TOWARDS VIABLE UNIVERSAL HEALTHCARE

EFFECTIVE. ACCESSIBLE. AFFORDABLE.

JULY 2021

FDR FOUNDATION FOR DEMOCRATIC REFORMS

TOWARDS VIABLE UNIVERSAL HEALTHCARE

EFFECTIVE. ACCESSIBLE. AFFORDABLE.

July 2021

Published by: Foundation for Democratic Reforms (FDR)

Price: Rs. 200/-

First Edition
Year of Publication: 2021

For Copies
Foundation for Democratic Reforms
#6-3-1187, 801 & 806,
8th Floor, Srinivasa Towers,
Beside ITC Kakatiya Hotel,
Begumpet, Hyderabad - 500016

Telangana
Phone: +91-40-2341 9949
Fax: +91-40-2341 9948

Email: communications@fdrindia.org; jp@fdrindia.org
www.fdrindia.org

Book Cover: Highpurple, Hyderabad.
Book Design: Tanvi Creatives Services, Hyderabad.
Printed at Kala Jyothi Process Pvt., Ltd., 1-1-60/5, RTC"X" Roads, Hyderabad

CONTENTS

CONTENTS

List of Tables

CONTENTS

List of Figures

CONTENTS

List of Boxes

FOREWORD

Forty-three years ago, in September 1978, the world community met at a global conference on primary healthcare in the then Alma-Ata in Kazakh Republic of the USSR (today's Almaty in Kazakhstan). The Alma-Ata declaration of "Health For All" (HFA) has been a rallying cry for all healthcare workers and governments since then. HFA highlighted that promotion and protection of the health of the people has positive effects on economic and social development, and emphasized the role of the state in providing adequate health. HFA urged all nations to incorporate the concept of primary healthcare in their health systems.

We in India embraced HFA as a concept and universal primary healthcare as a key goal. World over, there is overwhelming evidence that an integrated healthcare system with a strong foundation of primary care produces excellent outcomes at lower cost, and gives people a sense of security and confidence about their physical wellbeing. While successive governments have made efforts to improve our healthcare delivery, we still have a long way to go.

India's public expenditure on health, at about 1.2 percent of GDP, is one of the lowest in the world. Inadequate primary care, weak healthcare infrastructure, lack of integration between primary care and hospital care, huge burden of out-of-pocket-expenditure (OOPE) impoverishing people, and poor health outcomes are holding us back as a country. Our primary care system has largely failed to earn public confidence. People mostly rely on private providers, and for the vast majority of rural people, the first point of contact is an untrained, informal provider. In the absence of effective primary care, many illnesses are neither prevented nor diagnosed early; people are forced to flock to district and teaching hospitals after a preventable catastrophic illness develops. Public hospitals are underfunded and overcrowded, forcing many to depend on expensive private hospitals. There is inadequate risk mitigation and risk pooling in health care. With large OOPE, annually 40-50 million people are descending into poverty on account of ill-health. Inadequate care, high OOPE, and huge burden of disease are eroding public trust in the medical profession itself. Millions are suffering economic and social deprivation on account of sickness and premature death. India has one of the highest number of lost years due to death, disability, and sickness (DALYs).

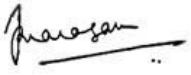
The COVID pandemic has dramatically exposed the weaknesses of our health infrastructure. Decades of cumulative neglect of healthcare made the COVID crisis much worse, and it should serve us as a wake-up call. Governments at union and state level, media, and citizens are looking for viable and effective solutions to address our health crisis.

Given our extremely low public expenditure on health and the profound impact of inadequate healthcare on the bulk of the population, improving healthcare delivery should be at the top of our priorities. As a developing country, our resources are limited, and

governments have limited fiscal room. Therefore we need a pragmatic roadmap for vastly improving our healthcare system at an affordable cost. This document is a humble and earnest attempt to synthesise Indian and global experience in healthcare and search for viable solutions at low cost, leveraging our strengths as a nation. None of the ideas or practices advocated here are original. We have merely drawn upon our country's experience and global best practices, and the ideas, research, and writings of many scholars and practitioners. We owe a debt of gratitude to all those practitioners, researchers, and writers whose work has inspired this document. Many of them have been cited in this document wherever possible. The approach we adopted is not a rigid, doctrinaire one; it is a humble, pragmatic, and realistic approach to get the best results at the lowest cost, and to build on existing systems and practices with least disruption. This model is flexible and is amenable to constant updation and improvement, as we gain more experience as a country, and as more evidence of best practices emerges from all over the globe. We urge the union and state governments, political parties, planners, economists, the media, healthcare advocates and activists, and all enlightened citizens to unite to seize the moment and help build a viable and effective healthcare system at affordable cost. A lot more than what is proposed here needs to be done. But we must be tempered by the thought that often the impossible best becomes the enemy of the possible good.

This document could not have been possible without the passion and hard work of many individuals. In particular, we are deeply indebted to Dr. B. Siva Rama Krishna Reddy and the Research Team at Foundation for Democratic Reforms — V. Keshav Reddy, Shweta Chandar, Snigdha Nagabhyrava, Sruti Paturi, Sumedha Kuraparthy and Vriti Bansal — for their dedication, hard work, and attention to detail. We are grateful to the Board of Management of Foundation for Democratic Reforms for their constant guidance, encouragement, and support. Thanks are due to B. Venkateswara Rao and V. Sasikala for their cheerful hard work and logistical support. Kalajyothi Printers, as always, have done a superb job in a short time; we thank them.

We appeal to all sections to discuss these proposals and give their suggestions to improve our healthcare delivery. Equally important, we appeal for support in persuading decision makers and making positive change happen.



Jayaprakash Narayan

ABBREVIATIONS

AIIMS	All India Institute of Medical Sciences
BPL	Below Poverty Line
CABG	Coronary Artery Bypass Graft
CGHS	Central Government Health Scheme
CHC	Community Health Centes
CHE	Current Health Expenditure
CMNND	Communicable, maternal, neonatal and nutritional diseases
CMNPD	Communicable, maternal, perinatal and nutritional diseases
COVID	Coronavirus Disease
CT	Computerised Tomography
DALY	Disability Adjusted Life Year
DIU	District Implementation Unit
EMRI	Emergency Management and Research Institute
ESI	Employees State Insurance
FDR	Foundation for Democratic Reforms
GDP	Gross Domestic Product
GGE	General Government Expenditure
GHE	Government Health Expenditure
GoI	Government of India
GP	General Practitioner
GSDP	Gross State Domestic Product
ICU	Intensive Care Unit
IHME	Institute for Health Metrics and Evaluation
IMR	Infant Mortality Rate
IPV	Inactivated Polio Vaccine
IT	Information Technology
JSSK	Janani Shishu Suraksha Karyakaram
MBBS	Bachelor of Medicine and Bachelor of Surgery
MMR	Maternal Mortality Ratio
MR	Measles and Rubella
MRI	Magnetic Resonance Imaging
NA	Not Available/ Not Applicable
NCD	Non-communicable Disease
NHA	National Health Authority
NHS	National Health Service

ABBREVIATIONS

NSS	National Sample Survey
OECD	Organisation for Economic Cooperation and Development
OOPE	Out-of-Pocket Expenditure
PCV	Pneumococcal Conjugate Vaccine
PET	Positron Emission Tomography
PFI	Private Finance Initiative
PGIMER	Post Graduate Institute of Medical Education and Research
PHC	Primary Health Centre
PHE	Private Health Expenditure
PMJAY	Pradhan Mantri Jan Arogya Yojana
PPP	Public-Private-Partnership
ppp	Purchasing Power Parity
PTCA	Percutaneous Transluminal Coronary Angioplasty
RBI	Reserve Bank of India
RSBY	Rashtriya Swasthya Bima Yojana
RVV	Rotavirus Vaccine
SECC	Socio-Economic Caste Census
SHA	State Health Authority
TB	Tuberculosis
Td	Tetanus and adult diphtheria vaccine
TFR	Total Fertility Rate
USD	United States Dollar
UT	Union Territories

INTRODUCTION

We are facing a global health crisis unlike any other in a century. The SARS-CoV-2 pandemic has caused enormous suffering to millions world over, sent many to untimely graves, and tested the capacity of our healthcare system and economy as never before. Doctors and healthcare workers have been struggling tirelessly to cope with the crisis and save lives. Scientists and the pharmaceutical and medical instrumentation industry across the world have worked in mission-mode to provide vaccines and other support drugs and devices in record times and volumes. Despite these positive developments, India buckled under a vicious second wave as the virus mutated into more contagious and virulent variants. The relative mildness of the infection in the first wave in India lulled our society into a false sense of security, and there was inadequate compliance with scientists' recommendations to wear masks, maintain social distancing, and avoid gatherings. Once we let our guard down, the mutant strains of the virus which are more infective and virulent, spread very rapidly in the second wave, overwhelming our meagre healthcare infrastructure. From around 10,000 to 15,000 daily new infections in late-February, cases soared to about 400,000 corona positive cases a day by early May[1]. As we started observing social distancing norms again, the cases showed a declining trend by the end of May. This increase in cases detected led to a significant increase in hospitalisations across the country, stretching medical infrastructure and resources to the limit. Healthcare professionals scrambled to deal with the deluge of cases. The country was engulfed by a sense of panic, fear and distress.

When we look at the total number of cases, India is one of the worst hit countries, just behind the United States. However, the caseload per unit population and death rate are comparable, if not lower, than several other countries during their peak. Figures 1.1-1.8 indicate the Coronavirus Disease (COVID) incidence in several countries as on 14 May 2021, and the same at their respective peaks (refer to Annexures 1.1 and 1.2 for data corresponding to the Figures).

It is likely that many COVID-related deaths have not been reported in several parts of the country. Even after adjusting for under-reporting of deaths, our disease burden, hospitalisations and mortality rates are comparable to most of the countries. Countries with a greater caseload and deaths per unit population did not see a complete collapse of their healthcare infrastructure. France, for example, experienced a vicious third wave in April, with almost twice as high a caseload per unit population in comparison with India (see Figure 1.3). Yet, the healthcare system of France could withstand the intensity of the crisis, whereas the Indian healthcare infrastructure crumbled under a less severe caseload. The inadequacy of our healthcare infrastructure made the crisis much worse than the numbers indicate.

Figure 1.1: Total COVID Cases in Select Countries

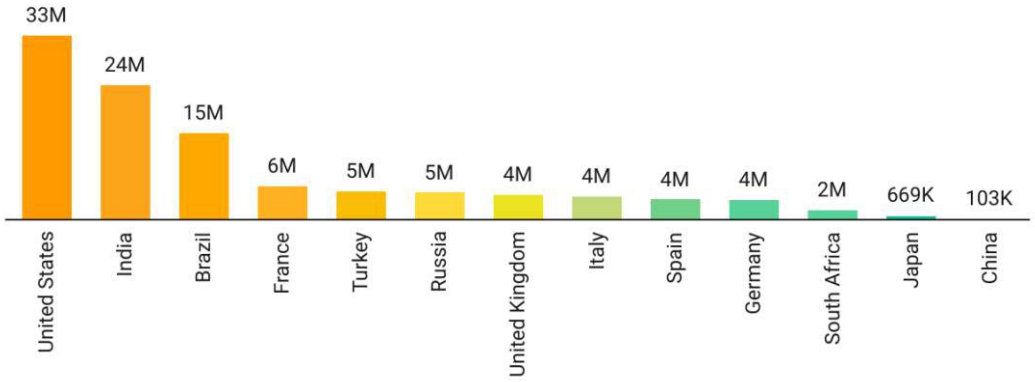


Chart: Foundation for Democratic Reforms • Source: Johns Hopkins University Coronavirus Resource Center • Created with Datawrapper

