

Discussion Paper

on

Rejuvenating Healthcare System

by

 **FOUNDATION FOR
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Discussion Paper on Rejuvenating Healthcare System

I. SARS-CoV-2: A wake up call for change

The SARS-CoV-2 pandemic has swept across the world rapidly and left many nations reeling under its attack. The healthcare systems of most nations have been stretched to the limit. Even wealthy nations cannot afford to invest vast resources for simultaneous emergency and critical care for millions of patients. In order to prepare for a once in a generation pandemic, the governments cannot deploy all resources for idle critical care facilities at the cost of all other health services. In many countries, normal health services have been severely disrupted because of the shortage of capacity to handle them in the midst of the COVID disease burden and more often, because of patients staying away from hospitals for fear of catching the infection.

So far, India has seen low levels of COVID incidence relative to our population. ICMR's sero-survey¹ suggests that about 0.78% of the population — or over 10 million people — are infected with the virus, while about 3% of them — about 360,000 — have progressed to have the COVID disease. Of those with COVID, the mortality is about 3%. ICMR reports that overall COVID mortality among infected persons is 0.08%. If these numbers hold true, it appears that so far, despite mass poverty, difficulties in social distancing among the poorer segments of the population and poor hygiene and sanitation, the infection is spreading relatively slowly. However, in some metropolitan areas, 15% or more people seem to have been silently infected, judged by the emergence of antibodies found in the survey. There are many unproven theories to explain the relatively low burden of COVID disease in India — a low-virulence strain, BCG vaccine giving general protection, genetic make-up with fewer receptors on respiratory cell membranes making the

¹ Shekhar, Snehanthu. "ICMR releases sero-survey results, says no community transmission yet but large population at risk of Covid-19". *India Today*. 11 June 2020, <https://www.indiatoday.in/india/story/icmr-sero-survey-community-transmission-high-risk-coronavirus-india-population-hotspot-containment-zones-1688045-2020-06-11>

Indian population less susceptible, relatively young population, family care of the elderly rather than retirement-home care — all have been postulated, and some of these factors may be contributing to relatively less COVID disease burden, morbidity and mortality. However, it is premature to conclude that India has been largely spared by the health ravages of the pandemic. As the lockdown has been relaxed and the economy is opening up, the cases are on the rise.

As shown in Table 1 below, as of June 19th, there are only 277 COVID cases per million people in India whereas the average number of COVID cases in the top ten countries worst hit by the virus stands at around 5000 per million. Reported deaths amounting to 9 per million population is observed in India, which is significantly lower compared to the average of the top ten countries, which is around 296 deaths per million population. Assuming that India is infected on par with the top ten countries, we would have had to deal with over 5 million patients by now and there would have been over 380,000 deaths. If India had witnessed a higher rate of infections that converted to life-threatening illness, it would have completely overwhelmed its existing underprepared and inadequate healthcare system. In India, there are approximately 6,80,968² hospital beds in public sector care and 1,185,242³ beds in private sector care. About 2,00,000 of the public hospitals beds are in PHCs and CHCs, which are ill-equipped to deal with life-threatening emergencies, and a third of the private sector hospital beds cannot deal with serious health problems. For a country of 1.39 billion people, there are only approximately 96,485 beds and 48,242⁴ ventilators in public and private hospitals combined. Countries that are far more affected due to COVID than India are better equipped in infrastructure and critical care resources. For example, the US has 292 ICU beds for a million people⁵,

² “Rural Health Statistics”, Ministry of Health & Family Welfare 2018-19 https://main.mohfw.gov.in/sites/default/files/Final%20RHS%202018-19_0.pdf and “National Health Profile”, Central Bureau of Health Intelligence, Ministry of Health & Family Welfare, 14th Issue 2019 <http://www.cbhidghs.nic.in/showfile.php?lid=1147>

³ “State-wise estimates of current hospital beds, intensive care unit (ICU) beds and ventilators”, Center for Disease Dynamics Economics & Policy and Princeton University 2020 https://cddep.org/wp-content/uploads/2020/04/State-wise-estimates-of-current-beds-and-ventilators_20Apr2020.pdf

⁴ “State-wise estimates of current hospital beds, intensive care unit (ICU) beds and ventilators”, Center for Disease Dynamics Economics & Policy and Princeton University 2020 https://cddep.org/wp-content/uploads/2020/04/State-wise-estimates-of-current-beds-and-ventilators_20Apr2020.pdf

⁵ Halpern, Neil. and Tan, Kay See., “US Resource Availability for COVID”, *Society of Critical Care Medicine* <https://sccm.org/Blog/March-2020/United-States-Resource-Availability-for-COVID-19>

Germany has 292 ICU beds, Italy has 125 ICU beds and Spain has 97 ICU beds⁶. India, on the other hand, has a ratio of 73 ICU beds for a million people. This data highlights the fact that if our situation was more acute, the critical care support infrastructure in India would have been inadequate to cater to a growing number of COVID patients, in addition to an ever-increasing patient load with other critical care needs.

Table 1: COVID-19 Global Statistics⁷

Country	Total Cases	Total Cases/1M Pop	Total Deaths	Total Deaths/1M Pop	Death Rate = Total Deaths/Total Cases
USA	2,263,749	6,840	120,688	365	5.33
Brazil	983,359	4,627	47,869	225	4.86
Russia	569,063	3,899	7,841	54	1.37
India	381,485	277	12,605	9	3.3
UK	300,469	4,427	42,288	623	14.0
Spain	292,348	6,253	27,136	580	9.2
Peru	244,388	7,416	7,416	226	3
Italy	238,159	3,939	34,514	571	14.1
Chile	225,103	11,779	3,841	201	1.7
Iran	197,647	2,354	9,272	110	4.7

Even if we are to assume that the healthcare impact of COVID will not be severe, there are three reasons why this pandemic should serve as a wake up call to India. First, in a future epidemic or pandemic, our population may be much more susceptible and the number of patients requiring hospitalisation and critical care will

⁶ Rhodes, A., Ferdinande, P., Flaatten, H. *et al.* “The variability of critical care bed numbers in Europe”, *Intensive Care Med* 38, 1647–1653 (2012) <https://doi.org/10.1007/s00134-012-2627-8>

⁷ Worldometer Data from <https://www.worldometers.info/coronavirus/>

overwhelm the system very quickly. Second, in the absence of a robust and credible primary and family care system accessible to all citizens, patients with even milder infections will flock to the tertiary care hospitals and inundate the limited facilities available, or those with early stages of the disease will wait until their condition becomes critical, increasing morbidity and mortality. India's primary care infrastructure is currently ill-equipped to screen and test at the local level, to assuage people's fears. Finally, and most importantly, the Indian healthcare system is extremely weak, under-funded and inadequate to serve the needs of the population, causing enormous avoidable suffering and driving people into poverty and penury. Let us examine the second and third reasons in some detail.

During the monsoon months of July-October, dengue is prevalent in many parts of India. Every year, thousands of patients flock to public hospitals every day during dengue season with complaints of fever, though most cases are relatively harmless viral fevers. Most of these patients in out-patient departments of teaching and district hospitals are poor and travel long distances at considerable cost. Often, hospitals have no choice but to admit them as in-patients and discharge most of them after a couple of days after laboratory tests clear them of dengue virus. If an adequate primary and family care system is in place and if patients can access a qualified physician within 10 kms — a physician and team which comforts and reassures the patients, conducts diagnostic tests and prescribes and dispenses medicines — minor problems would not become critical, nor would public hospitals be inundated with thousands of patients. In a pandemic situation, in the absence of a credible and accessible primary care and referral system, the fear and mass hysteria will lead to the inevitable collapse of the hospital system.

The most important reason why the pandemic serves as a wake up call is the perilous state of our healthcare system even in normal times. The public expenditure on health is about 1.3% of GDP, among the lowest in the world. About 90% of the workers in India are in the unorganised sector without secure jobs, monthly wages, or health coverage. As a result most of the expenditure is out-of-pocket. Not surprisingly, our disease burden is among the highest in the world, with many preventable deaths and high morbidity and avoidable suffering. Perhaps the most compelling reason why we should address the healthcare crisis on war footing is the

fact that over 55 million Indians descend into poverty every year on account of lost income because of illness or high out-of-pocket expenditure incurred for treatment⁸. If we have a robust and effective healthcare system in place, all poverty can be eradicated within a decade.

