fixed amount per person per time period.¹³ The provider bears financial risk in situations in which the actual cost of these services exceeds that fixed amount. Conversely, the provider retains at least a portion of monies that accrue in the instance the costs borne are less than the predetermined reimbursement. The most frequently voiced concern about how capitation might affect quality of care is that the provider entity receiving the payment might act too aggressively in constraining service use, eliminating some necessary as well as some 'unnecessary' services. The result could be lower quality of care for patients. This is especially true, it is thought, if there is no sharing of risks or surpluses, if the capitated contract is short term, and if contract renewal does not depend on measures other than costs. In this situation there are few, if any, financial incentives for providers to improve quality, unless that improvement reduces costs as well.

Cash Transfer Model: Here, the Government transfers cash to its citizens directly in order to spend on health. It would be individual's choice to spend that money as they like. The major disadvantages are a) lack of risk pooling and thereby not achieving its intended purpose when needed b) lack of choice due to absence of qualified primary care providers in rural areas c) behavioural economics come into play with early spending of such money on needs other than health.

Lessons from the existing fee-for-service models: A few schemes are in place run by the central and some state governments to cover secondary and tertiary care.⁹ Aarogya Sri scheme has been introduced by the government of Andhra Pradesh in 2007 as a bundle-based fee-per-service insurance model covering certain secondary care operations and admissions for low income groups. In the beginning AP state government paid a private insurer but later began to act as the insurer. This scheme resulted in rampant over-treatment and malpractice (such as removal of uterus in healthy young women, unnecessary risky spinal disc operations etc.).¹⁴ Both the private insurer and later the Government failed to control over-provision and the possible reasons may have been a) impossibility in adequate monitoring b) poor deterrents for malpractice c) possible collusion between insurer and provider in order to transfer burden on the Govt. d) Phantom services. In addition it was proved to be highly cost-inefficient (e.g. 59,000 surgeries were performed with the Rs. 274-crore Aarogya Sri budget mostly in the corporate sector while the Gandhi Hospital in Hyderabad could conduct 2.56 lakh operations with a meagre budget of Rs. 12 crores).¹⁴ The private hospital association's in AP, further acts as pressure groups to increase the budget or threaten to withdraw services. Thus, profits are privatized and losses are socialized.¹⁴ However more importantly, studies showed that this programme and also other insurance based programmes (RSBY – Rashtriya Swasthya Bhima Yojana) failed to reduce the OOP expenditure of the poor and failed to protect the poor against impoverishment due to spending on health.^{5,14,15} This is because the coverage of the scheme included some cherry picked operations with no incentive for preventing the disease, excluded drug expenditure and siphoned the monies from the existing skeletal primary care. This model also undermined the existing Govt. hospital based teaching institutions adversely affecting the teaching and training of the next generation of healthcare professionals. This demonstrates the major challenges in providing a cost-effective secondary care. In a slightly different model of ‘managed competition’ among different third party insurers in the Eastern European experience, excessive controls and interference in management and tariffs by the Govt. caused increased costs similar to problems experienced in the Aarogya Sri. However evolution of Aarogya Sri over the years showed that technology can be used in different ways to improve the monitoring. This whole experience should be utilised in developing robust monitoring mechanisms.

What models are suitable for the different domains of public funded health care?

There is no **one-size-fits-all solution** for different domains of healthcare delivery. The primary care (85% of current OOP expenditure) cannot be provided by fee-for-service PPP model due to the difficulty in auditing the high frequency - low cost events, high transaction costs and poor regulation of the quality. Inefficiency of the public providers of primary care is nearly impossible to tackle at the current stage. In this case, a capitation based PPP seems to be a better choice, though this can lead to some under-provision again due to inadequate auditing.¹⁶ Also a robust primary care gate-keeping system reduces over-all costs immensely¹⁶. Whereas the balance in the case of secondary care tilts towards fee-for-service PPP system in order to prevent under-provision which can be disastrous. However embarking on fee-per-service models

without developing adequate monitoring mechanisms can be very expensive and even catastrophic. A robust, accessible, referral based (except for emergency cases) secondary care system involving government CHCs and small, moderately priced, good quality private nursing homes should complete the family care needs of the whole population. We may aim at about 100 beds per 100,000 population in secondary care, allow competition and choice among care givers. Fee-for-service model can be adopted based on standard costs and protocols developed.

For tertiary care, developing autonomous 'centres of excellence' public providers can be extremely cost-effective. Vertical integration of these domains with each other also with the public health and the medical education improves the overall efficiency. Expanding of the cost-effective primary care (capitation based PPP) and tertiary care (public providers) domains can help to overlap the highly expensive and challenging secondary care domain making overall spending economical. A phased introduction of these effective models and their functional specifics are described in the next chapter. Integration of the existing public sector workers and infrastructure and utilizing the services of the vastly expanded private providers are the key elements of this pragmatic approach.

6. Comprehensive Healthcare System – A phased approach

We propose here a comprehensive and cost-effective healthcare system with an implementation plan. In principle this is a universal coverage system without any means testing or target oriented approach. In reality we expect this system to cater the bottom 60% of the economical strata.

Expanding the public funded healthcare provision needs to be done in a phased manner considering the above-mentioned challenges (chapter 5) in any model that we may choose. A phased approach is essential in the proposed system which will be built on a primary care network. This will provide the time to tinker with the system which surely will be dynamic in nature. This would also allow time to debate over alternative models without hampering the introduction of a skeletal system. In the first phase, the cost-effective primary and tertiary care models must be rolled in with a skeletal secondary care. Phase 2 involves improving the primary care base and expanding the secondary care provision. In the final phase, by a complete integration of all domains, comprehensive healthcare provision can be achieved. Each phase would take 3-4 years of time to roll in. There can be overlapping in these phases depending on the evolution of the system.