Figure 1.2: Total COVID Cases per 100,000 Population in Select Countries

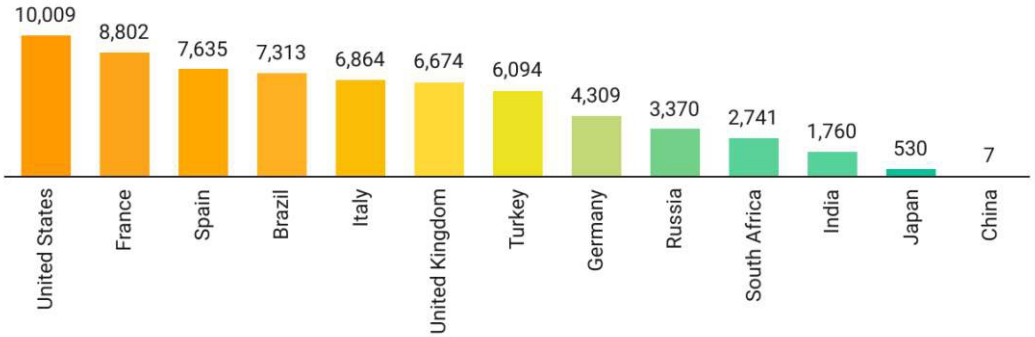
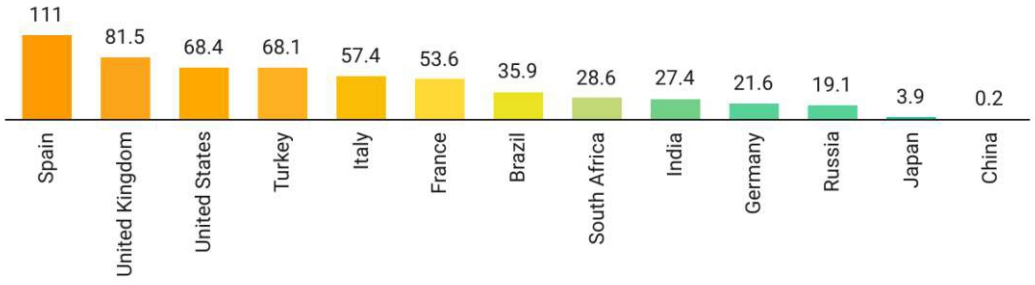


Chart: Foundation for Democratic Reforms • Source: 1. COVID data – Johns Hopkins University Coronavirus Resource Center 2. Population – World Bank Open Data Portal • Created with Datawrapper

Figure 1.3: New COVID Cases at Peak per 100,000 Population in Select Countries



Note: Numbers represent 15 day centered average of daily new cases around the respective date of peak in each country.

Chart: Foundation for Democratic Reforms • Source: COVID data – 1. Johns Hopkins University Coronavirus Resource Center 2. Population – World Bank Open Data portal • Created with Datawrapper

Figure 1.4: Total COVID Deaths in Select Countries

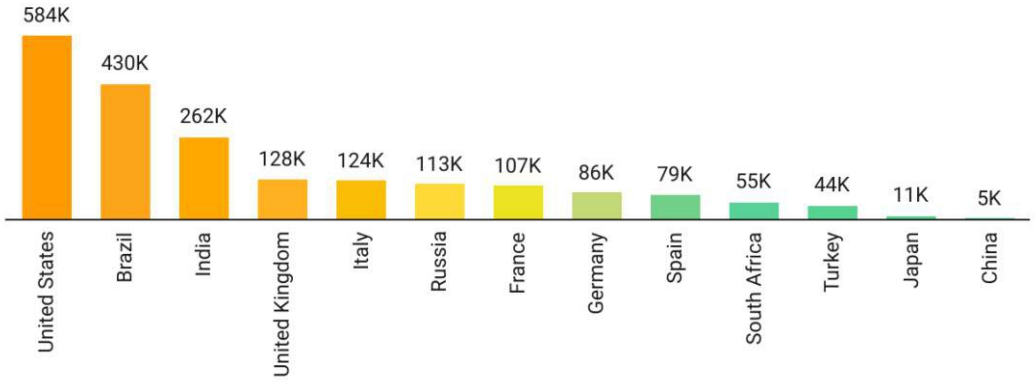


Chart: Foundation for Democratic Reforms • Source: Johns Hopkins University Coronavirus Resource Center • Created with Datawrapper

Figure 1.5: Total COVID Deaths per 100,000 Population in Select Countries

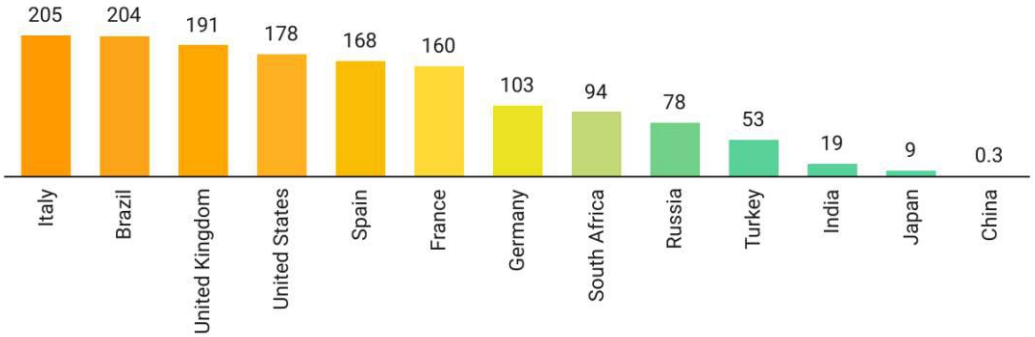
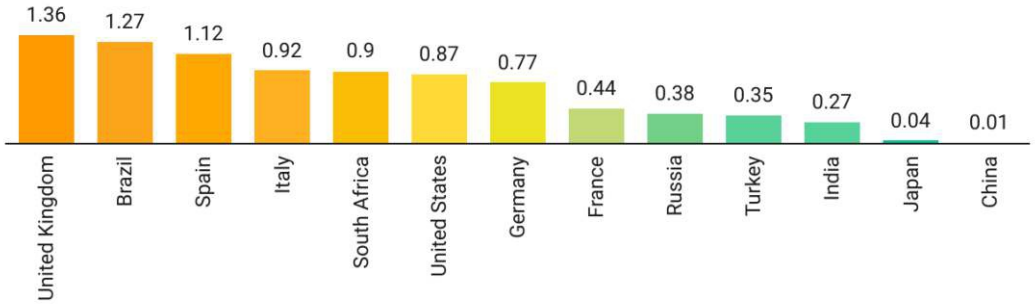


Chart: Foundation for Democratic Reforms • Source: COVID data – Johns Hopkins University Coronavirus Resource Center. Population – World Bank Open Data Portal. • Created with Datawrapper

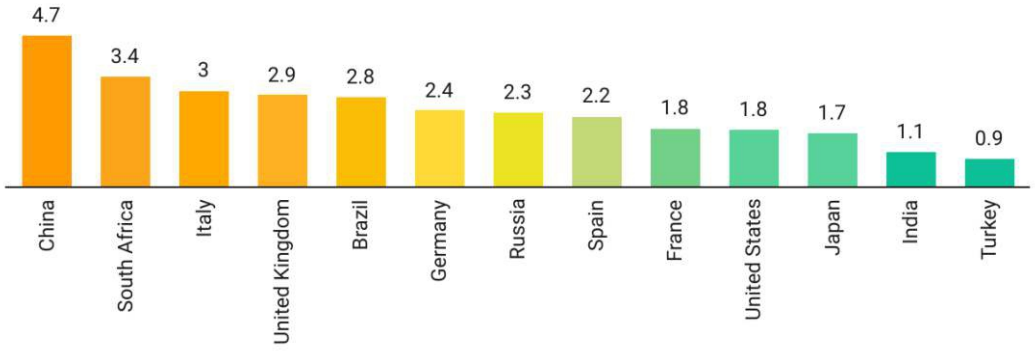
Figure 1.6: COVID Deaths at Peak per 100,000 Population in Select Countries



Note: Numbers represent 15 day centered average of deaths around respective date of peak in each country.

Chart: Foundation for Democratic Reforms • Source: 1. COVID data – Johns Hopkins University Coronavirus Resource Center 2. Population – World Bank Open Data portal • Created with Datawrapper

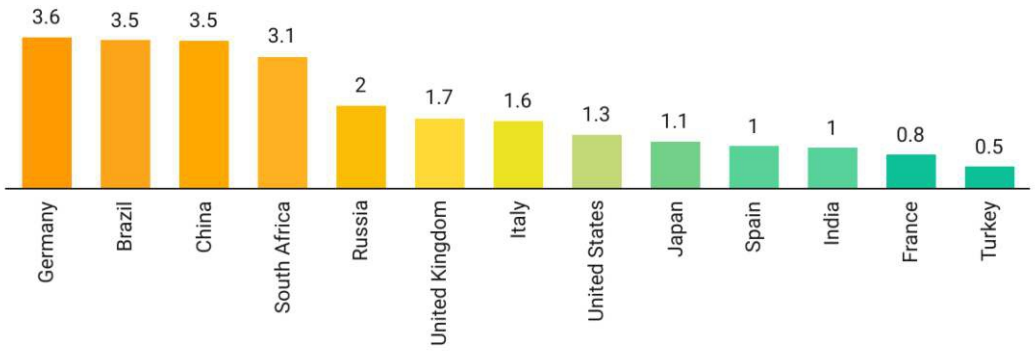
Figure 1.7: Case Fatality Ratio in Select Countries



*Case Fatality Ratio = (Total Deaths/Total Cases)*100*

Chart: Foundation for Democratic Reforms • Source: Johns Hopkins University Coronavirus Resource Center • Created with Datawrapper

Figure 1.8: Case Fatality Ratio at Peak in Select Countries



*Case Fatality Ratio at Peak = (Average Deaths/Average New Cases at Peak)*100*

Chart: Foundation for Democratic Reforms • Source: Johns Hopkins University Coronavirus Resource Center • Created with Datawrapper

Table 1.1 shows the grossly inadequate healthcare infrastructure in India. At 1 bed per 2000 population in the public healthcare system, India has too few medical resources to deal with such a crisis. If we include both public and private sector beds, the total beds in India (including Primary Health Centres (PHCs)) come to about 1.4 per 1000 population, which is still extremely low compared to the rest of the countries (refer to Table 1.1). A significant proportion of these beds are not capable of dealing with serious disease, as they are in under-equipped rural PHCs, Community Health Centres (CHCs), and in small rural private nursing homes with minimal infrastructure. Around 80,000 MBBS[2] and 100,000 nursing[3] students graduate every year in India. After China, India produces the highest number of medical graduates in a year (refer to Figure 2.7 in Chapter 2). However, there is a skewed distribution of healthcare providers across the country, with concentration in big cities, leaving vast rural areas and small towns inadequately served. In the absence of adequate resources, the healthcare system has failed to provide medical care to those in

need, creating a sense of impending doom and dismay. The shortage of beds and the oxygen crisis witnessed during April - May 2021 is a clear indication of how lack of access to medical care aggravated the crisis. Poor primary care system compounded the crisis, as there was no access to home care or local treatment and reassurance in mild cases that do not need hospitalisation or intensive care. As a result of the failure of primary care, many patients with mild symptoms also panicked and inundated the hospitals, overwhelming the meagre infrastructure.

Table 1.1: Healthcare Infrastructure in Select Countries

Country	Beds/ 1000 Population (2016-2019)	ICU Beds/ 100,000 Population (2012-2020)	Personnel/1000 Population		Medical Staff as % of Total Population	Medical staff as % of Total Labour Force
			Physicians (2016-18)	Nurses (2017-18)		
India	*0.5	6.8	0.65	1.3	0.20	0.56
United States	2.9	25.8	2.6	14.5	1.71	3.39
United Kingdom	2.5	6.6	2.8	8.2	1.10	2.12
Italy	3.1	8.6	4.0	5.7	0.97	2.31
Germany	8.0	33.9	4.2	13.2	1.74	3.34
France	5.9	16.3	3.3	11.5	1.48	3.31
Spain	3.0	9.7	3.9	5.7	0.96	1.99
Brazil	2.1	NA	2.2	10.1	1.58	2.92
South Africa	2.3	5.6	0.9	1.3	0.22	0.59
Turkey	2.9	10.0	1.8	2.7	0.45	1.16
Russia	7.1	NA	4.0	8.5	1.25	2.51
China	4.3	NA	2.0	2.7	0.47	0.85
Japan	13.0	5.2	2.4	12.2	1.46	2.69

Note:
* India's 0.5 beds per 1000 population excludes private beds. There are an estimated 1,185,242 private beds in India (Center for Disease Dynamics, Economics & Policy and Princeton University). Including private beds will make it a total of 1.4 beds per 1000 population.