Table 2: Healthcare workforce

Country	Total healthcare workforce	Percentage of total population	Percentage of total workforce
UK	1.9 million workers ⁹ (mostly in NHS)	2.9%	5.8%
US	17 million workers ¹⁰	5.14%	10.74%
India	3.8 million workers ¹¹	0.27%	0.77%

In addition, if we look at the employment potential in a robust, comprehensive healthcare system, the economic argument for rejuvenation of the healthcare system is compelling. As we can see from the above table, compared to the UK and US, we are deploying only a tenth and a twentieth of the health workers per unit population respectively. If we reach even a healthcare workforce of 1% of the population, India will be able to absorb over 10 million new workers in the healthcare system alone. Even then, we would be at 40% of the UK level and 20% of the US level of the health workers per unit population.

⁸ Sakthivel, Selvaraj., Habib Hasan, Farooqui., Anup, Karan., “Quantifying the Financial Burden of Households, Out-Of-Pocket Payments on Medicines in India: A Repeated Cross-Sectional Analysis of National Sample Survey Data”, *Public Health Foundation of India* 1994-2014; <https://pubmed.ncbi.nlm.nih.gov/29858403/>

⁹ Office for National Statistics, UK; <https://www.ons.gov.uk/peoplepopulationandcommunity/populationandmigration/internationalmigration/articles/internationalmigrationandthehealthcareworkforce/2019-08-15>

¹⁰ “The US Health Workforce State Profiles”, US Dept. of Health & Human Services, Human Resources and Services Administration <https://bhw.hrsa.gov/sites/default/files/bhw/nchwa/state-profiles/usworkforcestateprofiles-2018.pdf>

¹¹ Karan A, Negandhi H, Nair R, et al., “Size, composition and distribution of human resource for health in India: new estimates using National Sample Survey and Registry data”, *BMJ Open* 2019 [doi:10.1136/bmjopen-2018-025979](https://doi.org/10.1136/bmjopen-2018-025979)

The COVID pandemic has not subsided globally and these numbers would rise for months, before effective antiviral drugs, vaccination and herd immunity gives protection to the bulk of the population. A future pandemic may have even higher mortality rates, devastating populations. The significant disruptions caused by COVID and the potential for deluge at hospitals due to lack of credible elementary care, serves as a wake-up call to introspect and evaluate the overall healthcare service in India. This crisis should be seen as an opportunity to push for comprehensive and sustainable public healthcare reforms in the country.

II. Burden of Communicable and Non-Communicable Diseases

In India, the burden of communicable diseases, largely preventable and caused mostly due to poor sanitation and public health, have reduced to 27.5% in 2016 from 53.6% in 1990¹². This reduction is due to extensive vaccination drives, increase in income, better living conditions and advancements in medicine and technology. As per the National Health Profile 2019, life expectancy in India has increased from 49.7 years in 1970-75 to 68.7 years in 2012-2016¹³. There has also been a consistent decrease in the birth rate, death rate and natural population growth rate and as of 2017, India registered a birth rate of 20.2 per population of 1000 and death rate of 6.3, while the natural growth rate was 13.9 per population of 1000¹⁴. Despite these positive developments, infectious diseases like tuberculosis, malaria, dengue and diarrhea still pose a significant burden on the Indian healthcare system.

- Nearly 2000 children below the age of five years die each day in India out of preventable diseases

¹² “India: Health of the Nation’s States, The India State-Level Disease Burden Initiative”, Indian Council of Medical Research and Public Health Foundation of India, 2017
https://www.healthdata.org/sites/default/files/files/policy_report/2017/India_Health_of_the_Nation%27s_States_Report_2017.pdf

¹³ “National Health Profile”, Central Bureau of Health Intelligence, Ministry of Health & Family Welfare, 14th Issue 2019 <http://www.cbhidghs.nic.in/showfile.php?lid=1147>

¹⁴ “National Health Profile”, Central Bureau of Health Intelligence, Ministry of Health & Family Welfare, 14th Issue 2019 <http://www.cbhidghs.nic.in/showfile.php?lid=1147>

- According to UNICEF, India had the second-highest number of deaths of children under the age of 5 in 2018 due to pneumonia after Nigeria¹⁵
- In India, notifications of new cases of TB rose from 1.2 million to 2.0 million between 2013 and 2018 (+60%)¹⁶
- As per World Malaria Report, there were 7 million malaria cases and ~10000 deaths in India in 2018
- As per the National Leprosy Eradication Programme Progress Report, 0.12 million new leprosy cases were reported in India in 2018
- Only 17.4 million newborns (65.2%) are fully immunised out of 26.7 million newborns in a given year
- According to a Lancet study of India, China, Brazil and Mexico, between 2005 and 2016, India was the only country where communicable diseases accounted for nearly half of the deaths in the age group of 5 to 14 years¹⁷

Despite India making great strides in improving health outcomes, the burden of avoidable suffering still remains high. On top of the existing burden of preventable diseases, the share of non-communicable diseases (NCDs) has increased.

- The total NCD disease burden has increased to upto 60% in 2016 from 38% in 1990¹⁸

¹⁵ UNICEF Press Release 2019 <https://www.unicef.org/press-releases/one-child-dies-pneumonia-every-39-seconds-agencies-warn>

¹⁶ “Global Tuberculosis Report”, *World Health Organisation*, 2019
https://www.who.int/tb/publications/global_report/GraphicExecutiveSummary.pdf?ua=1

¹⁷ Shaza A Fadel, Cynthia Boschi-Pinto., “Trends in cause-specific mortality among children aged 5–14 years from 2005 to 2016 in India, China, Brazil, and Mexico: an analysis of nationally representative mortality studies”, *Lancet* 2019; 393: 1119–27 [https://doi.org/10.1016/S0140-6736\(19\)30220-X](https://doi.org/10.1016/S0140-6736(19)30220-X)

¹⁸ “Comprehensive health study in India finds rise of non-communicable diseases”, *Institute of Healthcare Metrics and Evaluation*, 2017
<http://www.healthdata.org/news-release/comprehensive-health-study-india-finds-rise-non-communicable-diseases#:~:text=More%20than%2060%25%20of%20deaths,illness%20from%20some%20leading%20NCDs.>

- The National Health Profile 2019 shows that the number of people screening for NCDs almost doubled in one year from 35 million in 2017 to 65 million in 2018¹⁹.
- According to Lancet Oncology, the incidence of cancer cases in India were 548,000 in the year 1990 and 1,069,000 in the year 2016, registering a 95% increase²⁰.
- Moreover, as per WHO data, a total of 58,17,000 deaths were estimated from cardiovascular disorders, cancer and diabetes in 2016²¹.

The above-mentioned data shows that the increased occurrence of NCDs are inevitable due to India's epidemiologic transition caused by longer lifespan and lifestyle changes, hence, requiring an efficient primary care system to manage health and a sustainable tertiary care system to treat critical patients.

The recent emergence of COVID, the already-existing excessive burden of communicable and non-communicable diseases, along with the systemic challenges within healthcare, is why it is important, now more than ever, to push for comprehensive and sustainable healthcare reforms. Having a robust public healthcare system will make healthcare, which is now seen as a luxury rather than a necessity, affordable and accessible to the masses.

III. Systems Predicament

Alarmingly, 55 million Indians annually descend into poverty on account of poor healthcare. This scenario is a reflection of India's inefficient and poorly equipped healthcare system and its disproportionate impact on the poor. India spends only

¹⁹ "National Health Profile", Central Bureau of Health Intelligence, Ministry of Health & Family Welfare, 14th Issue 2019 <http://www.cbhidghs.nic.in/showfile.php?lid=1147>

²⁰ "The Burden of Cancers and Their Variations Across the States of India: The Global Burden of Disease Study 1990–2016", *Lancet Oncology*, 2018 [https://www.thelancet.com/journals/lanonc/article/PIIS1470-2045\(18\)30447-9/fulltext](https://www.thelancet.com/journals/lanonc/article/PIIS1470-2045(18)30447-9/fulltext)

²¹ Dey., Sushmi, "Non-communicable diseases cause 61% of deaths in India: WHO report", *Times of India*, 20 Sept 2017 <https://timesofindia.indiatimes.com/life-style/health-fitness/health-news/non-communicable-diseases-cause-61-of-deaths-in-india-who-report/articleshow/60761288.cms#:~:text=According%20to%20the%20data%2C%20NCDs.and%20heart%20problems%20in%202016.>

1.3% of its GDP on public healthcare, which is abysmally low by global standards. This low expenditure means poor infrastructure and inadequate manpower development. Moreover, an ineffective delivery system has led to uneven distribution and absorption of the healthcare workforce, especially in rural areas, causing enormous hardships to the poor. Lack of adequate primary and outpatient care at the grassroots level is also converting easily treatable problems into serious morbidity and catastrophic illness. The failure of primary care and the absence of a referral system are imposing enormous burden on the tertiary care system leading to overcrowding, poor services and declining public trust.