Primary care includes preventive care: Here onwards, in this document the term ‘primary care’ embraces the preventive care as well. As discussed before most of the primary care is preventive in nature and all the preventive care can be delivered by the primary care provider. The requirement for a proportionately high spending in the primary care cannot be over-emphasised. In the UK, primary care and hospital care share 30% and 70% costs respectively.¹⁷ Cost of prescriptions in the primary care is 7% only. Despite the very high costs involved in the hospital care, still a very high amount is spent on the primary care to attract the work force and cut down the hospital admissions. The importance of primary care in a cost-effective improvement of nation’s health once again cannot be over emphasized.^{18,19}

Phase 1:

Aims

- a) Establishing a network of local family physicians (FP) paid by the Govt.
- b) Registration of the whole population digitally by this network of FPs and obtaining the health profile of the nation
- c) Establishing an economical and high quality drug distribution system

- d)** Establishing Govt. run diagnostic centres
- e)** Establishing centres of excellence tertiary hospitals, one per half a million population
- f)** Converting the existing CHCs into polyclinics
- g)** Establishing robust accountability mechanisms

The idea is to attract and streamline family physicians such that they would register all the patients and their basic health data digitally. All the registrations and consultations will be based on AADHAR card including biometric confirmation of identity. All digital data will be uploaded to central servers at a Central Healthcare Monitoring Agency (CHMA). This would provide a baseline data to assess the health problems of the nation properly with a geographical outlook. In addition to registration, the FP's responsibility will be performing the foremost tasks in the primary and preventive care (immunisation, antenatal check-ups, malnutrition assessment, infectious disease treatment, chronic disease screening etc.). A drug dispensary will be managed by each FP and it runs in a replenishment model where the Govt.'s 'Drug Supply Agency' (DSA) restocks the used medicines. All the prescriptions will be digital with attached Aadhaar card number such that tracking would be possible. Capitation based payment follows the registration and thereafter for provision of services. Further payments follow on reaching specific health targets. Primary care will be detailed in the chapter 7, drug delivery in chapter 10 and accountability mechanisms in chapter 12. Govt. run diagnostic centres (chapter 11) will be established in the current PHCs to support the FPs.

Simultaneously tertiary care centres will be established one per four million population using the private finance initiative (PFI) to raise the capital and maintain standards. This is described in Chapter 9. Specialists from the tertiary care centres will support running 'polyclinics' set-up in the existing CHCs as a hub and spoke model (Chapter 8).

A district health board (DHB) will be managing the monies for contracting primary care and funding the public healthcare providers in the district. This is described in chapter 16.

Phase 2:

Aims

- a)** Expanding the roles of the FPs and introducing health-outcome-based incentives.
- b)** Contracting the secondary care services including maternity care and trauma care
- c)** Expanding free drug dispensaries to private providers

The second phase will be consolidating on the gains in the first phase that is registration and assessment of disease burden. And also a sufficient time is allowed in phase 1 to tinker with the system and seal the loopholes. In phase 2, the incentives for secondary income will evolve dynamically after reaching the initial

targets. The initial indicators will earn less money now as additional indicators will add up such as successful diagnosis and treatment of chronic conditions (diabetes, hypertension, heart disease prevention), reduction of maternal and child mortality (time lag effect), patient education programmes, community prevention efforts, continuous professional education of the personnel etc. Approved private hospitals will be provided with free drug dispensaries managed by the DSA. This system provides an incentive for the private hospitals to subject themselves to rigorous monitoring mechanisms. Important secondary care services can be contracted on bundle based fees-per-service model from these hospitals using the experience from the Aarogya Sri.

Phase 3: Once a well-functioning, monitored and tinkered primary care skeleton is up and running, a complete secondary care provision can be contracted from private providers in this final phase. We propose two models available to achieve this goal.

1. Expanded DHB to contract all secondary care from private providers or
2. Private run regional healthcare trust (RHT) model

Expansion of DHB role:

DHBs expand their role by contracting all secondary care in addition to contracting the FPs and funding the Govt. providers. This will be on a fee-per-service model. Essentially money flows from the DHBs to the private FPs on capitation basis, to the private hospitals (secondary care) on fees-for-service basis and to the tertiary hospitals and diagnostic centres on salary basis. Direct flow of the money to tertiary centre cuts the administration costs of billing for services. DHB will choose which services to be delivered by the tertiary centres and which services to be bought at the private hospitals (secondary care). This model can boost the profits incurred by the private RHTs (see below) whereas lack of profit incentive can result in overall inefficiency in reaching the stated goals for the population.

Private RHT model:

Private agents will bid to provide a comprehensive healthcare for a geographical region as a regional health trust (RHT). Money flows to RHT from the Govt. through the DHBs on capitation basis. RHT need to pay the primary care providers (individual FPs or groups) and also pay for the secondary and tertiary care needed for the population in the approved hospitals with set standards. There will be several exclusions to limit the risk and high costs. For example, expensive (often merely life prolonging) chemotherapy for cancer, joint replacements, major organ transplants, prolonged ITU care etc. will be excluded. Also the interventions unsupported by evidence will be excluded (e.g. spinal discectomies, hysterectomies for insignificant problems). An excluded list will be provided rather than inclusive list. An expert panel develops such a list utilising the experience of Aarogya Sri and RSBY. RHT is completely independent in choosing the type of

contract or method of payment for services with the care providers. RHT can run any type of care provision itself. RHT will strive to improve preventive and primary care in order to reduce the hospital admissions and also for early discharge of patients for community based care. Primary care providers will act as **'gate keepers'** to reduce the unnecessary referrals to specialist centres (FP referral is compulsory for availing secondary or tertiary service for non-emergency conditions). Specialist visiting services also can be arranged by the RHT to improve community-based services. Though, emergency admissions to the secondary and tertiary centres cannot be controlled by the gatekeepers, efficient preventive and primary care would keep the rate of such admissions to the lowest level. The costs of primary care and also the disease burden as per geographical region will be evident by the end of phase 2. This information will help the private agents to perform risk-profit analysis in embarking into RHT bidding. Again digital recording of all the events and data will help to switch the services from one agent to another by the end of (say three yearly) contracts of RHTs. Govt. run tertiary centres will also be paid by the RHT in a fee-per-service model. The private player, as a single payer, will have maximum incentive in promoting health of the community such that it would spend more on preventive and primary care in order to reduce the disease burden and thereby reducing the more expensive costs accrued in secondary and tertiary care. A single player (RHT) whose primary incentive is in creating a healthy population that least requires healthcare facilities can be a win-win solution for the private player and the public.