Source:
Beds/1000 population
1. World Bank Open Data portal.
ICU beds capacity/100,000 population
2. India – Geetanjali Kapoor, et. al., 'State-wise estimates of current hospital beds, intensive care unit (ICU) beds and ventilators', Center for Disease Dynamics, Economics & Policy and Princeton University, 20 April 2020.
3. United Kingdom – A. Rhodes, et. al., 'The variability of critical care bed numbers in Europe', Intensive Care Med, 2012.
4. Turkey – Esma Meltem Simsek, et. al., 'How effective are Intensive Care Unit Beds Used in Our Region?', Turkish Journal of Anaesthesiology and Reanimation, 2019.
5. South Africa – Jessica Craig, et. al., 'National estimates of critical care capacity in 54 African countries', Center for Disease Dynamics, Economics & Policy, 2020.
6. Other countries – Organisation for Economic Cooperation and Development Health Statistics Data portal.
Personnel/1000 population
7. India – Sarwal R, et. al., 'Investment Opportunities in India's Healthcare Sector', Niti Aayog, 2021.
8. Other countries – World Bank Open Data portal.
Medical staff as % of total population
9. Calculated by FDR based on population estimates from the World Bank Open Data portal.
Medical staff as % of total labour force
10. Calculated by FDR based on total labour force numbers for the year 2020 from the World Bank Open Data portal.

Table prepared by Foundation for Democratic Reforms.

CHAPTER 1

The second wave of the COVID pandemic has evidently exposed India's fragile state of healthcare, which has suffered from decades of neglect at both the federal and state levels. A cross country analysis of health expenditure and outcomes seen in Tables 1.2 and 1.3 highlights that India has one of the lowest public health expenditures as a percent of the Gross Domestic Product (GDP). Similarly, the healthcare outcomes in terms of life expectancy and Infant Mortality Rate (IMR) are among the worst, comparable only to South Africa. Singapore, Malaysia and Thailand, whose Current Health Expenditure (CHE), public and private, is about four percent (4%) of their GDP, are able to achieve much better outcomes than India. CHE estimates include healthcare goods and services consumed in a year and exclude capital expenditures such as buildings, medicines, information technology (IT), and vaccines for emergencies. Remarkably, public health expenditure is well below five percent (5%) of General Government Expenditure (GGE) in India, whereas in the case of Organisation for Economic Cooperation and Development (OECD) countries, public health expenditure averages at 15 percent of the GGE. India's public expenditure on health is a 1.2 percent of GDP – about 70 percent incurred by the states and 30 percent by the union[4]. This is the lowest expenditure among all countries, excluding war-ravaged, strife-torn societies. Public expenditure accounts for only about a quarter of the CHE in India, whereas in major European countries, three-quarters of their CHE is borne by the government, and in every significant country except Brazil, public expenditure accounts for more than half of the CHE.

The low public expenditure has resulted in an ineffective healthcare system in India with severe consequences to people's lives. Given that about 90 percent of the workers in India are in the unorganised sector without secure jobs, monthly wages, or health coverage, most of the private expenditure is out-of-pocket. The out-of-pocket expenditure (OOPE) on healthcare for people below the poverty line is one of the major reasons for perpetuating their status of poverty and reducing productivity. As will be discussed in greater detail in Chapter 2, around four percent (4%) of households are impoverished annually on account of high OOPE, pushing millions of Indians below the poverty line (about 55 million in 2011-12).[5] These numbers reveal that even in 'normal', non-pandemic years, poor healthcare delivery is causing immense grief, misery and loss of productivity and incomes. Improvement of healthcare delivery alone will eradicate poverty in a decade, all else remaining unchanged.

In addition to our weak and under-funded healthcare system, India has a serious problem of communicable and non-communicable disease burden, which is among the highest in the world, leading to many preventable deaths, high morbidity and avoidable suffering. Table 1.4 shows the Disability Adjusted Life Years lost (DALYs) due to communicable and non-communicable diseases (NCDs) across countries based on two parameters, causes and risk factors. DALY is a quantitative measure of the state of health of a society by calculating the number of years lost due to premature death, incapacity due to ill-health and loss of work due to morbidity. In respect of both communicable diseases and NCDs, the burden of disease is the highest in India, except for South Africa in case of communicable diseases. After South Africa, India performs the worst in mortality

due to communicable diseases as seen in Figure 1.9. 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 years.[6] The threat of increasing antibiotic resistance may further worsen the burden of infectious diseases in the near future. However, we have made good progress in reducing the incidence of certain diseases. As can be seen in Figure 1.11, malaria incidence in the country has declined by 50 percent in the last 10 years. Yet, in the same time period, incidence of tuberculosis (TB) and dengue remains a cause for concern (see Figures 1.10 & 1.12).

Understandably, in high-income countries the burden of NCDs is higher due to better economic conditions and an ageing population. The relatively high NCDs burden in India, a country with a predominantly young population, is indicative of the poor state of preventive and primary health care. Figure 1.13 and 1.14 show that there has been a steady upward trend in the number of people diagnosed with NCDs, namely cancer, cardiovascular disease and diabetes in the country. This increased incidence of NCDs is inevitable due to India's demographic transition, caused by enhanced prosperity, longer lifespan and lifestyle changes. Failure of primary care is driving many patients to the tertiary care hospitals for relatively minor or easily treatable ailments that should have been handled in the primary care system. In 2019-20, All-India Institute of Medical Sciences (AIIMS), New Delhi received 44,14,490 outpatients and 2,68,144 inpatients, which is around 12,000 outpatients and 740 new admissions as inpatients, per day![7] Also, poor primary care is leaving many cases of NCDs undiagnosed, leading to serious complications and catastrophic illness necessitating high cost, sophisticated tertiary care later. Therefore, it is necessary to have a credible and accessible primary care system with regular check-ups, treatment of simple ailments, early diagnosis and management of chronic diseases and referral services to hospital system when the need arises. The hospital system should be able to handle health emergencies and all referral cases in a credible and sustainable manner to save lives, treat serious illnesses, and provide health security.

Table 1.2: Healthcare Expenditure in Select Countries, 2018

Country	CHE (% of GDP)	GHE (% of GDP)	GHE (% of CHE)	PHE (% of CHE)	GHE (% of GGE)	OOPE (% of CHE)	Average GHE per capita, ppp (USD)	Average OOPE per capita, ppp (USD)
United States	16.88	8.51	50.41	49.58	22.50	10.80	5355.78	1148.31
India	3.54	*0.95	26.95	72.35	3.38	62.66	74.16	172.42
Germany	11.43	8.87	77.68	22.31	19.99	12.64	4737.33	771.34
France	11.25	8.26	73.37	26.62	14.78	9.24	3852.32	485.58
Canada	10.79	7.93	73.49	26.50	19.54	14.72	3821.55	765.89
United Kingdom	9.99	7.85	78.60	21.38	19.19	16.70	3631.16	771.85
Brazil	9.51	3.96	41.67	58.24	10.30	27.54	637.92	421.65
Spain	8.97	6.32	70.40	29.59	15.17	22.16	2517.97	792.71
Italy	8.66	6.40	73.88	26.11	13.23	23.54	2677.77	853.29
South Africa	8.25	4.46	54.05	44.06	13.33	7.72	610.43	87.24
South Korea	7.56	4.42	58.45	41.54	14.03	32.50	1878.60	1044.49
Israel	7.51	4.86	64.70	33.55	12.06	21.13	2075.36	677.97
Vietnam	5.91	2.69	45.56	52.59	9.34	44.90	200.54	197.64
China	5.35	3.01	56.41	43.58	8.85	35.75	527.60	334.34
Russia	5.31	3.16	59.45	40.54	9.76	38.31	884.90	570.20
Singapore	4.46	2.24	50.34	49.65	15.27	31.03	2234.97	1377.74
Thailand	3.79	2.89	76.27	23.39	15.03	11.01	551.22	79.58
**Malaysia	3.75	1.92	51.18	48.80	8.46	35.12	611.03	419.33
**Indonesia	2.87	1.42	49.33	50.29	8.51	34.85	185.06	130.75

GDP: Gross Domestic Product; **CHE :** Current Health Expenditure; **GHE:** Government Health Expenditure; **PHE:** Private Health Expenditure; **GGE:** General Government Expenditure; **OOPE:** Out-of-Pocket Expenditure; **USD:** United States Dollar; **ppp:** Purchasing Power Parity.

Note:
* The World Bank reports the GHE as 0.95% of the GDP in 2018. The Economic Survey of 2015-16 reported the expenditure to be 1.3% of the GDP in the first 8 months of that year. The National Health Accounts estimate for 2016-17 is 1.2% and the National Health Policy 2017 estimates it to be 1.15%. RBI estimates the expenditure to be 1.1% for the year 2019-20.
** Malaysia and Indonesia are outliers, with the government spending on healthcare accounting for only 1.92% and 1.42% of GDP, respectively. Even in these two countries, the share of public expenditure is about 50% of the CHE.

Source:
World Bank Open Data portal.

Table prepared by Foundation for Democratic Reforms.

Table 1.3: Healthcare Outcomes in Select Countries, 2019				
Country	**Life Expectancy**	**IMR**	**Birth Rate**	**Death Rate**
United States	78.78	5.6	11.40	8.70
India	69.65	28.3	17.64	7.26
Germany	80.94	3.2	9.40	11.30
France	82.57	3.8	11.20	9.10
Canada	82.04	4.2	9.90	7.60
United Kingdom	81.2	3.7	10.70	9.00
Brazil	75.88	12.4	13.70	6.53
Spain	83.48	2.6	7.60	8.80
Italy	83.19	2.7	7.00	10.50
South Africa	64.13	27.5	20.12	9.39
South Korea	83.22	2.7	5.90	5.70
Israel	82.8	3.0	20.10	5.10
Vietnam	75.4	15.9	16.45	6.38
China	76.91	6.8	10.50	7.10
Russia	73.08	4.9	9.80	13.30
Singapore	83.49	2.1	8.80	5.00
Thailand	77.15	7.7	10.16	7.78
Malaysia	76.15	7.3	16.60	5.17
Indonesia	71.72	20.2	17.75	6.51

Note:
1. Infant Mortality Rate (IMR) is the number of deaths of infants under one year of age per 1,000 live births per year.
2. Birth rate is the total number of live births per 1,000 population per year.
3. Death rate is the number of deaths per 1,000 population per year.

Source:
World Bank Open Data portal.

Table prepared by Foundation for Democratic Reforms.

Table 1.4: DALYs in Select Countries (per 100,000 Population), 2019

Country	DALYs due to All Causes	DALYs due to CMNNDs	DALYs due to NCDs	DALYs due to All Causes attributable to All Risk Factors	DALYs due to CMNNDs attributable to All Risk Factors	DALYS due to NCDs attributable to All Risk Factors
South Africa	49954	23778	20844	29711	18759	9910
India	**37843**	**11801**	**22071**	**19450**	**8168**	**10446**
Brazil	29427	4838	20309	11949	3009	8017
Vietnam	27542	3910	20466	13587	2225	10607
South Korea	17191	1217	13534	6067	654	4849
United Kingdom	20956	1380	18000	8179	802	7016
France	18781	1014	15461	6373	542	5122
Canada	19683	1254	16352	7425	721	6100
United States	26061	1597	21717	11557	986	9918
Germany	20075	1036	17277	7943	582	6859
Russia	31110	2740	23206	15606	1687	12943
Italy	18185	944	15752	6267	517	5310
China	22270	1889	18058	10310	1104	8743

Note:
DALYs: The sum of years lost due to premature death (YLLs) and years lived with disability (YLDs). DALYs are also defined as years of healthy life lost (one DALY is loss of one year of healthy life).
Causes: A single disease or injury or an aggregation of diseases and injuries that causes death or disability.
Example of causes: communicable diseases, NCDs, injuries, self harm & interpersonal violence etc.
CMNNDs: Communicable, maternal, neonatal and nutritional diseases
NCDs: Non-communicable diseases such as cardiovascular diseases, cancer, stroke etc.
Risk factor: An attribute, behavior, exposure, or other factor which is causally associated with an increased (or decreased) probability of a disease or injury. If the probability decreases, the risk is a protective factor.
Risk factors included are environmental risks (air pollution, unsafe water etc.), occupational risks (exposure to certain harmful chemicals), behavioural risks (smoking, drug use, alcohol use, poor diet etc.), metabolic risks (high LDL cholesterol, high body-mass index etc.)

Source:
1. Institute for Health Metrics and Evaluation (IHME) – Global Disease Burden Database, University of Washington, Seattle.