The challenge in India is to build a relatively low cost, effective, accessible healthcare system on the foundations already existing. Radical overhaul is not feasible. Nor can India commit more than 1% of its GDP on additional resources in public healthcare, given the fiscal constraints. Universally, the overall healthcare is divided into three distinct systems based on the level of care provided: Primary, Secondary and Tertiary care systems. For reasons of convenience and clarity, each of these three tiers of healthcare needs to be addressed distinctly and separately, even as we establish linkages and fully integrate all these systems.

Table 3: Interventions under each level of care

Primary Care	Secondary Care	Tertiary Care
Nutrition, sanitation, immunisation, maternal & child care, reproductive & family planning services, outpatient care, control of communicable disease, basic diagnostic services, treatment of simple problems including infections & early diagnosis and follow up and management of most non-communicable diseases	All cases of hospitalisation, abdominal surgeries, fractures, other simple surgeries, basis eye and dental care	High cost diagnostics such as MRI, PET Scans, other sophisticated interventions like cardio-thoracic surgery, neurosurgery and retinal surgery, cancer treatments and radiotherapy, critical care involving life supporting systems, and other high-skill, high-infrastructure, high-cost interventions

In India, due to the introduction of recent government programs like Ayushman Bharat and other state level risk-pooling systems, a certain degree of attention has

been shown to some aspects of healthcare, most of these being components of secondary care. A closer look at these secondary care risk-pooling programs will be a good starting point to see what seems to reasonably work within the current Indian healthcare scenario.

IV. Opportunity in Secondary Care

Secondary care, sometimes referred to as 'hospital and community care', includes all hospital care and planned elective care such as an abdominal or cataract operation, or urgent and emergency care, such as treatment for a fracture. This level of hospitalisation, involving relatively low-cost simple interventions, is currently being addressed by insurance-based risk-pooling programs run by the union and states. The National Health Protection Scheme at the union level, Ayushman Bharat, is designed to offer 1,393 procedures²² free of cost in empanelled public and private healthcare facilities across 24 specialisations. The scheme has cost the exchequer Rs. 13412 crore on 1 crore hospitalisations since its launch in September 2018²³. Several states like Andhra Pradesh and Telangana, have been implementing Aarogyasri and other risk-pooling systems for hospital care. In fact, these models have become the template for Ayushman Bharat. However, there are some limitations of such risk pooling. First, the program emphasises hospital care, whereas most sickness in India is an offshoot of the failure of primary care. Second, the program does not distinguish between the list of services that can be availed at the secondary and tertiary level. Without a clear demarcation between the two levels of care, insurance-based healthcare models prove to be expensive with increasing temptation to subject patients to unnecessary and costly investigations and interventions.

Experience of the Aarogyasri program at the state level shows an average increase of expenditure on the insurance program and a consequent slowdown of expenditure on primary and secondary facilities within the constrained fiscal space. This has long term cost implications as with the advancement of technology, tertiary care cost is bound to increase, particularly in the private sector. The lack of primary facilities

²² Pradhan Mantri Jan Aarogya Yojana, https://pmjay.gov.in/sites/default/files/2020-01/HBP_2.0-For_Website_V2.pdf

²³ Pradhan Mantri Jan Aarogya Yojana, <https://www.pmiay.gov.in/>

may lead to increased hospitalisations, which would increase the insurance costs, and further push the expenditure towards tertiary care. Prevention of hospitalisation is a better outcome from a fiscal point of view as costs incurred at primary and secondary levels are lower than reimbursement at the tertiary care level.

Table 4: Expenditure Profile of Aarogyasri Program

Aarogyasri Program							
		2015-16	2016-17	2017-18	2018-19	2019-20	2020-21
Andhra Pradesh	Amount Spent (in Crore)	500	1301	1000	1300	1305	1900 (Allocated)
	No. of patients treated	321,672	363,204	479,688	439,345	42,564	-
Telangana	Amount Spent (in Crore)	NA	707	772	621	720	720 (Allocated)
	No. of patients treated		2,74,480	3,09,129	-	-	-

Source: Andhra Pradesh Annual Budget, Telangana Annual Statistics Report

From the standpoint of hospital care through public health insurance and risk pooling schemes, India has a decent chance of providing quality secondary care to all its citizens. Eliminating minor shortcomings, integrating the union and state-specific models and universalising the care can lead to comprehensive secondary care at a moderate cost with public-private partnership. However, in order to provide comprehensive secondary care, it is necessary to keep the costs down and the program solvent. This can happen only when an adequately funded and well-designed primary care is deployed to treat patients locally and early, thereby reducing the burden on secondary and tertiary care.

V. Primary Care - Overview

Primary care is the first point where patients interact with the health system, providing longitudinal, comprehensive, and person-centric care. The four main features of primary care services are first-contact access for each new need, long-term person (not disease)-focused care, comprehensive care for most health needs, and coordinated care. The discipline of family medicine and/or general practice is

also included in the primary care. India has committed itself to ‘Universal Health Coverage by 2022’ but because of the lack of inputs from the primary level, most of the health programs in India fall short of their objectives to combat the widely prevalent problems of child mortality, malaria, tuberculosis and other such illnesses.

Low government expenditure on public healthcare, high out of pocket expenditure, lack of infrastructure and manpower resources at the primary level, dependence on private providers and proliferation of informal care providers are the main challenges plaguing the primary care system. Absence of qualified primary care physicians and facilities in rural areas, either in the public sector or private sector, is a big concern. In the private sector, unqualified people cater to primary care needs. Though the reason can be seen to be on the supply side due to lack of training for physicians and lack of formal medical postgraduate training, the basic problem lies on the demand side as general practice in rural areas is neither financially viable nor associated with pride. Lack of facilities in rural areas act as a disincentive to live and work there. Physician accountability towards patients is limited and because of poor quality of services provided, people’s expectations from primary care physicians remain low.

VI. Challenges with the current primary care system

Our public health expenditure is merely around 1.3% of GDP²⁴, which is one of the lowest in the world. Out of the total health expenditure in India, only 27% is the public share, and the rest comes from citizens, most of it is out-of-pocket²⁵. During 2015-16, out of the total government expenditure on healthcare, 51.5% was spent on primary care and for the most part, through facilities owned and operated directly by the government²⁶.

²⁴ RBI State Finance Report 2019-20

<https://rbidocs.rbi.org.in/rdocs/Publications/PDFs/STATEFINANCE201920E15C4A9A916D4F4B8BF01608933FF0BB.PDF>

²⁵ WHO Global Health Expenditure Database https://apps.who.int/nha/database/Country_Profile/Index/en

²⁶ Nachiket., Mor, “Financing for Primary Healthcare in India”, March 2020

These primary care resources of the government are currently principally focused on controlling infectious diseases (through vaccinations, mass-drug-administrations, vector-control, and timely-treatments) and addressing maternal and child health concerns, failing to provide the first point of contact needed for curative medical care²⁷. A major deficiency in our primary care system is its lack of credibility in dealing with individual patients and families. On paper, it may seem that we have more than enough primary healthcare infrastructure in India. There are 26192 Primary Healthcare Centres with 4-6 beds each (Table 2). However, there is a huge inter-state variation in the quality of PHC facilities. For example, only 66 PHCs (<0.3%), with 52 in Maharashtra alone, have been accredited with NABH 2018 (National Accreditation Board for Hospitals and Healthcare Providers accreditation standards for PHCs)²⁸. According to the Economic Survey of India 2018-19, only 20% of PHCs at the national level function as per IPHS (Indian Public Health Standards) norms, highlighting the dreadful state of primary healthcare services in India.