Ideally a **randomised controlled trial** (RCT) can be run in demographically similar areas to compare the cost-effectiveness of enhanced DHBs with private run RHTs. It is not difficult to run RCTs and it is the only way to know the 'truth' in complex systems (i.e. the real world).

Cost Analysis:

Projected expenditure for 2025 after phased introduction of the system:

Projected population: 1.4 billion

Primary Care: Rs 700 per capita making Rs. 1 lakh crores

Existing infrastructure: Rs 25,000 crores

Drug supply chain, Diagnostic centres, CHMA: Rs 25,000 crores

Total 1.5 lakh crores

Secondary Care: Rs 1000 per capita expenditure or Rs 10 lakhs per bed with 15 lakh beds making it to Rs. 1.5 lakh crores

Tertiary Care: There is a need to have at least one tertiary centre for every district (40 lakhs population) upgrading each district hospital. This would account to 300 hospitals across the country. PFI lease can be Rs. 50 crores and running costs are Rs. 150 crores. There are other 200 existing tertiary care hospitals. Total expenses for year would be 1 lakh crores.

Total = 1.5 + 1.5 + 1 = Rs 4 lakh crores

Projected GDP = 4 trillion USD = Rs. 240 lakh crores

Projected expenditure by 2025 would be 1.7% of the GDP. Current public health spending is 1.3% of the GDP.

Rationale of the system

1. A system founded on technology based monitoring and optimal economic models
2. High quality primary care provision; Better reception by general public of the accessible FP clinics led by doctors (as opposed to ANMs in sub centres currently)
3. It is very difficult to control the expenses of hospital care when a private provider is involved in fees-per-service models. By expanding primary and tertiary cares in cost-effective models, the scope of the secondary care will shrink, thereby cutting the over-all costs.
4. Money follows health. Several healthcare outcome performance indicators will be identified that can be measured with least subjectivity. Financial incentives to the FPs will be linked to these indicators.
5. Strong financial incentives in order to attract qualified personnel to work as FPs in rural areas.
6. Nominal fees at the point of delivery (Rs.10 each for consultation and prescription) will curtail over-utilisation by the patient and a low-powered incentive for the FP to provide service
7. Govt. run tertiary centres of excellence will provide training opportunities.
8. Govt. run drug supply chain (DSA) will reduce both under- and over-utilisation of the services. Private provider neither has incentive to overprescribe nor to under-prescribe. But there is a strong incentive to prescribe adequately to satisfy the patient. Monitoring through electronic prescription and making the doctors and RHT responsible can control siphoning of drugs to the black market.
9. Govt. run diagnostic centres will reduce under- and over- utilisation. Private providers have an incentive (satisfying their patients) to apply constant pressure on these centres to maintain efficiency. Infrastructure of the existing PHCs can be used to run these centres.
10. Mandatory electronic recording is the key element of monitoring. The onus is on the private agent (FP, RHT or private hospital) to maintain electronic recording for payments.
11. Phased approach to gain trust and tweak the system
12. Functioning markets to allow cost reduction and quality improvement;
 - a) FPs compete with each other to attract more patients as they are paid per capita
 - b) Drug companies compete to obtain DSA contracts

- c) Private providers improve the quality to get approved such that they can run free drug dispensary which will attract patients
13. Universal approach will obviate the need for identification of the target population which is highly susceptible to corruption. Biometric registration will prevent the potential for fraud by the FPs by nominally registering non-users of the services for payments.
14. In phase 3, the advantages of private RHTs would be
- a) The private parties would themselves endeavour in evolving the system thereby saving the government from a huge and inefficient bureaucratic exercise.
 - b) Powerful incentive to expand the horizons of the RHTs to pursue the local authorities in maintaining sanitation, vector control etc. Patient education will be undertaken by the RHT for early detection of problems. Perhaps this system would provide an excellent financial incentive for innovative preventive care solutions
 - c) Capitation payment model for the RHTs would on balance curtail overtreatment thereby abiding to the basic ethical principle of the medical field that is 'do no harm'.
 - d) RHTs compete with each other in bidding for low cost
 - e) Private hospitals compete with each other in providing low cost services to RHTs
 - f) Money follows health and does not simply follow patients, disease or provision (e.g. operations, admissions, drugs supplied etc.).

7. Preventive and Primary Care

An accessible clinic run by a family physician (FP) would be at the heart of delivering all primary care needs (includes preventive care). This clinic can be called SPAS clinic standing for Sakal Parivaar Aarogya Suraksha clinic. AADHAR card remains the key for registration and availing the services. Lucrative payments linked to performance and monitoring will attract the qualified doctors to the remote and rural areas.

SPAS (Sakal Parivaar Aarogya Suraksha) clinic

FPs will be contracted by the DHB (District health board), either individually, as groups/consortium of FPs or through a company (a private primary care trust – PCT) that can employ FPs and other personnel to run the SPAS clinics. Such flexibility will allow the system to evolve depending on the local markets. Bi-annual contracts will be issued. The primary source of income for a FP would be capitation basis payment as per the number of registrations within a stipulated geographic area. Each FP would be allowed to accept registration of patients from a much larger area (10 times bigger) than the area they are expected to cover. This will introduce a competition among the FPs to attract more patients and the patients will have a choice

to choose the best performing one or the nearest one as per their priorities. Secondary income for the FP will be from performance and outcome based incentives dependent on digital logging of basic tasks mentioned above. Biometric logging of the patients (parents in case of children) with their AADHAR card identities is mandatory for the first registration. This will be strongly encouraged for future consultations and prescriptions however the logistics such as power shortage, ill patients will be duly considered. In these exceptional circumstances alternatively patients will be given a paper health card with events signed and dated by the SPAS clinic personnel such that cross checking can be done on random basis. Registration alone will release monies (per capita basis) to the FP in the beginning. Several objectively assessable health indicators will be selected and depending on the percentage of coverage of those services in the geographical area and/or registered patients and thereby the number of the points accrued, additional money flows (say which will not be more than 30% of the registration based income).²⁰ Third source of income will be from the drug dispensary. Based on the amount of the drugs prescribed and number of prescriptions, further money will be earned as a commission (this will not be more than 20% of registration based income). Fourthly each consultation and each prescription carries nominal fees (Rs.10) to be paid by the patient to the FP directly.