Table prepared by Foundation for Democratic Reforms.

Figure 1.9: Percentage Share of Deaths by Cause, 2016

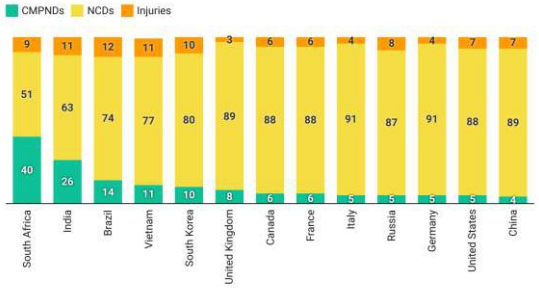
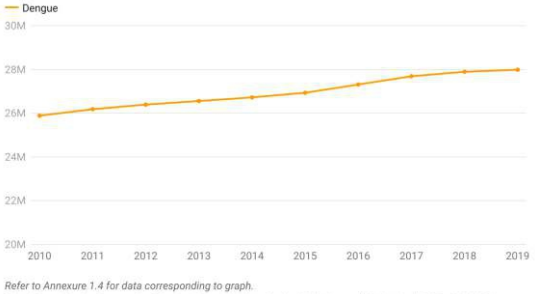


Chart: Foundation for Democratic Reforms • Source: Non-Communicable Disease Country Profiles 2018, World Health Organization. • Created with Datawrapper

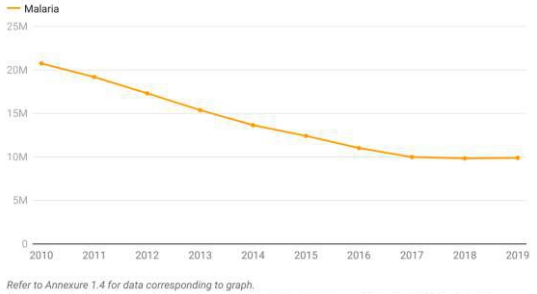
Figure 1.10: Trend in All-India Dengue Incidence



Refer to Annexure 1.4 for data corresponding to graph.

Chart: Foundation for Democratic Reforms • Source: Institute for Health Metrics and Evaluation (IHME) – Global Disease Burden Database, University of Washington, Seattle. • Created with Datawrapper

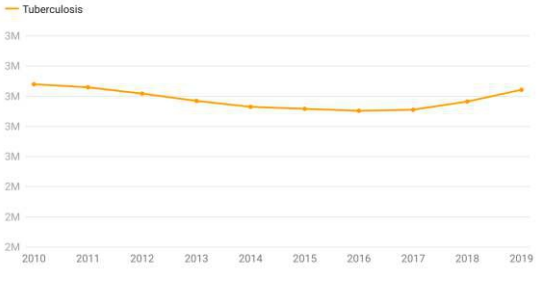
Figure 1.11: Trend in All-India Malaria Incidence



Refer to Annexure 1.4 for data corresponding to graph.

Chart: Foundation for Democratic Reforms • Source: Institute for Health Metrics and Evaluation (IHME) – Global Disease Burden Database, University of Washington, Seattle. • Created with Datawrapper

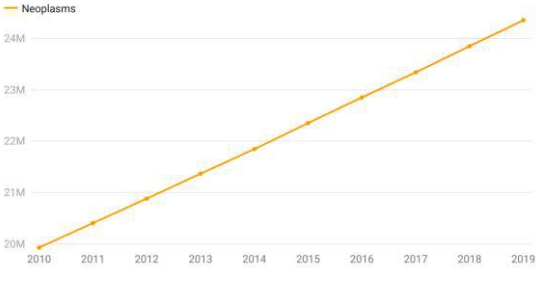
Figure 1.12: Trend in All-India Tuberculosis Incidence



Refer to Annexure 1.4 for data corresponding to graph.

Chart: Foundation for Democratic Reforms • Source: Institute for Health Metrics and Evaluation (IHME) – Global Disease Burden Database, University of Washington, Seattle. • Created with Datawrapper

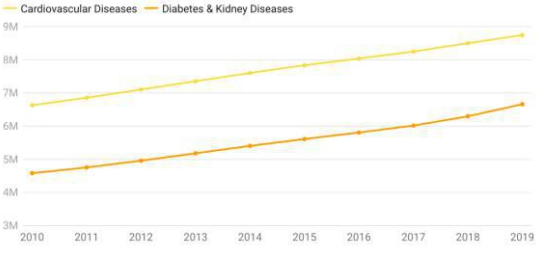
Figure 1.13: Trend in All-India Cancer Incidence



Refer to Annexure 1.3 for data corresponding to graph.

Chart: Foundation for Democratic Reforms • Source: Institute for Health Metrics and Evaluation (IHME) – Global Disease Burden Database, University of Washington, Seattle. • Created with Datawrapper

Figure 1.14: Trends in All-India Cardiovascular and Diabetes & Kidney Disease Incidence



Refer to Annexure 1.3 for data corresponding to graph.

Chart: Foundation for Democratic Reforms • Source: Institute for Health Metrics and Evaluation (IHME) – Global Disease Burden Database, University of Washington, Seattle. • Created with Datawrapper

CHAPTER 1

We must recognise that India has made great strides in reducing the burden of communicable, maternal, neonatal and nutritional diseases (CMNNDs) in the country. The proportion of all deaths in India due to CMNNDs has reduced from 53.6 percent in 1990 to 27.5 percent in 2016[8]. Maternal Mortality Rate (MMR) of India declined to 122 per 1,00,000 live births in 2015-17[9] from 212 in 2007-2009[2] against the global MMR of 216 in 2015[2]. MMR in India further declined to 113Ä in 2016-18. Similarly, IMR was 32 infant deaths per thousand live births, for the year 2018[9], which is about one-fourth as compared to 1971[2]. These improvements are due to extensive vaccination drives, better sanitation, drinking water and nutrition, increase in income, improved living conditions and advancements in medicine and technology.

In recent years, India has taken early concrete steps towards achieving universal health coverage, through the launch of the national public insurance programme Ayushman Bharat – Pradhan Mantri Jan Arogya Yojana (PMJAY). The programme has provided coverage to 15 crore families[10] since its launch in 2018. The Indradhanush mission, launched in 2014 as a special drive to vaccinate all unvaccinated and partially vaccinated children and pregnant women has been a huge success, with over 3.76 crore children and 94.6 lakh pregnant women vaccinated so far[11], resulting in a 6.7 percent annual expansion in the immunisation cover[12]. Several new vaccines are also included in the universal immunisation programme for children including Inactivated Polio Vaccine (IPV), Rotavirus Vaccine (RVV), Measles and Rubella (MR) vaccine, Pneumococcal Conjugate Vaccine (PCV), and Tetanus and adult diphtheria vaccine (Td). The National Digital Health Mission is a welcome start towards building an integrated database of healthcare providers and a robust system of digital health records.

State governments have also been introducing successful innovations in healthcare delivery. The setting up of Mohalla Clinics in Delhi to provide affordable and accessible outpatient care, drugs and diagnostics to the poor and underserved population is a promising state initiative. Centralised drug procurement in Tamil Nadu, low-cost diagnostics through Public-Private-Partnership (PPP) in Andhra Pradesh, along with the Aarogyasri insurance programme in Andhra Pradesh and Telangana, are other examples of the innovations in state healthcare systems. Through risk-pooling programmes such as Ayushman Bharat and Aarogyasri, a framework is now available to effectively deal with hospital care and catastrophic illness without out-of-pocket burden on the families. These initiatives work reasonably well for hospital care at the secondary level, whereas interventions at the primary and tertiary level leave much to be desired. Moreover, there is a significant inequity in healthcare infrastructure and services in rural areas and small towns and a considerable divergence among states in terms of infrastructure, services and outcomes.

In 2017, the National Health Policy[13] was formulated with the key objective of achieving universal health coverage by –

a. Ensuring access to free comprehensive primary health services through the existing health infrastructure and voluntary private partners.

b. Affordable secondary and tertiary care services through strategic purchasing at public and non-government hospitals in the short term. Eventually, the policy envisages to have fully equipped and functional public sector hospitals to meet secondary and tertiary health care needs of the population, especially the poorest and marginalised.

c. Reducing OOPE and catastrophic healthcare spending. The policy set the goal of reducing catastrophic healthcare spending by 25 percent from current levels by 2025.

The policy aims to strengthen the trust of the common man in the public health care system by making it predictable, efficient, patient-centric, affordable and effective, with a comprehensive package of services and products that meet immediate health care needs of most people. The utilisation of public facilities is envisaged to be increased by 50 percent by 2025. The policy rightly places emphasis on primary and preventive care, NCD screening with primary care network as the gatekeeper, public procurement of drugs, integration of health records across public and private sector, training and up-skilling of medical professionals, and strategic PPP to bridge critical gaps in infrastructure and quality.

The time has come to achieve the objectives set forth in the policy. There is enormous public demand for accessible, affordable and effective healthcare. The significant disruptions caused by COVID and the severe shortages at hospitals due to lack of credible primary care serve as a wake-up call. The already existing excessive burden of communicable and non-communicable diseases, the crushing burden of OOPE on the poor, and the impoverishment of tens of millions of people every year on account of ill-health are crying for urgent attention. The second wave of COVID helped Indian society focus on healthcare, and there is widespread recognition of the fierce urgency of comprehensive and sustainable healthcare reforms. We need an innovative and appropriate delivery model to make healthcare available and accessible to the bulk of the population at a relatively low cost, taking into account our unique strengths and addressing our special challenges. Most importantly, we need political will to execute the reforms and make the vision of 'health for all' a reality.

CHAPTER 1

INDIAN HEALTHCARE SYSTEM: AN OVERVIEW

An endeavour to restructure and strengthen healthcare services necessarily calls for an examination of the particular features of the Indian healthcare system. Large private sector presence, low patronage of public healthcare facilities and high out-of-pocket expenditure on healthcare have become typical of the healthcare system in general. However, the divergence in the degree of each of these factors as well as in healthcare outcomes across the states is significant and cannot be ignored. Any model to improve the healthcare system in the country must incorporate elements of flexibility for it to be viable across such varying circumstances. Each of these attributes will now be examined in detail.

Over the decades, India has made considerable progress in the public health sector. There has been a substantial decline in IMR from 114 per 1000 live births in 1980[14] to 32 per 1000 live births in 2020[15]. The Total Fertility Rate (TFR) continues to drop and today stands at 2.2 – a level slightly above the replacement fertility rate[15]. Life Expectancy has shot up from 52.3 in 1980[14] to 69.4 (2014-18)[16]. An aggregate improvement in these indicators could be attributed to the health initiatives undertaken by successive governments. However, the glaring disparity in health expenditure and health outcomes achieved across states cannot be overlooked.

2.1. Inter-state Variations

As illustrated in Table 2.1, some states have made impressive progress in bringing down the IMR and TFR whereas others continue to lag behind. Health indicators in parts of India are close to those attained by the Upper Middle and Middle Income countries whereas others underperform and are comparable to Low and Lower Middle Income countries. A few of the better off states such as Kerala, Tamil Nadu, Maharashtra, Andhra Pradesh, by virtue of their political will and institutional capacity, innovate and lead in some public health measures and practices. States such as Odisha, operating within the constraints of limited capacity and resources, have achieved impressive progress in family planning and reproductive services (refer to Box 2.1).

The disparity can partly be explained by differences in their level of economic development and incomes. However, the significant progress made by all the states over the years in most of the indicators cannot go unnoticed (see Annexure 2.2). Some states have managed to innovate in some respects, setting an example for others to follow. A closer look at these cases explains that better directed expenditure on healthcare coupled with political will and administrative efficiency, can bring about significant improvements in healthcare delivery at a moderate cost.