Table 5: Beds at PHCs²⁹

	Functional Primary Health Centers (PHCs)		
	Rural	Urban	Total
No. of PHCs	21002	5190	26192
No. of Beds	84008	20760	104768

²⁷ Nachiket., Mor, “Financing for Primary Healthcare in India”, March 2020

²⁸ “Re-engineering Indian healthcare 2.0”, *FICCI and EY*, 2019. http://ficci.in/spdocument/23111/Re-engineering-Indian-healthcare-2.0_FICCI.pdf

²⁹ “Rural Health Statistics”, Ministry of Health & Family Welfare 2018-19 https://main.mohfw.gov.in/sites/default/files/Final%20RHS%202018-19_0.pdf

The problem is further compounded by the absence of physicians working in PHCs and shortage of health care support staff (Table 6).

Table 6: Manpower deficiencies³⁰

	Doctors		Health Worker/ANM*		Total
	Rural PHCs	Urban PHCs	Rural PHCs	Urban PHCs	
Vacant positions in existing sanctioned strength	7715	954	5478	2891	17038
Shortfall of such staff on the ground	1484	867	6492	11498	20341

According to the Indian Medical Association, India has over 2 lakh qualified medical doctors who are unemployed. India is also producing over 50,000 physicians³¹ and over 60,000 nurses³² every year. We can effectively train these physicians, nurses, pharmacists, lab technicians, physiotherapists and other paramedics and absorb them into the system. The problem is not the availability of qualified manpower; it is one of deployment. First, the training is not always attuned to primary and family care. Short, well-designed orientation programs will address this problem. Second, there are no facilities to serve the poor, underserved rural and urban slum population. Expanding public facilities free of cost or at a minimal fee to the patients will address this problem. By providing attractive perks and incentives, physicians and other health workers can be deployed to rural areas, to serve the underserved sections of the society. In Italy, for example, a financial incentive of approx. five euros per

³⁰ “Rural Health Statistics”, Ministry of Health & Family Welfare 2018-19
https://main.mohfw.gov.in/sites/default/files/Final%20RHS%202018-19_0.pdf

³¹ Manuel, Thomas., “India Produces 50,000 Doctors a Year. If Only Medical Education Were Better Regulated”, *The Wire*, 28 Aug 2015 <https://thewire.in/education/medical-colleges-mci-mbbs>

³² Sinha, Kounteya., “India will need 2.4m nurses by '12: WHO”, *The Times of India*, 12 May 2010
<https://timesofindia.indiatimes.com/india/India-will-need-2-4m-nurses-by-12-WHO/articleshow/5918320.cms#:~:text=Annually%2C%20the%20country%20produces%20around,to%20foreign%20shores%20every%20year.>

patient is provided to the doctors to encourage them to work in rural areas.³³ Third, the PHC is an impersonal, institutional model with no patient-doctor relationship or trust. Absence of personnel and resources and subsequent lack of trust at the local level drives rural populations to seek medical help elsewhere which could put the patient in peril. Critically, an abysmally low doctor consultation rates of 0.5 to 0.7 consultations³⁴ per capita per year, also point to rural population delaying much needed primary health care culminating into overburdening of the tertiary care system. Consultations with doctors at the primary level points to the overall performance of a healthcare system. A healthcare system which cannot see and consult with its patients at least twice a year (2 consultations per year), cannot be expected to provide a reasonable degree of service. This demonstrates the glaring disparity in the doctor consultation rates between countries and clearly shows the dismal state of primary consultations and care in India.

We need to establish physician clinics with far more sophisticated diagnostics and drug dispensing all within 10 kms from the patient’s residence. Public-private partnership in diagnostics at primary care level is feasible, as demonstrated by states like Andhra Pradesh. States like Tamil Nadu have already shown how drug procurement and dispensing can be improved. Fourth, accountability in public systems is very poor and negligence, absenteeism and corruption are endemic problems in public health services. This problem can be addressed by innovative models incorporating competition and choice with public private partnership, mostly funded by the government. Finally, regular monitoring of non-communicable diseases and robust health information systems are non-existent for most Indians. A physician-based, choice driven primary care system with all logistical and inventory support from existing PHCs will help monitor non-communicable diseases. An initial step can be taken to build health records and information systems for all patients and citizens and over time, a robust health information system can be a computerised system, so that patient records can be pulled out anywhere by authorised persons with adequate safeguards.

³³ Donatini, Andrea., and Romagna, Emilia., “International Healthcare System Profiles: Italy”, *The Commonwealth Fund*, 5 June 2020 <https://www.commonwealthfund.org/international-health-policy-center/countries/italy>

³⁴ "Doctor consultations per capita, latest year available", *OECD* (2018), in *Health care resources and utilisation*, Paris, https://doi.org/10.1787/health_glance_ap-2018-graph90-en

In the absence of an effective public primary care system, the vacuum is filled by private providers who have now become the first point of contact for most patients. Estimates show that about two-third of the private expenditure is on curative needs at the primary level. Further, there is increasing proliferation of informal care providers. More than 70% of the primary care in rural India is provided by informal care providers³⁵. Out of 10 lakh informal providers, only 3.5 lakh are eligible for limited licence to practice and prescribe specific medicines in preventive and primary care, under the National Medical Commission Bill, 2019³⁶. Given the challenges around the supply of formal health professionals, especially clinicians, informal care through unqualified persons, will continue to seriously damage the health of the poor. It is imperative to best leverage these informal providers through appropriate regulations and capacity building, to mitigate the risk of misdiagnosis and incorrect treatment. But the real solution lies in providing credible, accessible care through qualified physicians and nurses.

These challenges of primary care can be viewed as disguised opportunities to push for substantial changes in the primary healthcare system. India has the public demand necessary for qualitative, accessible and affordable healthcare, and a large pool of skilled manpower. Our pharmaceuticals and vaccine industry is very efficient and economical, producing high quality products at a very low cost. Our physicians are well-qualified and provide quality care at an extremely low cost by world standards. With all this in mind, we need an innovative and appropriate delivery model to make healthcare available and accessible to the poor at a low cost.

VII. Primary care structure of other countries

A study of the healthcare models that work with a certain degree of success in serving patients in other countries would be useful in designing an appropriate model suitable to our conditions. Models that can provide incentives to service providers and also provide care and medicines to patients at very low cost have been evaluated.

³⁵ “Re-engineering Indian healthcare 2.0”, *FICCI and EY*, 2019. http://ficci.in/spdocument/23111/Re-engineering-Indian-healthcare-2.0_FICCI.pdf

³⁶ “Re-engineering Indian healthcare 2.0”, *FICCI and EY*, 2019. http://ficci.in/spdocument/23111/Re-engineering-Indian-healthcare-2.0_FICCI.pdf

The National Health Service in the United Kingdom, the Canadian Healthcare System, and the Italian National Health Service offer useful lessons for their design and working. Salient features of these models are presented in the table below, some of which can be adapted into a primary care model for India. Structure and features of Mohalla Clinics in Delhi was also reviewed to seek out solutions that can work.