Central storage of the digital data at CHMA (but accessible to the DHB for the respective geographical region) will allow transfer of the data to the new provider (FP) if the provider changes based on the dynamics of health economics or regional economics. Adverse selection of healthy beneficiaries only by the FPs can be curbed by massive campaign by the Govt. encouraging registration with the FPs within a stipulated time (6 months). However analysing the demographic profile of registration from a SPAS clinic will reveal any adverse selection of young and healthy population. No FP is allowed to refuse registration for any patient unless they have crossed a maximum number that they can deal with (say 7000).

Aims of the SPAS clinic:

- 1) To register the population in an electronic patient record system
- 2) To provide primary care for nominal fees
- 3) To monitor and promote health in local communities by patient education and preventive care.

Key characteristics:

1. FP is the responsible person for the SPAS clinic who will employ at least one qualified nurse and one support worker
2. Contract is between the FP or a primary care trust (PCT) running the SPAS clinics and the Government. Per-capita payments to FPs or PCTs by the Govt. for providing all primary care services to certain population for certain period of time (2 years)

3. Nominal fees (Rs. 10) to be paid by the patient directly to the FP per-visit
4. A drug dispensary will be attached to the SPAS clinic with prescription based supply of generic and quality medicines by the Govt.'s DSA
5. Nominal prescription fees paid by the patient directly to the FP (Rs. 10).
6. Health quality outcome based financial incentives to the FP
7. Electronic records based on Aadhaar no. linked to CHMA (Central Healthcare Monitoring Agency)
8. Alternative paper health card carried by the patient for logging the events (as a back-up for prolonged power failure, other logistics).

Duties of the FP:

1. Registration of all the people in their area in an EPR (electronic patient record) system
2. Demographics of each patient and their baseline health parameters (full health questionnaire, BMI, nutritional status, BP, blood sugar, Hb etc.) will be registered at first time visit which is free of cost. Financial incentive for near full registration of the catchment area.
3. Screened diseases should be treated (anaemia, hypertension, diabetes, TB, HIV etc.) at primary centre or referrals made to secondary or tertiary centres within a reasonable distance.
4. Follow-up health check-ups after stratifying the patients into risk groups
5. Catering everyday outpatient clinic: For each visit, patient pays the FP a nominal amount of 10 rupees.
6. Routine vaccination
7. Routine pre-natal and post-natal care
8. Patient education for hygiene, vaccinations, maternity care through direct discussions, hand-outs, camps etc. (Evidence of camps uploaded to central database)
9. Drug dispensary: Dispensing generic drugs for a nominal fee of 10 rupees for one week's prescription.
10. Identifying disease causing factors and identifying/complaining to/about local authorities (clear pathway to be developed) e.g. sewage problem, mosquitoes etc.
11. Mandatory notification of the epidemics to the 'epidemic team'. A digital red flag system from the central data at the CHMA can be linked to the epidemic team.
12. All national health programmes function through the SPAS clinics

Measurable health outcomes linked to payments:

Standards of outcomes can be incentivised in two ways. a) for reaching absolute standards b) for reaching competitive standard i.e. reaching top percentile

- i) Clinical standards
 - 1. Vaccination compliance rate
 - 2. Maternal health indicators
 - 3. Child health indicators
 - 4. Chronic Disease Management- Asthma, Diabetes, Hypertension, Ischemic Heart Disease.
 - 5. Infectious disease screening compliance
 - 6. Mortality

- ii) Patient education and preventive care
 - 1. Smoking and Tobacco cessation drives
 - 2. Publicising perils of alcohol.
 - 3. Healthy lifestyle promotion.

- iii) Organisational standards
 - 1. Registration
 - 2. Availability of personnel
 - 3. Quality of personnel
 - 4. Quality of Facilities
 - 5. Quality of referrals
 - 6. Notification of epidemics

- iv) Experience standards
 - 1. Patient satisfaction

Standards for FPs:

Govt. authorises any local qualified doctor to run the SPAS clinic. Requirement to get approval would be

- 1. MBBS and 2 years of post-registration experience
- 2. Competition based allocation-giving priority to standard of the medical college (ranking), achievements etc., but preferring younger doctors. A points based system can be developed.
- 3. Continuous Professional Development
- 4. Revocable contracts on pending allegations

In addition, simultaneous rolling in of family practice post-graduate courses will deal with the supply side of the FP shortage problem. However considering the difficulties in attracting MBBS graduates, alternative medicine graduates (AYUSH) will be allowed to take up the roles after finishing a two-year family practice course working in a teaching hospital. As the system evolves, in the future only doctors with a family practice graduate degree or post-graduate degree will be allowed. This is further discussed further in chapter 13.

Standards for the nurse: Allied nurse should be duly qualified with regular CPD and training compliance

Standards for the clinic:

A clinic facility comprising of ...

1. One doctor
2. One qualified nurse
3. Basic software installed on a computer (laptops to work with during short term power cuts)
4. Biometric reader and webcam with internet connection
5. Basic/essential medical equipment
6. One support worker
7. A drug dispensary
8. Cold chain
9. 8 hours of minimum working time flexible between 9 am to 5 pm or 9 am to 1 pm and 5 pm to 9 pm.

Who can be become primary care trusts (PCT)?

- 1) An individual / or group of individuals with an interest in health care provision
- 2) An established charitable health care provider with a track record
- 3) Existing corporate houses

A PCT will be allowed to obtain contracts for SPAS clinics not more than a set number (30). If a PCT obtains contract, then the PCT will be paid per capita and the PCT pays the FPs and others. However a small proportion of monies (20%) flow directly to the FP from the DHB to retain the competition among the FPs in attracting the patients.

Cash Flow (Example):

This is calculated per FP and can be extrapolated to a PCT if a PCT is under contract rather than the FP.