Table 2.1: Disparity in Health Outcomes Across Select States

State	TFR (2018)	IMR (2018)	U-5MR (2018)	MMR (2016-18)	Life Expectancy (2014-18)
Karnataka	1.7	23.0	28.0	92.0	69.4
Kerala	1.8	7.0	10.0	43.0	75.3
Telangana	1.8	27.0	30.0	63.0	69.6
Gujarat	1.9	28.0	31.0	75.0	69.9
Maharashtra	1.7	19.0	22.0	42.0	72.5
Tamil Nadu	1.6	15.0	17.0	60.0	72.1
Himachal Pradesh	1.7	19.0	23.0	85.0	72.9
Punjab	1.6	20.0	23.0	122.0	72.7
Andhra Pradesh	1.6	29.0	33.0	65.0	70
India Average	**2.2**	**32.0**	**36.0**	**113.0**	**69.4**
Haryana	2.2	30.0	36.0	91.0	69.8
Rajasthan	2.5	37.0	40.0	164.0	68.7
Odisha	1.9	40.0	44.0	150.0	69.3
Chattisgarh	2.4	41.0	45.0	159.0	65.2
Madhya Pradesh	2.7	48.0	56.0	173.0	66.5
Uttar Pradesh	2.9	43.0	47.0	197.0	65.3
Bihar	3	32.0	37.0	149.0	69.1

High Income	High Income - Upper Middle Income	Upper Middle Income - Middle Income	Middle Income - Low & Middle Income	Low & Middle Income - Lower Middle Income	Low Income

TFR: Total Fertility Rate; **IMR:** Infant Mortality Rate; **U-5MR:** Under-Five Mortality Rate; **MMR:** Maternal Mortality Rate.

Note:
1. Selected states have been categoried into two groups based on their performance relative to India average. Within these two categories, the states have been arranged in descending order of their per capita GSDP (2018-19).
2. The states have been marked according to World Bank's classification of income levels and average value of each indicator. Refer to Annexure 2.1 for World Bank's averages by income level.
3. Telangana's Infant Mortality Rate is closer to Middle Income group value (26.81) than the Low & Middle Income group value (30.61).
4. Kerala's Life Expectancy is closer to Upper Middle Income group value (75.53) than the Middle Income group value (72.05).

Source:
Total Fertility Rate
1. SRS Statistical Report, 2018, Office of the Registrar General & Census Commissioner, Government of India, pg. 78.
Infant Mortality Rate
2. SRS Statistical Report, 2018, Office of the Registrar General & Census Commissioner, Government of India, pg. 137
Under-Five Mortality Rate
3. SRS Statistical Report, 2018, Office of the Registrar General & Census Commissioner, Government of India, pg. 164
Maternal Mortality Rate
4. Special Bulletin on Maternal Mortality in India 2016-18, Sample Registration System, Office of the Registrar General, India, 2020, pg. 3
Life Expectancy
5. Rural vs Urban Expectations of Life at Birth, India, Office of the Registrar General, India, 2020, pg. 6.

Table prepared by Foundation for Democratic Reforms.

Box 2.1: A Brief Overview of Odisha's Efforts in Bringing Down the Total Fertility Rate

The state has made exemplary efforts in bringing down the TFR to 1.9 – below the national average – from a very high rate of 4.1 in 1980. Odisha's case clearly shows that political will, decentralised planning, better directed expenditure, context specific interventions, and active involvement of the community workforce can bring about significant results even in an otherwise resource constrained state. Some of the measures adopted by the state in reaching its goals are highlighted below:

1. **Decentralised Planning:** The state called for a bottom-up approach, and family planning sub-plans were developed at the district level by the district teams. The districts prioritised goals based on the prevalent situation and resources were allocated accordingly.
2. **Involvement of Community Workforce:** Active engagement of ANM workers – the state had a shortfall of 441 Female ANM/health workers in 2005, by 2020 it has 1009 in surplus (Rural Health Statistics, 2019-20) – seemingly had a profound impact on family planning and related measures.
3. **Addressing Family Planning needs:** ASHAs were involved to ensure the door step delivery of contraceptives. They were positioned as community level family planning counselors to improve access to family planning services, and trained on reproductive rights, fertility, methods of contraception etc. The state emphasised on spacing methods as part of its family planning efforts. In 2015-16, Odisha's median interval between births was 41 months whereas the national average was 32 months (National Family Health Survey-4).
4. **Incentives for the Workforce:** Financial incentives were employed to increase the retention of healthcare professionals in rural areas. Odisha has observed a decline in vacancy rates of doctors from 29.1% (2008-09) to 6.% (2012-13); and for nurses from 21.8% to 13.1% during the same period.

Source:

1. *Compendium of India's Fertility and Mortality Indicators, 1971 - 2013, Office of the Registrar General & Census Commissioner, Government of India.*
2. *States Successful in Achieving Control on Population Growth, Ministry of Health and Family Welfare, Release ID: 1604955, PIB Delhi, 3 March 2020.*
3. *Directorate of Family Welfare, Department of Health and Family Welfare, Government of Odisha, available at: www.dfwodisha.nic.in, accessed on 14 June 2021.*
4. *Deborah Thomas et al., "Closing the health and nutrition gap in Odisha, India: A case study of how transforming the health system is achieving greater equity", Social Science & Medicine 145 (2015) 154-162.*

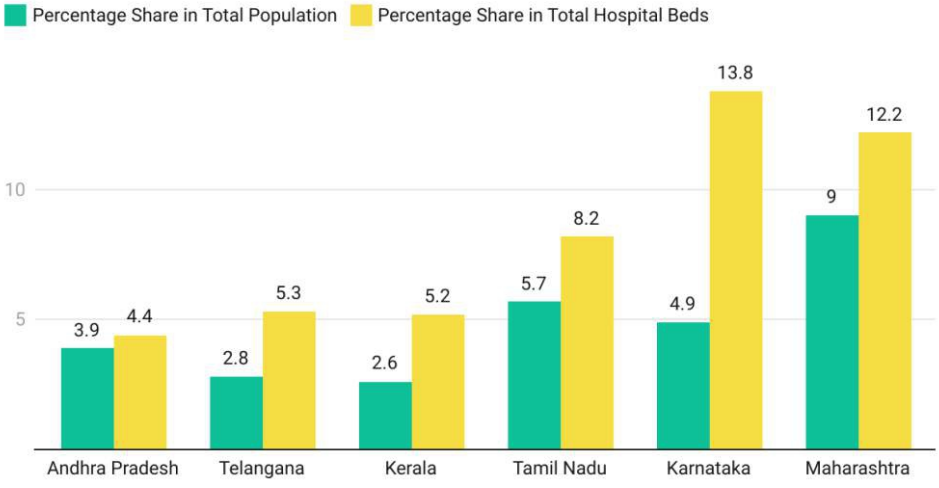
Besides the regional variations, another defining feature of the Indian healthcare system is the huge presence of the private sector which caters to a majority of healthcare needs in the country despite a sizable network of public healthcare facilities. The massive inroads made by the private healthcare sector is evident across all three dimensions of infrastructure, utilisation, and expenditure.

2.2. Private Sector Involvement in Healthcare Services

2.2.1. Infrastructure

Currently, more than 60 percent of healthcare infrastructure is under the private sector. As of April 2020, out of the total 18,99,228 hospital beds, 11,85,242 were in the private sector.[17] However, the distribution of these infrastructural resources across the states is not uniform. Six states (see Figure 2.1) which are home to 28 percent of the population have a concentration of about half of the total hospital beds in the country.

Figure 2.1: Percentage Distribution of Hospital Beds vis-à-vis Population



2.2.2. Utilisation

Associated with the pattern of private healthcare infrastructure distribution is the utilisation rate of private healthcare facilities vis-a-vis the public sector. As Table 2.2 clearly shows, the private healthcare providers are the dominant caregivers in almost every major state in the country. Nearly 75 percent of the visits to a hospital are to a private healthcare facility (refer to Annexure 2.3).

Table 2.2: Private Sector Share Across States – Infrastructure and Utilisation		
Region	**Private Hospital Beds (%)**	**Total Private Facility Utilisation (%)**
India	62.4	74.6
Andhra Pradesh	72.2	85.8
Telangana	79.0	85.7
Tamil Nadu	50.1	65.5
Kerala	61.7	66.4
Bihar	62.2	86.1
Uttar Pradesh	72.9	85.1
Gujarat	68.9	80.5
Maharashtra	77.8	82.3
Odisha	27.8	27.8
Assam	29.1	22.0
Haryana	68.9	90.2
Himachal Pradesh	22.7	51.7

***Source**:*
***Hospital Beds** –*
1. Geetanjali Kapoor, et. al., "State-wise estimates of current hospital beds, intensive care unit (ICU) beds and ventilators", Center for Disease Dynamics, Economics & Policy and Princeton University, 20 April 2020.
***Utilisation Percentage** –*
2. "Health in India", NSS 71st Round, Ministry of Statistics and Programme Implementation, 2014, pg.s S-6 and S-7.

Table prepared by Foundation for Democratic Reforms.

Estimates by the NSSO indicate that the consultation rate in India is currently about 2.3, i.e. a person makes two visits to a hospital or healthcare provider (including informal providers) on an average in a year[18] (refer to Annexure 2.3). A mere 25 percent of these visits are to a government health facility[18] with the consultation rate for the public health sector remaining stagnant at about 0.5-0.6 per head per year over the past 25 years[19] (refer to Annexure 2.3). A significant proportion of the consultations in the private sector are with an informal, untrained caregiver in the private sector, or a non-physician health worker in the public sector providing reproductive care and family planning services. Nearly 70 percent of the primary care in rural India is provided by the informal providers who are the first point of contact in most cases[20].

Box 2.2: Public Sector Utilisation Over the Decades

The Economic Survey 2020-21 showcases (see Figure I and Figure II) a steady increase in the utilisation rate of public facilities for outpatient care in both rural and urban areas. The utilisation for inpatient care in rural areas has seen a growth from 2014 (42%) to 2018 (46%) after remaining unchanged for a decade, since 2004. The utilisation in urban areas saw a dip from 2004 (38%) to 2014 (32%), and has increased since then (35% in 2018) although it is still below the 2004 level. Despite the modest growth in patronage for public healthcare facilities, the private sector continues to dominate healthcare services in the country.

Figure I: Percentage Share of Public Sector in Healthcare Services - Hospitalisation Care

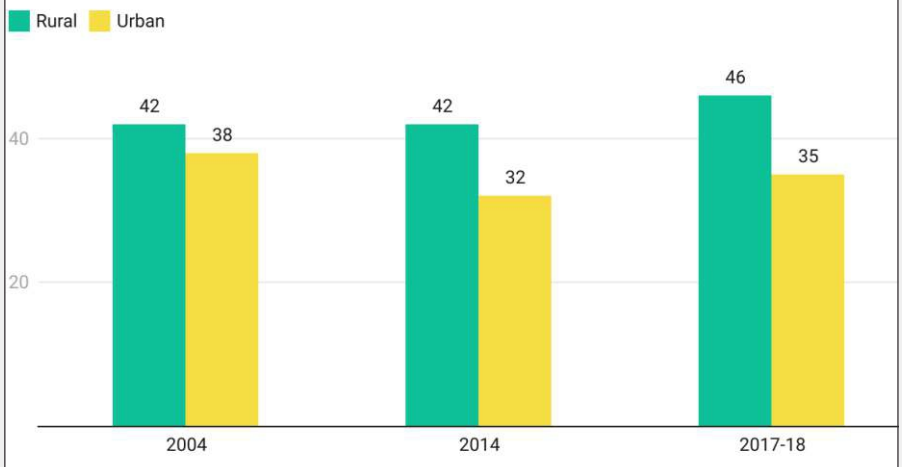


Chart: Foundation for Democratic Reforms • Source: Volume I, The Economic Survey 2020-21, Department of Economic Affairs, Ministry of Finance, Government of India, pg. 162. • Created with Datawrapper

Figure II: Percentage Share of Public Sector in Healthcare Services - Outpatient Care