Table 7: Details of Practices in Other Countries

Countries	Form of partnership b/w govt and private practitioner	Payment to private practitioner	Choice	Drug Supply
UK- NHS	All the costs - for medical tools, office rental, and personnel - are borne by the GP	Per patient registered	Yes, choice to register with any practitioner	Free of cost ³⁷
Canada	All the costs - for medical tools, office rental, and personnel- are borne by the GP ³⁸	Mostly fee-for-service, but varies from province to province ³⁹	Yes, but patient may not be accepted if practitioner has a closed list	Partial payment ⁴⁰
Countries	Form of partnership b/w govt and private practitioner	Payment to private practitioner	Choice	Drug Supply
Italy - NHS	All the costs - for medical tools, office rental, and personnel -	Per patient registered; financial	Yes, choice to register with any practitioner	Free of cost ⁴²

³⁷ “Prescription curbs to free up hundreds of millions of pounds for frontline care”, NHS UK, 30 Nov 2017 <https://www.england.nhs.uk/2017/11/prescription-curbs-to-free-up-hundreds-of-millions-of-pounds-for-frontline-care/>

³⁸ “Health Systems Characteristics Survey 2016: Canada”, OECD <http://www.oecd.org/els/health-systems/OECD-HSC-Survey-2016-Canada-Comments.pdf>

³⁹ Clement, Fiona., and Memedovich., Katherine, “Drug coverage in Canada: gaps and opportunities”, *Journal of Psychiatry and Neuroscience*, May 2018 <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5915235/>

⁴⁰ Official Website of Government of Canada <https://www.canada.ca/en/health-canada/services/health-care-system/pharmaceuticals/access-insurance-coverage-prescription-medicines.html>

⁴² Tedeshchi, P., “Building primary care in a changing Europe: Case studies”, *Observatory Studies Series*, No. 40., 2015 <https://www.ncbi.nlm.nih.gov/books/NBK459002/>

	are borne by the GP ⁴¹	incentives to work in rural and remote areas		
Delhi Mohalla Clinics	Government, supply of doctors also managed by the government	Per out-patient	Limited; doctor sent on daily basis to outpatient clinic from a panel	Free of cost

VIII. Approach for India: Integrated Family Physician-Primary Care Model

An Integrated Family Physician-Primary Care Model as the first point of contact, that people can trust in the community, must in the very least, treat infections and manage health through routine checkups. Such a system would build doctor-patient trust and maintain strong linkages between primary, secondary and tertiary levels of healthcare, thereby reducing the burden on tertiary hospitals.

1. Family Physician Model - Overview

A Family Physician (FP), a private qualified doctor certified in family healthcare, should serve as the first point of contact. In the US and the United Kingdom (UK), ~50% of the Post Graduate seats are in family medicine, while in India there are only 200 DNB (Diplomate of National Board) family medicine seats available through a central admission test. The family medicine practitioners’ pool is currently unavailable at the basic primary care level due to a lack of focus on community and primary care education in the country. Changes in the current curriculum to include family medicine and introducing certification courses after MBBS graduation is essential to have qualified doctors, specialised in family care, to cater to specific needs of communities. There could be two broad models: A per capita payment or fee for outpatient services.

FPs can be contracted and paid by a Regional Health Trust (RHT), which will receive money from the government on a per capita basis. PHCs can be integrated into the FP model by concentrating on those services which complement the FP’s duties. The

⁴¹ Donatini, Andrea., and Romagna, Emilia., “International Healthcare System Profiles: Italy”, *The Commonwealth Fund*, 5 June 2020 <https://www.commonwealthfund.org/international-health-policy-center/countries/italy>

FP will register patients, maintain records, conduct basic diagnostics and provide free generic drugs. Primary and preventive care such as immunisation, antenatal checkups, malnutrition assessment, infectious disease treatment and chronic disease screenings will be provided by the FP at the clinics. The FP would reside in the area he or she practices in. In rural areas, the FPs will reside in small towns, where nearby villages are covered. This will ensure sufficient rural penetration. The core aspect of this model is the direct interaction that patients will have with their FP, which will build a bond of trust and act as a psychological booster. Since there will be continuity of care, such consultations will also ensure holistic healthcare rather than merely treating the patients. Alternatively, the compensation can be on the basis of outpatient visits.

2. Choice, Competition and Accountability

It is up to the people to choose their FP from a pool of available doctors. Let us say, in a small town with a population of 50,000 to 100,000 within a 10 km radius, there are 10 FPs included in the program. The families and patients can visit the doctor of their choice based on reputation, trust and past experience. Competition and choice of this kind will create an incentive for better performance of care providers. This element of choice will enable competition where FPs in a certain geographic area would vie to provide the best services, hence attracting more patients. The experience of Delhi Mohalla Clinic indicates that the **payment to the FP on a per outpatient basis** is a good fit for India's conditions, as currently primary care facilities remain underutilised. Secondary income can be provided to the FP in the form of performance and outcome-based monitoring. Such strong financial incentives will attract qualified medical personnel to work in rural areas. This will also ensure that the physician is more accountable to the system. Let us say the physician and her team are paid Rs. 150 for every outpatient visit. Assuming 40 to 50 outpatients per day, the physician and her team will earn a monthly income of about Rs. 200,000. This monetary incentive will make more care providers participate in the program. Competition and outpatient linked remuneration will ensure accountability and public trust.

3. Referrals and Linkages

FPs will make referrals to secondary and tertiary care in cases of elective non-

emergency procedures. This will lead to a clear demarcation between all the three levels of healthcare, thereby reducing the burden on tertiary care.

4. Record Keeping

Aadhar Number, including biometric confirmation, will be the mandatory basis for registration and availing of services. Over time, electronic health records of the patients will be available. These records will be uploaded onto and monitored by the Central Health Monitoring Agency. They can be digitally transferred to the concerned FP if the patient changes their provider, or needs referral care or emergency hospital care.

5. Diagnostics and Drug Procurement

Government-led diagnostic centers would be set up for primary care, which will provide blood tests, pulse oximeter, urine tests, electrocardiograph and x-ray services. These centers will provide pooled services to reduce costs using existing infrastructure of PHCs. If a diagnostic test is needed, the FP will send their patients to these centers and further treatment and follow-up can happen at the FP clinic itself. Alternatively, simple blood and urine tests can be conducted in the outpatient clinic itself. More sophisticated tests can be outsourced to the private sector. In Andhra Pradesh, such a system is in place and it seems to be working efficiently. A private partner collects samples from public institutions, transports samples, conducts tests and provides results the next day. With competition and quality control, the system is cost-efficient and clinicians are generally confident of accuracy of the laboratory findings.

In order to curtail out-of-pocket expenditure, a Drug Supply Agency should be created to ensure direct and free distribution of low cost but high quality generic drugs. Digital logging of the doctors in the primary, secondary and tertiary centers for the prescriptions, which are linked to the Aadhar number, will help in monitoring the usage of the drugs ensuring there is no abuse and in tackling the threat of antibiotic resistance. Drug dispensaries on replenishment model will curtail over-prescription and nominal prescription fees will control over utilisation. Tamil Nadu has successfully introduced centralised drug procurement coupled with an efficient distribution system. Other states are emulating this model with good results.

IX. Primary Care Cost Estimates

Preliminary cost estimates have been made to calculate the total additional expenditure required to establish and run a primary healthcare system in India. Our estimates are shown in the table below. The current per capita cost incurred by the Delhi government in Mohalla clinics is Rs. 120.

Table 8: Primary Healthcare Cost Estimates

Per Outpatient Cost Incurred	Rs. 150
Per day Outpatient visits in a clinic	50
Number of trained physicians available	200,000
Annual Outpatient Cost (assuming 300 working days; 15000*150*200000)	Rs. 45,000 crore
Initial Infrastructure and Training Cost (200000*100000)	Rs. 2,000 crore
Total annual additional expenditure on primary healthcare	Rs. 47,000 crore

X. Tertiary Care - Overview

Tertiary care is specialised healthcare for patients who are referred by primary and secondary healthcare providers for more advanced treatments such as for burns, cardiac issues, cancer treatment, neurosurgery etc. Tertiary care can be availed in tertiary level hospitals, both Government (District and Public Teaching) hospitals, apex multi-speciality institutes and Private or Corporate Hospitals. The treatments in tertiary hospitals are more advanced and high end, involving diagnostic support services, surgical procedures and complex operations and interventions by specialised medical personnel.

In the year 2018-19, AIIMS received 3,814,726 out-patients and 2,54,605 in-patients, a 36.9% and 26.3% increase in out-patients and in-patients respectively,

over the last five years⁴³. AIIMS therefore received around 12,000 out-patients and 840 in-patients per day during that year. In 2017-18, Guwahati Medical College received 7,61,532 out-patients and 92,856 in-patients, a 21.4% and 24% increase in out-patients and in-patients respectively, over the last five years⁴⁴. FDR's study of public teaching hospitals in Andhra Pradesh and Telangana shows that the daily outpatient visits number 2000-4000 in these hospitals. Often a single doctor has to see 100 or more patients in a three hour period in appalling conditions of overcrowding and poor infrastructure and sanitation. The above data clearly highlights the growing demand at public tertiary hospitals and overcrowding. Due to lack of a robust and efficient primary care system, people chose to go to tertiary care hospitals even for minor illnesses at tertiary hospitals, thereby burdening and overwhelming them.