Inflow:

1. Rs. 300 per person registered. With an expected intake of 5000 people by a FP this will provide Rs. 15 lakhs per annum
2. Rs.20 per each event (consultation + prescription), 50 events per day will provide Rs. 1000 a day amounting to Rs. 3.5 lakhs per annum
3. Outcome based incentives providing another Rs. 100 per person if all are met – providing Rs. 5 lakhs per annum

Total of Rs. 23.5 lakhs per annum

Outflow:

1. Salaries to nurse and attendant: Rs 30,000 per month or Rs. 3.6 Lakhs
2. Rent, electricity, water, cleaning, internet, consumables, dispensary- Rs. 4 lakh

Initial one-off costs: Around Rs. 2 lakhs

1. Computer, software, webcam, printer, internet connectivity. The equipment could be provided and the costs could be recouped later when the earnings pick up for a clinic. That gives us the leverage to standardize the software and equipment at various sites which in turn helps us to monitor and audit performance from the Central Health Monitoring agency. Also providing equipment will make it attractive to the well-meaning, committed but less entrepreneurial clinician.
2. Inventory, equipment for clinic and dispensary (thermometer, stethoscope, blood pressure measurement device, measurement tapes, weighing machine, peak flow meter, spacers for inhalers, glucometer, blood glucose test strips, urine protein test strips, urine ketones test strips, WHO/ISH risk prediction charts, evidence based clinical protocols, flow charts with referral criteria and audit tools.)²¹

Profit: Rs. 13.5 lakhs per annum or Rs. 1.1 lakh per month. From the second year it would be Rs 1.3 lakhs per annum. Reaching the maximum 7000 registrations will provide an income of Rs.1.5 lakhs per month.

Pts should have an incentive of maintaining regular follow-ups or should have a disincentive for skipping the medical checks.

Payment models can be altered as per the local needs. The DHBs will have autonomy in deciding the payments. Higher payments can be made to attract professionals to the remote areas.

Community Support:

A family doctor has been an essential component of Indian communities for many centuries. Specialisation in medicine has driven the standards of secondary and tertiary care to international standards but the followed health economics deprived the communities of their family doctor. This in turn is not only causing a huge preventable disease burden but also denied a trusted the people to have at local level with its psychological implications. Unqualified practitioners took the role with variable performance sometimes causing more harm than benefit. This proposed system will '**bring back the family doctor**' to the communities. The Government should build the public campaign in this direction not only to improve the physical health but also the psychological well-being of the communities. Involving the local bodies and voluntary workers to liaise with the SPAS clinics in organising local health education programmes can be envisioned once the necessary infrastructure/network has been built. Such an involvement can also drive the quality of the SPAS clinics up by being under attention.

8. Secondary Care

India has only around 5396 CHC's i.e. almost a CHC for every 2,30,000 population. In addition, we have roughly 1,50,000 small private nursing homes distributed throughout the country, providing moderate to good healthcare services at a relatively lower cost. Participation of select private nursing homes mostly at small town level would solve the inadequacies at the secondary care level, and at the same time ensure competition and choice in hospital care. A number of chosen small nursing homes (30 bed) subject to certain minimum standards where costs, quality of service are predefined will be contracted and paid by the RHT.

For all elective (non-emergency) appointments at CHC's and Private nursing homes, a referral from their respective FP clinic will be mandatory. This will reduce the unnecessary workload for the specialists. The patient will have the option to choose between the CHC and the private nursing homes. Call centers can be constituted for information dissemination and appointment/queueing mechanisms.

Also, these private nursing homes could be used for emergency care (life saving techniques) including basic trauma care. This model would ensure a healthy competition between Community Health Centers (CHCs)/public providers and private nursing homes by providing adequate choice to the patient.

Correspondingly, the OOP expenditures can be reduced in the secondary care by the following means.

1. Free drug dispensary (both at CHCs and pvt. nursing homes) to provide free generic medicine through electronic prescription linked to DSA and CHMA

2. Improving the standards of existing CHCs to dispense high quality maternity and emergency services
3. Setting up polyclinics at the CHCs run by the specialists from the tertiary care

CHCs as Polyclinics:

CHCs will play a greater role of acting as referral centres for secondary care and also as **polyclinics** as a **Hub and Spoke model**. Specialists from the district level tertiary centres can visit the 10 CHCs in each district on a rotation basis. If each consultant (in the tertiary centre/SIMS) visits a CHC once a week or fortnight, that will be of a great help to deal with complex cases which can be dealt on an outpatient basis. Most of these appointments lead to prescription based treatment and only a few would need complex diagnostic or therapeutic procedures for which patients will be suggested to visit the tertiary centre. Easily treatable conditions will be managed through admissions in the CHCs under the care of existing CHC doctors but with the guidance of specialists from the tertiary centres. Specialist clinics at periphery are extremely efficient even in the developed world. Moreover, these specialists can bring to the CHCs a better accountable and academic culture and leadership skills. This will also provide an integration of care connecting FPs, CHCs and tertiary centres.

CHC upgrading: CHCs must develop facilities to provide high quality maternity services and emergency inpatient care for infectious diseases.

PHC Integration: Existing PHCs can turn into diagnostic centres (chapter 11). PHC doctors can either move to a CHC or take up a FP position. PHC sub-centre ANMs can either align with the local FPs or move to CHCs

9. Tertiary care

PFI model to finance tertiary care

Essentially Private Financial Initiative (PFI) involves utilising the private sector expertise for raising the capital, building the hospital and necessary infrastructure and operating that the infrastructure for 25-30 years for which the Government pays a lease fee for using the infrastructure on a "no service, no fee" performance basis.

Rationale: In the NHS experience (Labour-led initiative from 2003), they have been criticised for not being a great value for money at the end. However, given the situation of poor accountability in India, they can be optimal models. Because, in this model the private agents have strong incentive to build sustainable infrastructure such that they can reduce their maintenance costs as much possible. This will not be case if Govt. builds the hospitals using private contractors and buys the equipment.

Example: The 2014-15 union budget proposed 5 AIIMS hospitals at Rs. 500 crores each (Total Rs 2500 crores). In reality the costs may go up to Rs. 1500 crores each by completion. Whereas, in a PFI model, Rs. 2500 crores per year can fund to build 70 AIIMS hospitals (if 7% of capital is the lease amount). In a developing country with a reasonably accurate prediction of continuation of GDP growth for a few decades, this cannot pose a massive fiscal deficit problem (unlike the case in the UK).