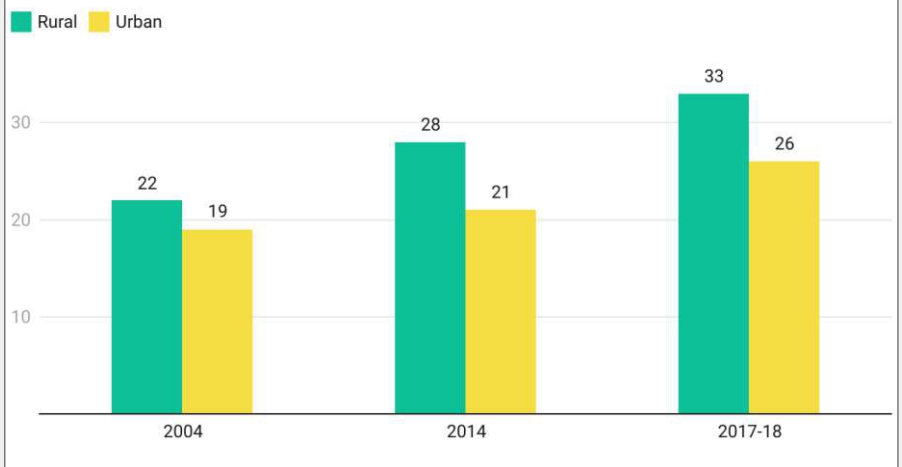
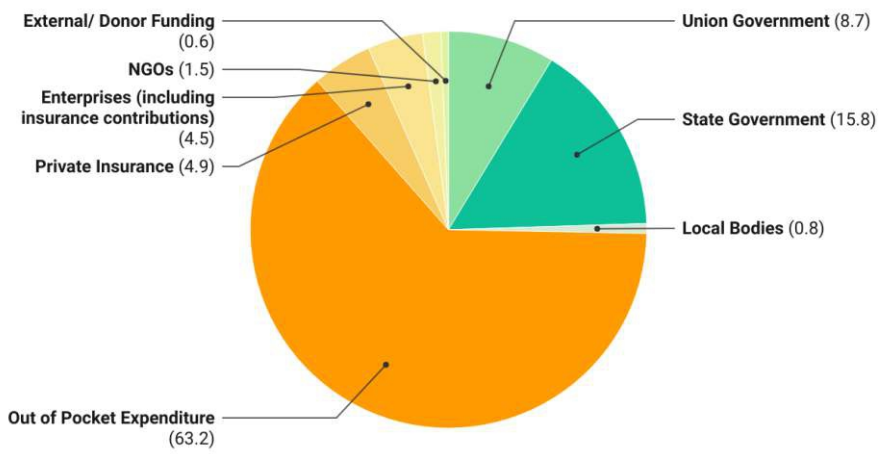


Chart: Foundation for Democratic Reforms • Source: Volume I, The Economic Survey 2020-21, Department of Economic Affairs, Ministry of Finance, Government of India, pg. 162. • Created with Datawrapper

2.2.3. Expenditure

A natural corollary of a large private sector presence and patronage in healthcare is increased private expenditure on healthcare. A staggering 75 percent of CHE comes from private sources (see Figure 2.2). At 3.53 percent of the GDP, CHE amounts to 93 percent of THE in the country.[4] Therefore, about three-fourths of healthcare expenditure that goes towards provision of healthcare services is being privately financed.

Figure 2.2: Components of Current Health Expenditure, 2016-17



Such a high share of private expenditure in the CHE is in stark contrast to most other major countries across income levels – United States (49.6%), Germany (22.32%), China (43.6%), Brazil (58.2%), Vietnam (52.6%) (Refer to Table 1.2 in Chapter 1).

It is noteworthy that the share of private healthcare expenditure in THE, while still constituting the lion's share, has seen a steady decrease across the several rounds of National Health Accounts in the past 15 years (see Figure 2.3). The share has decreased by nearly 10 percent from 2004-05 to 2016-17.

As a result of the disproportionate share of private healthcare expenditure in the overall health expenditure in the country, the per capita private spending on healthcare far exceeds the per capita public healthcare expenditure. In 2016-17, the per capita private expenditure stood at Rs 2963, more than twice the public per capita expenditure (Rs 1418)[4]. As can be seen in Figure 2.4, the gap between the public and private per capita expenditure has either expanded or remained unchanged since the turn of the century (refer to Annexure 2.5).

Figure 2.3: Private Health Expenditure as % of Total Health Expenditure, 2016-17

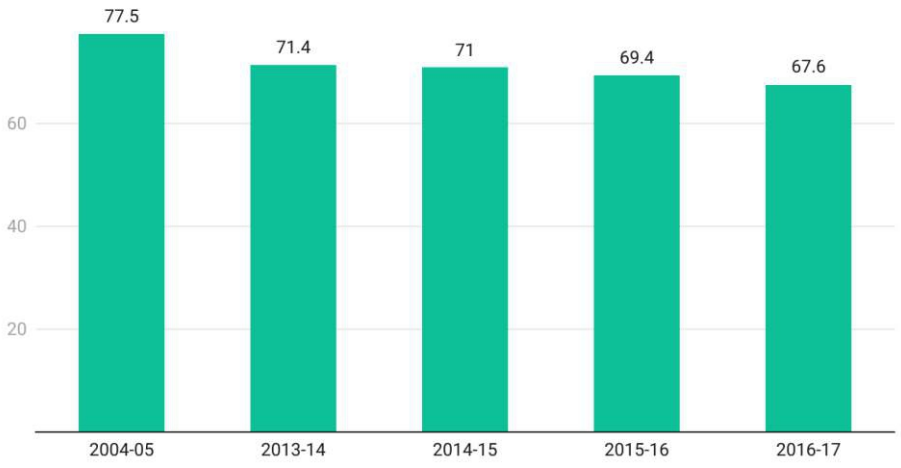


Chart: Foundation for Democratic Reforms • Source: National Health Accounts 2016-17 (Ref. 4) • Created with Datawrapper

Figure 2.4: Public and Private per capita Healthcare Expenditure, 2000-2018

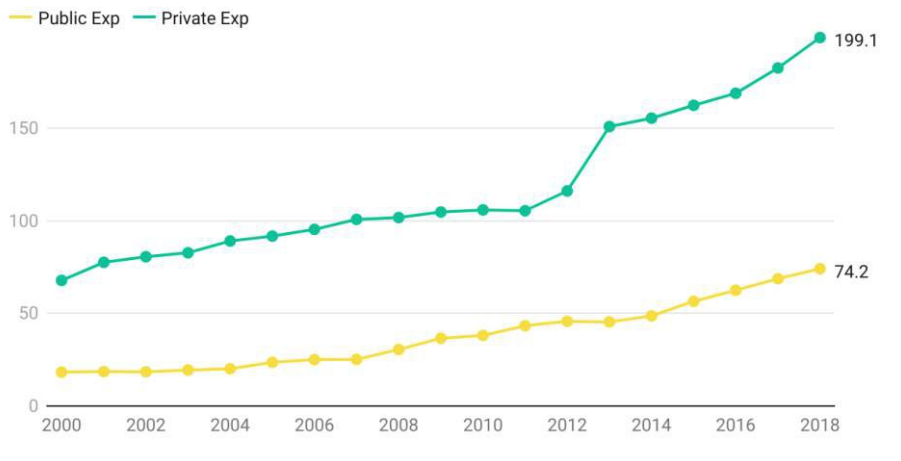


Chart: Foundation for Democratic Reforms • Source: World Health Organisation - Global Health Observatory Data Repository, accessed on 24th June 2021 • Created with Datawrapper

2.3. Burden of Out of Pocket Expenditure

Large private expenditure in healthcare is imposing an enormous burden on the poor and the middle classes in India. Out of the five components that constitute private health expenditure (see Figure 2.2), private health insurance and OOPE indicate the burden borne directly by individuals. Between the two, OOPE is more financially damaging since it is the sudden expenditure incurred from savings or other sources. OOPE is incurred at the point of care, in the absence of assured payment for a healthcare need. In contrast, private insurance does not entail sudden, unexpected OOPE but calls for regular premium payments in return for an assurance of payment in case the need arises. At

three percent (3%) of the total population, the private health insurance coverage in India is very low (refer to Table 5.6 in Chapter 5). Moreover, even the scant coverage is restricted to the richer quintiles of the population that can afford private insurance, while the poorer sections are left without any financial risk protection for healthcare needs (refer to Table 2.3). In the absence of an accessible public healthcare system offering quality services, the low and middle income groups are compelled to incur OOPE at private facilities. We have seen that (see Figure 2.2) only about five percent (5%) of the CHE is attributable to private health insurance, whereas 63 percent of the CHE is OOPE. This OOPE share is significantly higher than the figures for all other major countries. For instance, OOPE as a share of CHE for the United States, Germany, China, and Vietnam are 11 percent, 12.6 percent, 35.75 percent, 44.9 percent respectively (refer to Table 1.2 in Chapter 1).

Table 2.3: Private Insurance Coverage Across Quintiles

Quintile Class	% of Population Covered by Private Insurance	
	Rural	Urban
Q1	0.0	0.6
Q2	0.0	0.5
Q3	0.1	1.6
Q4	0.2	4.1
Q5	0.8	12.1
Average	0.2	3.8

Source:
1. National Health Profile 2020, Ministry of Health and Family Welfare, Government of India, pg. 254.

Table prepared by Foundation for Democratic Reforms.

Such a high burden of OOPE has serious ramifications for the poorer sections of the population. Having to bear the burden of healthcare costs by themselves, the poor and the middle classes invariably suffer the crippling effects of the lack of financial protection for healthcare. As a result, impoverishment on account of OOPE and loss of income due to sickness is substantial in India and its effects are two-fold. Firstly, it leads to a large number of individuals who are placed just above the poverty line to descend into poverty. One study estimated that around five percent (5%) of those above the poverty line (nearly 35 million people) in India fell into poverty due to healthcare expenditure in 2004-05.[21] Another study found that if calculated based on the Indian state-specific official poverty lines, about 55 million people fell into poverty in 2011-12 (refer to Table 2.4). In fact, the Union Government estimates that close to 60 million people are driven into poverty annually on account of healthcare spending[22]. Secondly, OOPE on healthcare has a poverty deepening effect on those already below the poverty line. As Table 2.4 depicts, OOPE expenditure places a considerable burden on the monthly consumption expenditure of the poor, intensifying their economic

hardships. However, it is important to note that these estimates are averaged across the country. In reality, the burden would be several times higher in individual cases, particularly because of health expenditure in catastrophic illness, causing tremendous financial distress.

In order to address the challenge of high OOPE burden, an assessment of the trajectory of its increase as well as some of the significant contributing factors is necessary. Between 2004-05 and 2011-12, the poorest quintile saw the highest growth in OOPE burden (refer to Table 2.5). The rate of growth of OOPE has been higher than the growth in household consumption expenditure resulting in a corresponding growth in the share of OOPE in the household consumption expenditure.

The share of OOPE for healthcare in the total household consumption expenditure has steadily increased from 4.9 percent in 1993-94, to six percent (6%) in 2004-05, and to 7.2 percent in 2011-12[23]. Significantly, between 2004-05 and 2011-12, the percentage of growth in the share of OOPE was the highest for the poorest 20 percent of the population (see Figure 2.5). In general, consumption expenditure constitutes a low share of income for the rich, and a very high share of income for the poor. As a result, higher OOPE and loss of wages and income for the poorer sections on account of healthcare failure often becomes catastrophic for the poor and middle-income groups, and plunges them into deeper poverty, or significantly weakens the households financially.

There are two components of OOPE burden – one, payment made to the caregiver – for consultation or hospitalisation; and two, the cost incurred for diagnostics, drugs, incidentals etc. With regard to payments to caregivers, the share of institutional expenditure (inpatient care) in total OOPE has been rising. The hospital care share of OOPE stood at 26.2 percent in 1993-94, 40.7 percent in 2004-05, 46.1 percent in 2011-12[23]. Since inpatient services are costlier, even if infrequent, the share of payments for institutional care, particularly in private hospitals, is steadily rising within OOPE. Outpatient services, however, continue to account for a majority of the OOPE on healthcare. While the cost per consultation may not be high, there are many more outpatient consultations compared to hospitalised care.

Among the components of OOPE, expenditure on medicines has remained predominant although, unlike the other components, its share has seen a downward trend since 1993-94 (78% in 1993-94, 66% in 2004-05, 63% in 2011-12)[23]. Significantly, expenditure on diagnostics witnessed the steepest increase from two percent (2%) in 1993-94 to eight percent (8%) in 2011-12, followed by an increase in expenditure on 'Others' (from 9% in 1993-94 to 17% in 2011-12)[23]. The increase in the share of diagnostics may indicate rising costs in general due to technological advances or even unnecessary utilisation because of overtesting. Irrespective of the driving factors of increase, provision of quality and affordable diagnostic services is evidently an essential component of an effective public health system. Further, since the category 'Others' would likely include expenses on transport, lodging, food and the like, healthcare services appear to be becoming increasingly inaccessible for the poor, and for those who live in rural areas and small towns. This is further corroborated by the finding that the increase in these components has been the greatest for the poorest quintile (see Figure 2.5). It is therefore unsurprising that OOPE on healthcare often has a devastating effect on the financial status of the poorer households.