XI. Market Failure in Insurance-based Models

Information asymmetries are abundant in the health sector. Patients and insurers suffer from lack of information regarding the risk characteristics of individuals, cost of diagnostics, services and treatments, alternative options and the need and rationale for diagnostics and interventions. This can foster supplier-induced demand, contributing to an inefficiently high level of utilisation. For example, in China, healthcare providers provided additional care to the patients under the 'DOTS free TB package' for tuberculosis treatment, such as over-prescription of medication, non-standardised tests, poor referral and high hospitalisation rates, and kept patients in therapy much longer than the prescribed six months, in order to generate additional revenue⁴⁵.

Moral Hazard is a common form of market failure in health insurance markets. It refers to at least two different situations in which the insured's behavior can affect

⁴³ 63rd AIIMS Annual Report 2018-19,

https://www.aiims.edu/images/pdf/annual_reports/annual%20report19-e-20-1-20.pdf

⁴⁴ Mishra, Saumya. "Gauhati Medical College & Hospital sees quantum increase in patients in last 5 yrs". *GPlus*. 20 July 2019, <https://www.guwahatipus.com/article-detail/gauhati-medical-college-hospital-sees-quantum-increase-in-patients-in-last-5-yrs>

⁴⁵ Qiu S, Pan H, Zhang S, Peng X, Zheng X, Xu G "Is tuberculosis treatment really free in China? A study comparing two areas with different management models", *PLoS One*. 2015 <https://doi.org/10.1371/journal.pone.0126770>

the probability of the various outcomes: (i) situations when insurance may induce greater use of a service by the insured or cause the insured to exercise less care and (ii) situations when an insured purposely causes harm or otherwise falsifies loss in order to collect insurance benefits or to inflate the loss. The insurer is unable to either predict the insured’s behaviour change in advance or prevent it by exempting such behavior from the insurance contract coverage⁴⁶. Moral hazard raises the cost of insurance and, consequently, reduces the degree of insurance coverage negatively affecting market outcomes⁴⁷. In the case of India, single-payer schemes like Ayushman Bharat allow individuals to engage in behaviour that does not minimise healthcare spending because they know that they are protected against the risks while the other party incurs the cost. Thus, individuals will have no motive to change their behaviour because they are getting access to good quality hospitals at the cost of others.

Adverse selection (hidden information) refers to the inability of insurers to observe risk characteristics of their customers, leading to offering a contract based on the average risk of the entire group of customers. In this case, more high-risk individuals purchase insurance; higher payouts by insurance companies force them to raise rates which, in turn, makes the insurance less attractive to low-risk individuals. As a consequence, this may reduce the stability of the market equilibrium, and the market may completely break down. Often insurance companies pick and choose low-risk customers and exclude those with pre-existing conditions, thus denying care to those who are most in need. According to Paul Krugman, in a two-payer model, private insurers allocate a lot of resources towards screening applicants and therefore, incur more administrative expenses as opposed to a single-payer model. In the individual insurance market in the US, so much money goes into underwriting and other expenses that only around 70 cents of each premium dollar actually goes into care⁴⁸.

Given that 90% of India’s workforce is part of the unorganised sector, the two-payer insurance model will not work. However, even a single-payer insurance scheme such as Ayushman Bharat has its shortcomings, and therefore, for a country like India, it

⁴⁶ Shavell S (1979) On moral hazard and insurance. *Q J Econ* 93:541–562

⁴⁷ Tennyson S, Warfel WJ (2009) Law and economics of first party insurance bad faith liability. *Conn Insur Law J* 16(1):203–242

⁴⁸ Krugman, Paul. "Health Care Realities". *New York Times*. 30 July 2009, <https://www.nytimes.com/2009/07/31/opinion/31krugman.html>

is best to adopt a single-payer universal healthcare system for effective, accessible and affordable care.

XII. Limitations of Single-Payer Public Health Insurance Systems

Despite the US spending 16.9% of its GDP on healthcare, the highest in the world, the country's health outcomes are poor, ranking 35 in the Bloomberg 2019 Healthiest Country Index⁴⁹. According to a Commonwealth Fund Study, in 2018, increasing access to affordable health care and strengthening primary care systems remain the two most important challenges for the US healthcare system.

With the world's largest public funded healthcare program, Ayushman Bharat, the government envisions providing access to secondary and tertiary level care to more than 10 crore families. The mission provides a cover of Rs. 5 lakh per family for 1393 medical procedures. The program has cost the exchequer Rs. 13412 crore on 1 crore hospitalisations since its launch in September 2018⁵⁰. The per capita public spending on healthcare in India is Rs 1,944 for the year 2019-20⁵¹. When compared to BRICS and newly industrialised countries, India's total per capita expenditure on healthcare is the lowest at 75 US dollars⁵². At a time when the public health system and primary care are in disarray, national health insurance will drive investment into hospital care, flood tertiary care centers for minor ailments that can be treated easily at the lower levels of medical care. Moreover, given the significant infrastructure deficit in the public health system, the majority of the care to the beneficiaries will be delivered by private tertiary care hospitals, since that would become accessible to people who otherwise cannot afford such treatment. This will diminish the resources for cost-effective primary care and lead to greater demand for high cost hospital care, thereby increasing fiscal burden on the government.

⁴⁹ Thornton, Alex. "These are the world's happiest nations". *Weform.org*. 25 Feb. 2019, <https://www.weforum.org/agenda/2019/02/these-are-the-world-s-healthiest-nations/>

⁵⁰ Pradhan Mantri Jan Arogya Yojana, <https://www.pmjay.gov.in/>

⁵¹ Rajagopal, Divya. "Should policymakers weigh an adjusted Covid death rate?" *Economic Times*. 23 June 2020, <https://economictimes.indiatimes.com/industry/healthcare/biotech/low-public-spend-on-healthcare-may-pose-challenges-to-fight-covid-19/articleshow/75049906.cms?from=mdr>

⁵² DownToEarth https://www.downtoearth.org.in/dte-infographics/59394_india_health_burden.html

Modern tertiary healthcare is extremely expensive. A modern, sophisticated, multi-specialty hospital has three high-cost requirements – decent physical infrastructure (often in cities where land prices are exorbitant), extremely expensive state-of-the-art equipment for diagnostics and interventions (MRI, PET scan, stereotactic radiotherapy, endoscopy, minimally invasive surgery etc), and highly skilled, trained physicians, nurses and technicians who deserve a fair compensation commensurate with their skills and knowledge. Even in the best of circumstances these requirements escalate the cost of tertiary care dramatically. Once the private sector makes huge investments in tertiary care facilities at high risk, and incurs enormous maintenance cost for services, equipment and personnel, the venture can only be sustained with high billing and returns. Therefore the system inevitably moves in the direction of excessive, sophisticated diagnostics to put the investment to use, and high-cost, low-impact treatments and interventions. There is a need for quality tertiary care, but there is a great risk of tremendous cost escalation without commensurate health outcomes.

The proximate cause of a large disease burden in India is inadequate primary care. The immediate need is to strengthen the primary care system in order to get the best value for money spent. To cater to critical care needs of the majority of the Indians who cannot otherwise afford hospital care, we need a credible public run tertiary healthcare system. Public health insurance as a means of healthcare delivery will inevitably lead to spiraling costs, as seen in the US, without commensurate benefits. In the US, it was projected that the Affordable Care Act (ACA) would reduce healthcare expenditure through savings of at least \$200 billion a year, or about 8 percent of national health spending projected for 2009, achieved from policies that would reduce insurers' administrative expenses, expand use of health information technology, and expand prevention and chronic disease management programs⁵³. However, National Health Data showed that these savings were not realised and national health spending increased from \$2.60 trillion in 2010 to \$3.65 trillion in 2018⁵⁴. A recent analysis estimated that as much as one-quarter of total health care

⁵³ Joseph R. Antos, James C Capretta 'The ACA: Trillions? Yes. A Revolution? No.' *Health Affairs Blog*, 10 April 2020. <https://www.healthaffairs.org/doi/10.1377/hblog20200406.93812/full/>

⁵⁴ Joseph R. Antos, James C Capretta 'The ACA: Trillions? Yes. A Revolution? No.' *Health Affairs Blog*, 10 April 2020. <https://www.healthaffairs.org/doi/10.1377/hblog20200406.93812/full/>

spending in the US, between \$760 billion and \$935 billion annually, is wasteful⁵⁵. Overtreatment or low-value care such as medications, tests, treatments, and procedures that provide no or minimal benefit or potential harm, accounts for approximately one-tenth of this spending. Year after year, the largest frauds detected in the US under False Claims Act are in the hospital billing and healthcare sector. With vast expenditure in insurance-based tertiary care, there is an irresistible temptation to increase billing by all means- fair or foul, ethical or unethical, without due regard to patient's welfare or rational and prudent use of resources.