Private players:

1. Expertise of the foreign companies can be brought through FDIs directly such that state of the art facilities can be built that can last for decades.
2. Involving very high net worth individuals in PFI schemes for capital provision and providing them the 'vanity' and/or 'legacy'. In Indian culture, a hospital (for the poor) still remains the best kind of legacy many people aim to have. A concerted effort can bring several donors into this ambit.

Land: As the tertiary hospital is a referral hospital only, these can be situated at least 30 km away from the densely populated towns and cities thereby reducing the costs of the land. Government procures the land.

Sushrutha Institute of Medical Sciences (SIMS)

1. One tertiary care hospital for every 40 lakh population
2. Once a tertiary hospital is built or upgraded from an existing one to high standards, it will be called **SIMS hospital** standing for Sushrutha Institute of Medical Sciences.
3. SIMS runs in the model of AIIMS or PGI with a fair amount of independence.
4. All existing medical and paramedical educational institutions will be affiliated to SIMS.
5. SIMS also will also be linked to CHMA database registering events linked to Aadhaar card no. Every department is obviously computerised.
6. It can provide additional drugs than the DSA supplied drugs
7. Consultants (doctors) cannot do private practice outside SIMS.
8. **Private services:** This is a very essential part of the hospital to drive the standards up not just for revenues. Large private care blocks will be built in the hospital. The stay facilities (private room, food, other facilities) are different in the private block however the treatment avenues (clinics, diagnostic facilities, operating theatres) are the same as for the free patient. In addition to the existing model in AIIMS and PGI where the hospital gets money from the private patient, doctor should also get money out of it. Every consultant will be given a quota of beds-days (no. of beds multiplied by no. of days) to use and based on a standard billing process (operative fees. Consultation fees), the consultant gets money as well. This will provides a strong incentive for the

bright and best to join these hospitals. A moderate-profit (10%) base will help SIMSs to compete with the private providers.

9. **Breaking the hierarchy:** Unlike the present model of AIIMS and PGI, every consultant will be independent. The hierarchical system with autocratic bosses is a huge stumbling block for progression in the existing models of AIIMS and PGI. This needs to be rectified. On a rotation basis, consultants take up the leadership role. Success of such a system is obvious in the NHS of the UK. Such a system of independent work and leadership opportunities and incentivised private work (within the SIMS) along with a reasonable remuneration (Rs. 2-3 lakhs) to begin with will drive many private specialists and overseas-trained doctors with experience to join the SIMSs. This is a huge group of human resource, which has not yet been tapped into.

10. Drug Delivery

Drug expenses constitute a major proportion of the OOP for the poor. Direct free distribution of the necessary 'low cost but high quality' generic drugs through a **Drug Supply Agency (DSA)** will tackle the problem directly. Digital logging of the doctors in the primary, secondary and tertiary centres for the prescriptions (linked to Aadhaar no.) will help in monitoring the usage of the drugs and also tackling grave threats such as antibiotic resistance. Drug dispensaries on **replenishment model** will curtail over-prescription and nominal prescription fees will control over-utilisation.

Charaka Aushadhalaya Samstha – CHAS dispensaries

Drug Supply Agency

1. Identifying the necessary drugs based on the best available evidence
2. Identifying simple prescription algorithms for common diseases based on the existing WHO guidelines.
3. Strengthening and aligning with existing drug quality control agencies
4. Transparent bidding for generic medication only from high quality renowned companies.
5. Establishing a supply chain with electronic linking of all the dispensaries whether run by private provider (SPAS clinics, approved private hospitals) or by Govt. providers.
6. Replenishing the stock driven by demand
7. Regular monitoring exercises to check on the quality and quantity of the prescriptions
8. Facility for independent random drug quality checks by voluntary organisations. This is the crucial part of quality control

9. Internal digital mechanisms that will raise flags for over-prescription or unusual patterns for a particular Aadhaar No., SPAS clinic or private hospital

11. Diagnostic Centres

The idea is to set-up a supportive Govt. led diagnostic centres relevant for primary care only. This will include

1. Blood tests: Hb, Blood cell counts, glucose, HbA1C, Liver functional tests, blood cholesterol assay, lipid profile test, serum creatinine assay, troponin test strips, Malaria smear etc.
2. pulse oximeter
3. urine tests
4. electrocardiograph
5. x-ray

They will be set-up using the existing infrastructure of the PHCs and CHCs. A computer based logging of all the events should happen at these centres, which again will be connecting, to central server. If a diagnostic test is needed, FP should send the patients to these centres. Bar code generators can be used in the FP clinic, which will be read by the diagnostic centre's computer and once the results are available, the FP should be able to access them on the computer at his clinic. Though the patient needs to travel to get these tests done, further treatment and follow-up can happen at their local FP.

12. Accountability Mechanisms

Grossly they can be divided into technology based models and institutions.

12.1 Technology Models:

a) Central Healthcare Monitoring Agency (CHMA)

Essentially this agency can be envisioned as central level IT infrastructure-based monitoring and controlling agency. Heavy investment to develop a robust monitoring agency is essential. All the FP clinics, drug dispensaries of approved private hospitals, diagnostic centres and drug supply agency are digitally linked to

this central database. All the patient records are linked to their unique identification number i.e. AADHAAR card number. **DHB** will have control of all the data in the district to aid all of its operations.

Such a dynamic database will help in

1. Assessing the cross-sectional health status of the population using several integrated audit tools
2. Flagging epidemics digitally/automatically
3. Flagging unusual patterns at clinics, diagnostic centres or drug dispensaries which raise suspicion for foul play (under-treatment or spurious over-treatment)
4. Flagging any unusual demographic patterns in registering the patients. This can check adverse selection of healthy beneficiaries.
5. Providing a psychological deterrent to do malpractice for the private provider
6. Recording achievements of the targets by the FP clinics and cross checking these self-reported outcomes to random survey based statistics
7. Payments to the FPs based on registrations and achievements
8. Adherence to prescription guidelines
9. Transferability of the records when the provider changes

Patient confidentiality can be a huge challenge, which needs to be dealt with using several control mechanisms. Developing such an IT system will be a big task but not impossible with the existing expertise. Several Indian IT companies have built similar systems for the healthcare industry in the developed countries. These existing systems can be easily adopted. Content selection for Indian context (understanding the requirements and considering low user expertise) will be a real task rather than the technological aspect of the task.