Table 2.4: Impoverishment Indicators due to Households' Total OOPE and Medicine Spending, India, 1993-1994, 2004-2005 and 2011-2012

	1993-94	2004-05	2011-12	Estimated Population in million (2011-12)
***Using National Poverty Line**				
Headcount Ratio Indicators (%)				
Gross Headcount	45.32	37.85	22.17	272
Headcount Net of Total OOPE	49.52	42.68	26.65	327
Total OOPE Induced Poverty	4.2	4.83	4.48	55
Headcount Net of Medicine OOPE	48.91	41.54	25.27	310
Medicine OOPE Induced Poverty	3.59	3.69	3.09	38
Poverty Gap Indicators (INR current prices)				
**Gross Poverty Gap	63.3	103.4	154.2	NA
***Gap Net of Total OOPE	69.7	115.8	182.8	NA
***Total OOPE Induced Gap	6.4	12.4	28.6	NA
****Gap Net of Medicine OOPE	68.9	113.7	176.7	NA
****Medicine OOPE Induced Gap	5.6	10.3	22.5	NA
Using International Poverty Line (5)				
Headcount Ratio Indicators (%)				
Gross Headcount	40.96	33.07	18.37	225
Headcount Net of Total OOPE	44.92	37.38	22.41	275
Total OOPE Induced Poverty	3.97	4.31	4.04	50
Headcount Net of Medicine OOPE	44.35	36.34	21.37	262
Medicine OOPE Induced Poverty	3.39	3.27	2.99	37
Poverty Gap Indicators (INR current prices)				
**Gross Poverty Gap	59.3	96.1	150.7	NA
***Gap Net of Total OOPE	65.4	107.5	177	NA
***Total OOPE Induced Gap	6.1	11.5	26.3	NA
****Gap Net of Medicine OOPE	64.6	105.8	172	NA
****Medicine OOPE Induced Gap	5.3	9.7	21.3	NA

OOPE: Out of Pocket Expenditure

Note:
* Based on Tendulkar Committee methods (poverty lines range between INR695 per month in Odisha and INR1018 per month in Kerala in rural and INR861 per month in Odisha and INR 1169 per month in Haryana in urban areas among major states).
** Only for poor
*** Only for poor net of total OOP
*** Only for poor net of medicine OOP
**** Using US$1.9 PPP at 2011-2012 prices and mixed recall period of household consumption expenditure (INR equivalent to US$1.9 PPP are 771.21 in rural and 945.41 in urban areas).

Source:
1. Sakthivel Selvaraj et al., "Quantifying the financial burden of households' out-of-pocket payments on medicines in India: a repeated cross-sectional analysis of National Sample Survey data, 1994–2014", BMJ Open, 2018, pg. 5.

Table prepared by Foundation for Democratic Reforms.

Table 2.5: Growth (CAGR) of Per Capita Total Consumption Expenditure and Per Capita OOPE

Consumption Quintile	1993-94 to 2004-05		2004-05 to 2011-12	
	Total Consumption	OOPE	Total Consumption	OOPE
Poorest	-0.3	0.8	3.8	10.3
Second	-0.3	1.1	4.0	7.8
Middle	-0.2	1.6	4.2	6.0
Fourth	0.0	2.4	4.3	6.1
Richest	1.1	3.9	4.6	5.2
All	0.4	3.0	4.4	5.9

Source:

1. Indrani Gupta and Samik Chowdhury, "Financing for Health Coverage in India: Issues and Concerns", IEG Working Paper No. 346, Institute for Economic Growth, Delhi, 2015, pg. 5.

Table prepared by Foundation for Democratic Reforms.

Figure 2.5: Increase in % Share of OOPE in Consumption Expenditure across Quintiles, 2004-05 and 2011-12

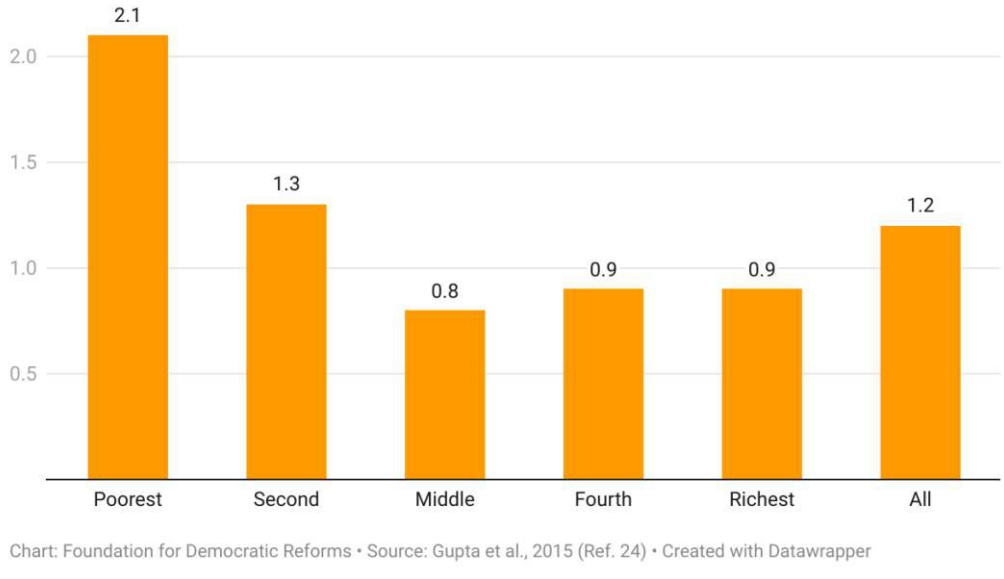


Figure 2.6: Compound Annual Growth (%) of OOPE and its Components across Quintiles, 1993-94 to 2011-12

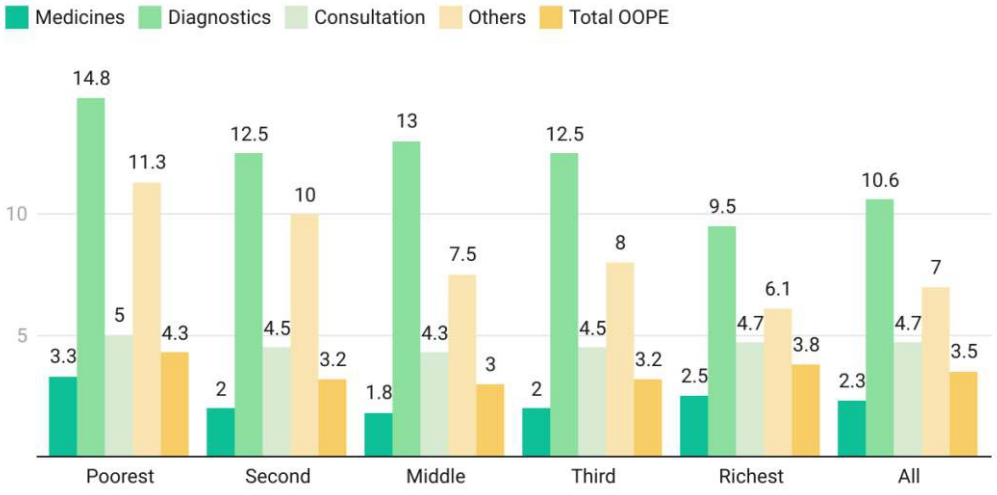


Chart: Foundation for Democratic Reforms • Source: Indrani Gupta et al., "Financing for Health Coverage in India: Issues and Concerns", IEG Working Paper No. 346, Institute for Economic Growth, Delhi, 2015, pg. 10. • Created with Datawrapper

The ramifications of OOPE are more pronounced when it is Catastrophic Health Expenditure, defined as OOPE on healthcare that equals or exceeds 10 percent of total household consumption expenditure. The number of households incurring catastrophic health expenditure grew from 21 percent in 2004 to nearly 25 percent in 2014 and the incidence increased the most for the lower quintiles (refer to Table 2.6). Evidently, affording healthcare is becoming harder for the poor and the middle-classes, with grave consequences for the financial well-being of such households.

Table 2.6: Households with Catastrophic Health Expenditure across MPCE Quintiles – NSS 2004 and NSS 2014

Quintile	NSS 2004	NSS 2014	% Change
Poor	18.0	24.5	35.9
Lower-middle	19.0	24.4	28.6
Middle	22.7	24.7	8.9
Higher-middle	23.4	25.3	8.0
Rich	22.7	25.3	11.8

Source:
1. Pandey et al., "Variations in Catastrophic Health Expenditure Across the States of India: 2004 to 2014", PLoS ONE 13(10), 2018, pg. 9.

Table prepared by Foundation for Democratic Reforms.

Between inpatient and outpatient expenditure, the latter proves to be the most financially burdensome in aggregate terms. An analysis of the impoverishing effect of OOPE on healthcare during the year 2004-05 underscored the tremendous burden that outpatient care places on the finances of the poor[21]. Although the share of institutional care expenditure in OOPE has increased overtime, outpatient care expenditure still remains dominant for most people. Shahrawat et al. showed that the annual increase in poverty headcount due to OOPE on healthcare (3.53% for 2004-05) showed negligible change when OOPE on inpatient care was removed (3.33%) (refer to Table 2.7). Significantly, when OOPE for outpatient care is excluded, the poverty headcount rate drastically fell to 0.53 percent. Clearly, the OOPE burden will be high for those who need hospitalisation. However, the vast majority of people do not need hospitalisation every year. But almost every family needs outpatient care for routine ailments or management of chronic diseases. Out of the cost burden of outpatient care, more than 60 percent of the OOPE is the cost of drugs[2]. Furthermore, the relief in terms of diminished OOPE burden was greatest for the poorest quintile of the population. Similar trends were observed in the percentage of households incurring catastrophic healthcare expenditure across quintiles under different scenarios[21].

The high share of drug cost in OOPE suggests a very low doctor consultation fee. For instance, in 2018, expenditure on drugs accounted for 68 percent of total OOPE in rural areas and 61 percent in urban areas[2]. Consultation fees, on the other hand, accounted for 12 percent and 16 percent respectively[2]. This may be an indication of a large section of the population being served by informal providers, charging nominal fees, given their widespread presence in the healthcare landscape of the country. While the drug costs cannot be altered as they are externally determined by formal mechanisms, the doctor consultation fees are susceptible to change according to the providers' preferences. Therefore, it is likely that the informal providers may be charging lower consultation fees to attract more outpatients, especially in the low-income segments of the population. Such a scenario exacerbates the problem of poor healthcare for the low and middle-income sections as they become greatly vulnerable to the dangers of unscientific and, at times, even hazardous medical practices at the hands of informal providers. Hence, an adequate coverage of public healthcare services, especially in a society with widespread poverty, is imperative in order to meaningfully guarantee healthcare for all.

Our healthcare system must therefore be designed with special emphasis on quality outpatient care at nominal or no cost to the patient in order to be able to alleviate the financial distress caused especially to the poor and lower income groups. The outpatient care must be comprehensive, encompassing provision of consultation, essential drugs and diagnostic services mostly free, with a nominal fee to strengthen the voice of the user and ensure accountability. We must also not lose sight of the increasing share of ancillary costs like travel being incurred by the people when seeking healthcare services; the system must therefore be accessible to reduce hardship and reduce OOPE.

Table 2.7: Impoverishment due to Healthcare Payment (2004-05)				
Above Poverty Line Quintile	Poverty Headcount Increase (%) under Different OOPE Scenarios			
	Status Quo	Excluding Cost of Drugs	Excluding Cost of Inpatient Care	Excluding Cost of Outpatient Care
1	17.52	2.18	17.4	2.33
2	4.10	0.28	3.9	0.41
3	1.13	0.02	0.95	0.17
4	0.91	0.07	0.56	0.36
5	0.67	0.01	0.16	0.38
APL Subtotal	4.87	0.51	4.59	0.73
All	3.53	0.37	3.33	0.53

APL: Above Poverty Line; OOPE: Out of Pocket Expenditure.

Source:
1. Shahrawat et al., "Insured Yet Vulnerable: Out-of-Pocket Payments and India's Poor", Health Policy and Planning, 2012, pg. 217.

Table prepared by Foundation for Democratic Reforms.