Therefore, the need of the hour is to strengthen the quality of our public tertiary care system and make it universal. It should be cost-effective for the government in the long run and affordable and accessible for all citizens.

XIII. Impact of Insurance-based schemes on private sector

There are two stark loopholes when it comes to private tertiary care being empanelled under the Ayushman Bharat scheme.

1. Public funded insurance schemes provide perverse incentives to the private healthcare practitioners to indulge in over-treatment and recommend expensive drugs and services to enjoy better monetary benefits. Since the launch of this scheme, a total of 164 hospitals⁵⁶ have been de-empanelled and penalties of approx. Rs 4.5 crore have been imposed on several hospitals who engaged in fraud and malpractice⁵⁷. Certain packages containing procedures reserved for government hospitals were performed by private hospitals. These hospitals claimed reimbursement from the government under a different package name or as an unspecified package.
2. Under Ayushman Bharat, tertiary care procedures are subsidised by the government and is free of cost for people who avail the stipulated services. The reimbursement tariffs set by the government under Ayushman Bharat and

⁵⁵ Roosa Tikkanen, Melinda K. Abrams, 'U.S. Health Care from a Global Perspective, 2019: Higher Spending, Worse Outcomes?', *commonwealthfund.org*, 30 Ja. 2020, <https://www.commonwealthfund.org/publications/issue-briefs/2020/jan/us-health-care-global-perspective-2019>

⁵⁶ Pradhan Mantri Jan Arogya Yojana, <https://www.pmjay.gov.in/hospital/de-empanelled>

⁵⁷ Statement made by National Health Authority

the existing state insurance schemes is very low, typically 25-50%, compared to the typical cash tariffs of private providers for a majority of procedures across metro and tier 1 cities⁵⁸. A comparison of the current cost structure of tertiary care private providers in metros across selected procedures vis-à-vis reimbursement tariffs set under the Ayushman Bharat scheme highlight that the tariffs cover only 40-80% of the total cost incurred by the private providers⁵⁹. Also, the collection cycle for government reimbursed patients typically ranges between 120-180 days⁶⁰. Additionally, despite being preferred over government hospitals for healthcare by a large section of the population, the private healthcare sector is currently witnessing worsening performance in terms of both profitability and return on capital employed (ROCE), which dropped from 6% in 2017 to 5% in 2018⁶¹. Hence, these drawbacks may deter genuine private hospitals from committing to union and state governments to be part of such insurance-based schemes in the long run.

XIV. Cost implications in Private Tertiary Care

Owing to advancement in technology and epidemiological shift, healthcare cost at the tertiary level is increasing, particularly in the private sector. The table below shows average cost per operational bed for private tertiary hospitals in India, which is around Rs. 1 crore. With a capital cost of about Rs. 1 crore per bed, and an annual billing requirement of Rs 1 crore per bed, private tertiary care is simply unaffordable to most Indians, and does not yield cost-effective services for a publicly funded programme in a poor country starved of resources. Private tertiary care with public funds will eventually suck most public health budgets at the cost of primary and family care; while families will be relieved of the economic burden of treatment costs, the public exchequer will soon be depleted without significantly improving overall health outcomes in society.

⁵⁸ Re-engineering-Indian Healthcare 2.0”, *FICCI and EY*, 2019. http://ficci.in/spdocument/23111/Re-engineering-Indian-healthcare-2.0_FICCI.pdf

⁵⁹ Re-engineering-Indian Healthcare 2.0”, *FICCI and EY*, 2019. http://ficci.in/spdocument/23111/Re-engineering-Indian-healthcare-2.0_FICCI.pdf

⁶⁰ Re-engineering-Indian Healthcare 2.0”, *FICCI and EY*, 2019. http://ficci.in/spdocument/23111/Re-engineering-Indian-healthcare-2.0_FICCI.pdf

⁶¹“Re-engineering-Indian Healthcare 2.0”, *FICCI and EY*, 2019. http://ficci.in/spdocument/23111/Re-engineering-Indian-healthcare-2.0_FICCI.pdf

At such an exorbitant cost, private tertiary care treatment is beyond the reach of the majority of Indians. Hence, we need a cost-effective, single-payer public tertiary system that is affordable and accessible to the poor and lower-middle class population.

Table 9: Private Tertiary Care Cost Estimates

Company	Total Revenue	Total Cost	Total Cost (Excluding Finance and Rent Costs)		ARPOB		ACPOB	
			Total Cost (Excluding Finance and Rent Costs)	ARPOB	ACPOB	ACPOB (Excluding Finance and Rent Costs)		
Shalby Ltd.	460.78	420.20	409.43	1.10	1.00	0.98		
Apollo Hospitals Enterprise Ltd. **	4,450.62	4,210.26	3,926.66	1.30	1.23	1.15		
Narayana Hrudayala Ltd.	2,077.10	1,888.30	1,792.76	1.00	0.91	0.86		
HealthCare Global Enterprises Ltd.	640.50	641.41	570.57	1.20	1.20	1.07		
Aster DM Healthcare Ltd.	594.78	628.89	601.79	2.10	2.22	2.12		
Fortis Healthcare Ltd.	642.96	998.00	795.47	1.50	2.33	1.86		
Fortis Malar Hospitals Ltd.	144.59	151.92	151.19	1.68	1.77	1.76		
Chennai Meenakshi Multispecialty Hospital Ltd.	22.36	22.81	20.88	0.21	0.22	0.20		
			Median	1.25	1.22	1.11		

Sources: Annual Reports (FY19) and ICICI Direct Healthcare Sector Report Dec 10, 2019

Notes:

1. ARPOB : Average Revenue Per Operational Bed
2. ACPOB : Average Cost Per Operational Bed
3. The Standalone Financial of the companies have been considered.
4. Only Operational Revenue has been considered for all entities.
5. ACPOB has been calculated as: $ACPOB = (ARPOB/Revenue)*Cost$
6. Finance Costs are the costs of borrowing, including interest payments, loan repayments, etc.

** For Apollo Hospitals Enterprise Ltd, only financial information pertaining to hospital segment has been considered and costs have been proportionately adjusted.

XV. Towards a viable public tertiary care system

A viable public tertiary care system can be achieved by increasing government expenditure on public healthcare, converting existing District Hospitals & Public Teaching Hospitals into specialised healthcare centers, encouraging public-private partnerships, and creating the right incentives to attract and retain talent.

The teaching hospitals and district hospitals in the public sector are under-funded and overcrowded. The wages of highly skilled doctors, nurses and other personnel are very low, and working conditions are abysmal. FDR studies of several teaching and district hospitals in Andhra Pradesh reveal a picture of poor funding, and yet by an objective measurement good value for the money spent. As discussed above, a high-end tertiary care private hospital can survive only with a billing of Rs. 50 lakh to 1 crore per bed per year. But the total expenditure of teaching hospitals in the public sector is typically Rs. 8 lakh to 10 lakhs per bed per year. This paltry amount includes all costs of hospital- wages, basic amenities, maintenance, sanitation, out-patient services, diagnostics, treatment, surgeries, drugs, food etc. In addition this cost includes additional impromptu beds often added according to need, and the running of the medical college and nursing college. A quick quantification of services delivered by these hospitals and costing them at a moderate to low pricing relative to the private sector shows that these public hospitals are rendering services valued at Rs 4 for every rupee spent by the exchequer. The cost-effectiveness of public tertiary care institutions is one of the revealing features of our health system. But the underfunding and overcrowding are leading to increasingly poor infrastructure, diagnostics, interventions and treatment, low public trust and flight of talent to the private sector. With higher expenditure per bed, better quantification of services and accountability, innovative private partnership for infrastructure building, and incentives for talented professionals to practice in public hospitals, significant improvement in tertiary care is eminently feasible at a moderate cost. Such a model will broadly have the following features:

1. The current 756 district hospitals can be upgraded and can function as cost-effective tertiary care centers. The existing 252 public teaching hospitals will serve as centers of excellence for education, training and research. Services at these government hospitals will be provided only on referral, barring in

emergency cases, to reduce burden and crowding at the tertiary level.