In addition to electronic patient record and management system, IT can be used for the following purposes.

1. Doctor's portfolio: a digital record of qualification and evidence of continuing professional development
2. Evidence of clinic: Uploading regular pictures of the clinic running and facilities (pictures with dated newspapers)
3. Evidence of doctor's presence: Doctor should login absences of himself/herself and of other personnel. Random checks will be done and the doctor will be asked to connect through webcam to show his presence in the clinic
4. Providing the FPs and other personnel with the necessary clinical guidelines, patient education leaflets etc. and updating them

b) Grievance mechanisms

1. Every clinic must clearly display the grievance mechanism and the nominal fees using large easy-to-read charts.
2. A complaints phone number linked to CHMA **-absenteeism** complaint can be quickly cross checked by asking the personnel to show-up on Skype/web cam or by monitoring activity on the smart card linked to the clinician.

c) Local Vigilance

Local bodies and voluntary organisations can be involved in regular monitoring of the SPAS clinics. They can help each other in conducting health education camps.

12.2 Institutions for Accountability:

Much more thought process and debate is needed in this domain, which is beyond the scope of this preliminary document. Regulation to maintain standards is a double-edged sword that can strangle the growth and transfer the corruption to the regulators. A brief outline of proposed changes is as follows.

1. MCI in the current format (with absolute power) must be dismantled.
2. Multiple **separate** institutions must be established to deal with
 - a) Doctor's professional registration and malpractice claims – Medical Council - Including lay people, eminent people, judiciary and bureaucrats in the council, heavy funding for human resources and infrastructure, extended roles, checks over this council, transparency, strict malpractice punishments
 - b) Paramedical registration and malpractice
 - c) Nursing registration and malpractice
 - d) Medical Education standards, curriculum, college approvals
 - e) Nursing and paramedical training course standards, college approvals
 - f) CHMA as above
 - g) Drug standards
 - h) Medical devices, implants and equipment standards
 - i) Research ethics
 - j) Standards of government and private hospitals
 - k) Road safety and trauma care as below
 - l) Similar to NICE as below
 - m) Allowing UN and other independent organisations to perform random checks
 - n) An overarching body closely integrating all the above bodies and health ministry
3. Transparency at each level: Proactive disclosures on public domain (beyond the compliance of section 4 of the RTI)

4. Regulating authorities must be looking into criminal negligence cases only rather than penalising the professionals for every trivial complaint. Local vigilance may act as a better deterrent at this stage in India.
5. Drugs and implants: extended compliances from European or US systems, (one step can be bypassed to curb corruption)
6. Generic drugs - regulations: random checks, involving independent organisations etc.
7. Prohibiting drug combinations and strict implementation. This is very essential to prevent future threat of antibiotic resistance.
8. Institution similar to NICE (national institute for clinical and healthcare excellence, UK) which formulates clear clinical guidelines to be followed by the professionals in diagnosing and treating diseases. In Indian set-up mandatory pathways are needed for SPAS clinics rather than guidelines. E.g. antibiotic rationalisation for curbing antibiotic resistance

13. Training and Education

Education and training of medical and allied health professionals is facing major challenges due to the effects of health economics and lack of political will. A detailed description is beyond the scope of this document. But fortunately we do not need to re-invent the wheel here. Unlike the healthcare delivery models, where direct adoption of developed world's models is not possible, education and training models can be directly borrowed from. However there are specific aspects that need to be addressed as follows.

Family Practice Education:

Training for family practice is very deficient at the moment. Several pathways can be developed.

1. Family practice undergraduate course (similar to BRMS - bachelor of rural medical sciences that was proposed a few years ago). However this needs to cover more or less same syllabus of MBBS but with special emphasis on family practice. The graduate will not be allowed competing for other specialist postgraduate courses unlike MBBS graduates. This can be named as MBBS – FP (family practice) and avoid that 'rural' tag of BRMS.
2. Post-graduate degree in family practice should be introduced for MBBS graduates to take up. This will help to provide network of FPs in urban areas. They can also take up teaching positions or leadership roles in the primary care.
3. An integrating course for the current AYUSH graduates to join family practice. This should be of 2-year duration based in major teaching hospitals with rigorous training and assessments.

Revamping the medical curriculum

This needs significant changes. Our medical education structure and assessment tools haven't changed much and haven't been modified to our realities. In this domain (unlike that of healthcare delivery), finding the right changes is not difficult; several steps can be taken but some of the steps are

1. An integrated work based learning modules right from the first year of medical college
2. Centralised examinations with multiple examiners to curtail the exam based corruption that is rampant at the moment
3. Training the trainers and teachers into new teaching and training methods
4. Electronic log books for post-graduates
5. Mandatory training in several important courses such as ALS, ATLS, BSS, etc.
6. Better remuneration of the interns and post-graduates to maintain their morale
7. Family practice exposure –current undergraduates could be posted to SPAS clinics for exposure to primary care. Hitherto, there have been such postings but these have been plagued by poor attendance as well as serving as another avenue for corruption for the staff at the centres. With the use of technology to monitor activity in our FP clinics, attendance can be guaranteed. Also, FPs can be incentivised to provide some training to the budding doctors. With good quality training, these postings may help to increase the enthusiasm and exposure to primary care and stimulate some to commit to a career in family medicine.

Misdistribution of medical college seats

There is gross disparity among different states of India with Bihar having one MBBS seat per 160,000 people whereas Karnataka has one per 11,000 people. This gross inequality has to be reduced proactively both by curtailing restrictions for private colleges and establishing Govt. run medical colleges. Dismantling the powerful MCI can be the first step in that direction.

Supporting AYUSH doctors:

There are 561 alternative medicine colleges running (301 Ayurveda, 207 Homeopathy, 44 Unani and 9 Siddha) producing around 30,000 graduates every year. There is enough evidence that more than 95% of AYUSH graduates eventually practice modern medicine (allopathy) in primary care set-ups in small to medium size towns at a higher tier than many more unqualified doctors (RMPs and PMPs). Some practice Ayurveda but fraudulent mixing of steroids and metals in the Ayurveda drugs is causing great harm (renal failure, diabetes, hypertension, avascular necrosis of hip etc.). Homeopathy is no longer popular in Germany, its birth place where only 3.6% of sold units in pharmaceutical sector are homeopathy medicines.

In order to give Ayurveda and other streams more credence in the world and also to best utilise their value to treat our own people, extensive randomised controlled trials need to be done to clearly establish their efficacy. For an exercise of such a scale, it is appropriate to establish **Ayurvedic Research Facility** with a mandate to conduct studies for alternative medicines similar to the modern medicines. The existing AYUSH seats could be reduced to about a 1000 at centres where high quality education in those streams is provided. It is essential to realise that modern medicine is nothing but evolution of Ayurveda and a philosophical distinction between the raw and refined drugs is unnecessary. Integrating the AYUSH doctors into family practice as described above can utilise the existing work force for effective healthcare delivery.

Enhanced training of paramedics and nurses

This is very essential considering that the nurses and the paramedical personnel can provide most of the basic services. Curriculum and training modules can be imported easily from the west. Partnerships with relevant western bodies can be very useful rather than re-inventing the wheel.

14. Trauma and Road Safety

There is a huge potential to prevent mortality and morbidity in this domain (**100,000 deaths** annually involving productive young lives).

There is a need for

1. Major trauma centres along the national highways
2. Trauma ambulance network for highways
3. Trauma networks – Linking Govt. and private trauma care and ambulance services
4. Integrated monitoring and accountability system linking road safety and trauma care
5. RTA registry: to monitor the patterns of the accidents. Helps to find out the preventable causes. If a particular vehicle designs, particular road location, or a combination of factors are causing the accident, it can be altered.
6. Making manufactures of vehicles, road contractors, RTA more accountable.
7. Massive education campaigns for simple measures driving in correct lane, not parking on the side of highways, seat belts, air bags and ensuring all vehicles have tail lamps will reduce the mortality very significantly.
8. Monitoring licensing tests to stamp out corruption and ensure drivers are fit for purpose

Trauma Trust:

A separate **Govt. Trauma Trust** can be formed in order to prevent and treat trauma on the national and state highways. The treatment can be availed at nearest private hospitals (if no government hospital is

available within 30 km) based on the fees-per-service model but with stricter guidelines with experience from Aarogya Sri. The very idea is creating a single authority is to streamline measures to prevent road accidents, 'golden hour' care, further treatment and integrating the existing private third party insurance for the road vehicles. Supreme Court has directed the government to establish 'Road Safety Authority of India' accountable to the Parliament following a PIL by Dr.Rajasekharan, an orthopaedic surgeon from Coimbatore with input from the IOSUK - Indian Orthopaedic Association of the UK. Merging Road Safety Authority of India with this Trauma Trust that oversees trauma care can provide immediate feedback for the prevention efforts.

The duties of such a trust can be

1. Implementing preventive measures working closely with transport authorities (mandatory seat belts and air bags for the vehicles regulating the companies directly etc.)
2. Massive education campaigns- educating the road users should be taken up in a big way.
3. Contracting special ambulance network covering all the national and state highways
4. Identifying govt. run tertiary care hospitals and upgrading them to SIMS as a priority under PFI model as described before in order to provide high quality trauma services
5. Contracting treatment by the private hospitals if there is no Govt. hospital within 30 km. Approved private hospitals based on set guidelines.
6. Extensive training of ambulance personnel, strict ATLS protocol based management
7. Workforce management, liaising with paramedical education standard institute for number of places for training
8. Constant monitoring and feedback to study the effect of the preventive measures on the trauma burden

15. Public health

India faces a severe shortfall of public health professionals, and capacity building efforts are urgently required to address its emerging public health challenges. Moreover, lack of data on population health remains the key problem in developing workable action plans. Digitalised primary care network of SPAS clinics linked to CHMA as described above solves this problem once for all. Integrating the proposed CHMA and National Institute of Clinical Excellence with the existing Public Health Foundation of India (PHFI) and Indian Institutes of Public Health (IIPH) will pave the way to develop real-time evidence and research based planning model of excellence. Below are some of the Public Health initiatives that are urgently needed.

1. Extended immunisation schedule including MMR and Hepatitis B
2. Integrating sanitation and clean water provision to the healthcare system in accountability pathways
3. Health helpline
4. Massive public health education programme:
 - 'No injection needed' campaign,
 - Sanitation campaign,
 - Hand hygiene campaign,
 - Early detection campaigns for of TB, cancer, diabetes, hypertension,
 - Maternity care campaign, Vaccination campaign
5. **High quality epidemic team**
6. Mandatory public health education air-time in all the private TV channels

16. Governance

The current system of piecemeal approach to healthcare by the union and state governments is not ideal. Pooling the funds at district level to establish a **District Health Board** is essential to improve the efficiency. As a national health policy, the central government must come forward to run the Drug Supply Agency, CHMA and SIMS hospitals in those states that agree to set-up and fund the DHBs and start the SPAS clinics. **District Health Board** constitutes bureaucrats and senior doctors.

Mechanisms to reduce corruption in the DHB are

1. Transparent contracting of the FPs or PHTs for SPAS clinics by point based system
2. No need for local drug contracts as central DSA supplying high quality generic medicines nationally

DHBs are responsible to reach the targets of the national programmes with different geographically appropriate goal posts. DHBs hold FPs or PHTs accountable for reaching these targets.

17. Conclusion

An endeavour has been made to design a healthcare system that actually works by delivering quality care to a billion-plus population effectively, reliably and at an affordable cost. Suggestions have been made as to how to optimally utilise the work force, build up an accountability mechanism and improve training. Admittedly ideas have been liberally borrowed from successful systems around the world. We have not set out to re-invent the wheel.

This model can be made to work in the real world. All it needs is support from the polity in India and most importantly the public. We believe a vibrant democracy like India simply deserves a better healthcare system. A society can only progress if it is healthy.

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