2. A Private Financial Initiative (PFI) Model, will design, build, finance, maintain and lease hospital facilities to the government. The government, in return, can pay an annual fee to cover capital cost, cost of borrowing, and maintenance of the hospital and any non-clinical services provided over the 30 - 35 year life of the contract on a 'no service, no fee' performance basis. This will incentivise private players to build quality infrastructure, enhancing long-term public-private partnership. Expertise of foreign companies can be brought through foreign direct investments directly so that state of the art facilities can be built that can last for decades. Additionally, high net worth individuals can be involved in this PFI Model for capital provisions, in turn providing them with 'vanity' and/or 'legacy'. Such a PFI model will enable us to build the necessary infrastructure without burdening the exchequer at the time of severe fiscal stress. It will also allow pooling of high cost diagnostics and other facilities, so that the equipment and facilities are optimally utilised, and we get the best value for the money spent.
3. On a rotation basis, independent consultants will take up leadership roles in these hospitals. Such a system of independent work, leadership opportunities and incentivised private work, along with a reasonable remuneration, will drive many private specialists (including NRIs) to join such institutions and sustain them, thereby improving quality of care. Large private care blocks will be built in these government hospitals to provide a strong incentive for the bright and the best to join these hospitals.

XVI. Tertiary Care Cost Estimates

A comprehensive field study of tertiary level public teaching hospitals (Rangaraya Medical College, Kakinada and others) in the state of Andhra Pradesh was done by FDR. Through this study, it was found that the government spends, on an average, somewhere between 6 to 8 lakhs per bed per year. The tertiary hospitals in government often have 30%-50% 'excess' beds beyond sanctioned capacity. These 'beds' are created to meet the burgeoning demand. These cost estimates are based on the actual beds in use in the hospitals. If only the sanctioned strength of beds is

taken into account, the expenditure of the government may be of the order of Rs. 8-10 lakhs per bed per year. Preliminary cost estimates have been made to calculate the total expenditure required to establish and run good quality district and public teaching hospitals in India. The current numbers of tertiary hospitals and beds along with our cost estimates, are shown in the tables below.

Table 10 : Current Status of District and Public Teaching Hospitals⁶²

	District Hospitals (101 - 500 beds)	Public Teaching Hospitals	Total
No. of hospitals	756	252	2242
No. of beds	166670	192520	266132

Table 11: District Hospitals

Current cost per bed in District Hospitals	Rs. 600,000
Total no. of beds at District Hospitals	166670
Expected Additional Cost per bed (phased over 3 years)	Rs. 900,000
Annual additional cost for district hospital	166670*900000 = Rs. 15,000 crore

Table 12: Private Teaching Hospitals

Current cost per bed in Public Teaching Hospitals	Rs. 800,000
Total no. of beds in Teaching Hospitals	192520
Expected Additional Cost per bed (phased over three years)	Rs. 1,200,000
Total Cost	192520*1200000 = Rs. 23,102 crores

Table 13: Total additional cost of improved tertiary care

District hospitals - 167000 beds	Rs. 15000 crore
Teaching hospitals - 192000 beds	Rs. 23000 crore
Total additional cost	Rs. 38,000 crore

⁶² "Rural Health Statistics", Ministry of Health & Family Welfare 2018-19 https://main.mohfw.gov.in/sites/default/files/Final%20RHS%202018-19_0.pdf and "National Health Profile", Central Bureau of Health Intelligence, Ministry of Health & Family Welfare, 14th Issue 2019 <http://www.cbhidghs.nic.in/showfile.php?lid=1147>

XVII. Total cost of the proposals

As can be seen, a credible, competition and choice-driven primary and family healthcare system all over the country involving about 200,000 physicians and corresponding teams will cost the exchequer about Rs. 50,000 crores per year. This will significantly reduce morbidity and mortality, relieve the poor and middle classes of the uncertainty and economic burden of out-patient treatment, and dramatically reduce overcrowding and overtreatment in the secondary and tertiary care system.

The present PPP risk-pooling model adopted by the Union and several States can be improved and expanded to cover all citizens for hospital care, but should exclude high-cost tertiary care. Such a model will provide decent quality of hospital care at moderate cost to the public exchequer.

The improved public tertiary care proposed will cost above Rs. 40,000 crore, and will provide quality tertiary care for all citizens at a moderate cost.

The total additional cost of these interventions will be of the order of Rs. 90,000 crore/year, which amounts to less than 0.5% of GDP. Even after this additional cost, the total public expenditure on healthcare by both the Union and States will be only of the order of 1.8% GDP, much below all the large economies in the world. More allocation is much-needed and welcome, but given our resource constraint, it is unlikely that India will be able to deploy 3 or 4% of GDP on public healthcare. These proposals are modest, affordable, cost-effective, and achievable with least disruption, building on our existing infrastructure and strengths.

All these services – primary, secondary and tertiary should be available free of cost, or at a modest fee, for all citizens. Once the more vocal and enlightened section starts utilising the services, there will be pressure to improve and maintain quality of services. In actual practice, probably 80% people will avail these services- including all the poor and a large population of middle income groups. The rich and salaried sections will, by choice, avail private services as now. Private sector will not be stifled, but the poor and middle income groups will not be driven to the private sector at unaffordable prices and at great economic cost to families. A viable, integrated healthcare system founded on efficient primary and family care will improve overall

health outcomes at low cost, and the impoverishment on account of ill-health will mostly disappear. As explained above, such a model will generate about 10 million new jobs in healthcare and support services. If a judiciously designed model is put in place, immense health and economic benefits will flow from modest investments.

The proposals made here are modest, economical and non-disruptive. We can implement it gradually in phases over three years. For instance, in primary care, annually 70,000 FPs can be introduced, and the service can be progressively extended. Similarly, in tertiary care, annually 33% increase in per bed expenditure can be planned. This phased implementation will reduce fiscal stress, give time to put in place the institutions, practices and monitoring mechanisms required, and allow concurrent evaluation and mid-course correction based on evidence. Depending on local conditions, there can be flexible models. Union and State may share the costs on a matching basis. The cost structure and availability of skilled professionals may also vary from state to state. As far as personnel are concerned, it is necessary to allow a national market for services, so that our strengths as a nation are leveraged, and we get the best outcomes at least cost. Also a national framework will help in integrating existing structures and programmes seamlessly with the new initiatives. We also need to leverage our strengths in the pharmaceutical and vaccine industry to get optimal outcomes at least cost, even as market competition is promoted.

SARS-CoV-2 pandemic can be turned into a great opportunity to improve our healthcare system at a low cost, with immense benefits. While we should pay attention to the immediate crisis, it would be in the larger interest of our people if we focus on the overall healthcare system and outcomes, and build a viable model that takes into account the infrastructure, institutions and incentives to generate the best possible outcomes at a low cost.

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Additional Notes

Table 5 - Beds at PHCs

1. Out of 24855 total rural PHCs in the country, 12760 are PHCs with the minimum Indian Public Health Standard (IPHS) requirement of at least 4 beds according to National Rural Health Mission Statistics, 2018-19; 8242 have been converted into Health & Wellness Centers (assuming all 8242 meet the minimum IPHS requirement of at least 4 beds due to non-availability of bed data) and the rest **3853** are assumed to be **dysfunctional**
2. Assuming all 5190 urban PHCs in the country (3456 urban PHCs & 1734 PHCs converted into Health & Wellness Centers) meet the minimum IPHS requirement of at least 4 beds due to non-availability of bed data.

Table 10 - Beds at district Hospitals and Public Teaching Hospitals

1. To calculate total beds in District hospitals, data by Niti Aayog was used; 220 hospitals had no data on beds so the minimum conservative number of 101 has been used.
2. To calculate public teaching hospitals, data from National Health Profile 2019 was used; hospitals that did not have data were assumed to have at least 300 beds.

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