The actual design of the system may vary across the states given the wide inter-state variance in the incidence of OOPE as well as catastrophic health expenditure. Pandey, et al.[24] reveal that the increase in households with OOPE was seen in states that are at a higher epidemiological transition level (12 states including the erstwhile undivided Andhra Pradesh). These states were categorised based on the ratio of DALYs from communicable diseases and those from NCDs. Besides the increase in the burden, the average per capita OOPE is also higher in such states. Similar to the pattern of OOPE burden, the incidence of catastrophic health expenditure is greater in states at a higher epidemiological transition level. In fact, it was only in these 12 states that the catastrophic health expenditure increased from 2004-2014. While the exact reasons for this pattern cannot be established, there are several possible explanations. One such hypothesis is that a higher prevalence of NCDs and injuries in states at a higher epidemiological transition level are possibly contributing to higher burden since treatment for complications arising out of NCDs is generally more expensive and prolonged. Another reason could be higher utilisation of healthcare services in these states, which, as a corollary, suggests an unmet need for affordable healthcare services in states at a lower epidemiological transition level but are seeing an increase in non-communicable disease incidence.

2.4. Challenges of the Indian Healthcare System at a Glance

Any solution to strengthen the healthcare system in India must factor in the underlying challenges that affect healthcare delivery across the country. The task before us is daunting as these challenges are many and wide-ranging.

1. Our public health expenditure as a percentage of GDP is just over one percent – a number too low to provide quality care to all. Relative to the country's income levels, the OOPE is exorbitantly high, pushing tens to millions of people below poverty every year.
2. DALYs lost on account of prevalent disease burden remain significantly higher in comparison to not only prosperous OECD countries, but also most middle and lower middle income countries (refer to Table 1.4 in Chapter 1).
3. Even today, infectious diseases like tuberculosis, malaria, dengue and diarrhoea pose a significant challenge to the healthcare system.
4. The increased incidence of NCDs poses yet another significant challenge to the already under-funded and ineffective system for two reasons. First, in the absence of early screening and preventive measures, chances of minor ailments turning into chronic diseases remain high; thereby increasing morbidity and mortality. Second, as the healthcare needs of the population change, requiring costlier and sophisticated interventions, the costs for the patients and the system are bound to increase.
5. In the absence of proactive state policies focussing on comprehensive primary care, the system of Family Practitioners in the private sector has significantly declined, and there is increasing reliance on hospital-based care.
6. The secondary care interventions are now increasingly being performed at tertiary or multi-specialty hospitals. This has led to the decline of small nursing homes providing quality care at an affordable cost.
7. Private tertiary care is prohibitively expensive. The public tertiary hospitals, at present, are under-funded, ill-equipped and are unable to attract the best talent. As the healthcare needs of the population change due to epidemiological shift, the healthcare costs are bound to increase. Advancements in technology would further contribute to the increase. In such a scenario, single-payer insurance mechanisms at the tertiary level escalate costs dramatically, draining the exchequer and rendering the system unsustainable in the long-run.

Addressing these challenges requires an increase in public investment in healthcare in a rational manner. There is a huge demand for quality healthcare in the country. This is evident from the significant increase in financial inflows from the private sector – from USD 94 million in 2011 to USD 1,275 million in 2016, a jump of 13.5 times[25]. Out of this, USD 647 million are Foreign Direct Investment (FDI) funds constituting 1.6 percent of the total FDI inflows for the year 2015-16[25]. However, benefits of growth in private tertiary healthcare investments will neither be cost-effective

for most patients, nor will they reach the poor and middle classes. In the absence of adequate public investment, quality healthcare will largely remain inaccessible to the poor and the middle-classes.

An integrated approach to provision of healthcare services that takes into consideration each of the several specific characteristics of the Indian healthcare system is the need of the hour. As outlined in this chapter, there are several issues that need to be addressed simultaneously keeping in mind the enormous diversity in our society and country.

A piecemeal approach towards healthcare services will not yield the desired result. The segmentation of health programmes rather than focus on continuum of care has proved to be ineffective at two levels: one, the cost of running the programmes is not commensurate with outcomes; and two, people end up paying more and suffering more. Lack of adequate outpatient care at the grassroots level is converting easily treatable problems into serious morbidity and catastrophic illnesses. The failure of primary care and absence of a referral system are imposing an enormous burden on the tertiary care system leading to overcrowding, poor services and declining public trust. Our healthcare crisis has many direct and profound consequences on lives and livelihoods – unreliable and often indifferent quality healthcare, unaffordable private care, high out-of-pocket expenditure and the associated disease burden, loss of productivity and incomes, increasing loss of healthy life years and diminished quality of life.

The challenge in India is to build a relatively low cost, effective, accessible healthcare system on the foundations existing already. Radical overhaul is neither feasible nor attainable. India cannot commit itself to spending abundantly given the fiscal constraints. Our goal must be to build a comprehensive healthcare system that is effective, non-disruptive, and takes into account the infrastructure, institutions and incentives to generate the best possible outcomes at a low cost.

2.5. Strengths of the Indian Healthcare System

We have extraordinary challenges in the healthcare sector. However, India has many unique advantages, relative to its income levels, that can be leveraged to build an effective healthcare system for all. Unlike many other emerging economies, India trains a large number of physicians, nurses and other healthcare professionals, and we are self-sufficient in human resources. Over the years, a significant number of our doctors trained abroad and gained expertise. Their skill and expertise makes most complex procedures, sophisticated surgeries and interventions available in India. Our success rate and safety record in these interventions like coronary artery bypass graft, knee replacement, kidney transplantation etc matches the global benchmarks. The cost of most interventions in India is among the lowest in the world; in most cases it ranges from one-fifth to one-tenth of the costs in OECD countries. Our pharmaceutical sector is a great success story, and India produces high quality drugs in large quantities at very low cost. While many poor Indians incur OOPE for drugs and find drug cost burdensome, by global standards our drugs are very inexpensive. India produces the most quality vaccines in the world at the lowest cost. We need to

leverage all these and other strengths in designing an effective, economical healthcare model.

There is a huge influx of doctors into the system every year. We have 542 medical colleges producing over 80,000 medical graduates annually. The annual inflow of qualified medical doctors is the highest in the world, barring China (see Figure 2.7). The existing institutional infrastructure is geared towards ensuring adequate availability of medical practitioners and other healthcare professionals to serve the needs of the country. However, the same does not hold true for nurses. The ratio of medical graduates to nursing graduates is skewed, and we need more nurses, especially as the demographic shift takes place and NCDs demand greater nursing care. Otherwise, in terms of health human resources, we only need to address the issue of quality and reorient training programmes to address our needs.

Figure 2.7: Medical Colleges and Graduates in Select Countries

Country	Medical Colleges	Medical Graduates
China	185	139750
India	542	80235
Brazil	334	34739
United States	170	26095
Mexico	117	15954
Germany	43	9581
Italy	47	9106
Japan	85	9015
United Kingdom	61	8756
France	54	7276
Spain	44	6712
Indonesia	73	5500
Australia	22	4070
South Korea	41	3848
Canada	17	2936
Denmark	4	1339
Switzerland	6	1018

Chart: Foundation for Democratic Reforms

Source: 1. Organisation for Economic Co-operation and Development 2. World Health Organization 3. World Directory of Medical Schools 4. Zanoll et al., 2020 (Ref. 30) 5. Rigby et al., 2017 (Ref. 31) • Created with Datawrapper

The private sector plays a vital role in catering to the overall health needs of the country. The Indian private healthcare sector is gaining prominence in the global landscape owing to its cost-competitiveness. The cost of sophisticated medical and surgical interventions in India is only a fraction of that in the developed countries (refer to Table 2.8), while our safety and success rates are comparable with the best in the world, making us an attractive destination for medical tourism. In 2017, almost five lakh (5,00,000) medical tourists were treated in India, with cost savings of up to 65-90 percent compared to the United States[26].

Table 2.8: Cost of Medical Procedures in Select Countries in USD

Medical Procedure	India	Thailand	Malaysia	Singapore	Turkey	South Korea
Heart Bypass	7,900	15,000	12,100	17,200	13,900	26,000
Angioplasty	5,700	4,200	8,000	13,400	4,800	17,700
Heart Valve Replacement	9,500	17,200	13,500	16,900	17,200	39,900
Hip Replacement	7,200	17,000	8,000	13,900	13,900	21,000
Hip Resurfacing	9,700	13,500	12,500	16,350	10,100	19,500
Knee Replacement	6,600	14,000	7,700	16,000	10,400	17,500
Spinal Fusion	10,300	9,500	6,000	12,800	16,800	16,900
Dental Implant	900	1,720	1,500	2,700	1,100	1,350
Lap Band	7,300	11,500	8,150	9,200	8,600	10,200
Gastric Sleeve	6,000	9,900	8,400	11,500	12,900	9,950
Gastric Bypass	7,000	16,800	9,900	13,700	13,800	10,900
Hysterectomy	3,200	3,650	4,200	10,400	7,000	10,400
Breast Implants	3,000	3,500	3,800	8,400	4,500	3,800
Rhinoplasty	2,400	3,300	2,200	2,200	3,100	3,980
Rhytidectomy	3,500	3,950	3,550	440	6,700	6,000
Liposuction	2,800	2,500	2,500	2,900	3,000	2,900
Abdominoplasty	3,500	5,300	3,900	4,650	4,000	5,000
Lasik (both eyes)	1,000	2,310	3,450	3,800	1,700	1,700
IVF Treatment	2,500	4,100	6,900	14,900	5,200	7,900
Legend		Low Price		Moderate Price		High Price

Source:
1. India: Building Best Practices in Healthcare Services Globally, FICCI, 2019

Table prepared by Foundation for Democratic Reforms.

Besides hospital services, the country has made strides in improving the quality of diagnostics with the expansion of private diagnostic chains over the past years. These private laboratories have played an important role in expanding the range of diagnostic services available while also enhancing their accessibility, efficiency and accuracy of results.

Indian pharmaceutical industry is rapidly growing and is one of the largest in the world. The industry is currently valued at over USD 40 billion (refer to Table 2.9) and is expected to grow to USD 120-130 billion by 2030[27]. It is efficient and economical, making us largely self-reliant in drug production. Our pharmaceutical imports were one-eighth of the exports in the sector in 2019-20 (refer to Table 2.10).

The country produces about 60,000 generic products across 60 therapeutic categories. contributing to 20 percent of the global generic drugs exports in terms of volume[27]. Indian drugs are exported to over 200 countries, with the United States being a key market[28]. The quality of Indian drugs meets global standards, while the price of products is often a fraction of OECD prices. The country is also a key global supplier of vaccines, catering to over half of the global demand for vaccines[28]. In fact, India is the top supplier of DPT, BCG, and Measles vaccines to WHO[29]. Our industry has the resilience, skills and capability to serve our needs at reasonable costs. Moreover, the development

cost of vaccines is lower as highly skilled modern biotechnologists, microbiologists, chemists, and chemical and biochemical engineers are abundantly available.

Table 2.9: Indian Pharmaceutical Market

Financial Year	Export			Domestic			Total		Exchange Rate
	in USD Billion	in Rs. Crore	Market Share	in USD Billion	in Rs. Crore	Market Share	in USD Billion	in Rs. Crore	
2018	16.88	120,185	48%	18.12	129,014	52%	35.0	249,200	71.20
2019	19.10	134,502	48%	20.30	142,952	52%	39.4	277,454	70.42
2020	20.70	144,900	49%	21.30	149,100	51%	42.0	294,000	70.00

Source:
1. Indian Pharmaceutical Industry 2021: future is now, Federation of Indian Chambers of Commerce and India and Ernst & Young LLP, February 2021, pg. 14-16.

Table prepared by Foundation for Democratic Reforms.

Table 2.10: Imports and Exports in India's Pharmaceutical Industry

Year	2015-16	2016-17	2017-18	2018-19	2019-20
Exports	12,910	12,930	13,255	14,754	16,289
Imports	1,641	1,717	1,898	2,083	2,334

Note:
The Export-Import numbers from the Ministry of Commerce Website does not include antibiotics, albumins albumints and other albumin derivatives, medical or surgical instruments. On adding these three components, the export figures roughly correspond to the figures given in Table 2.9.

Source:
1. Investment Opportunities in India's Healthcare Sector, NITI Aayog, 2021, pg. 16.

Table prepared by Foundation for Democratic Reforms.

These are impressive achievements for an otherwise poor country with a relatively low level of human development. We need to build on these strengths and capabilities while devising and implementing effective strategies for ensuring a healthy future. An understanding of the role of state, specifically in healthcare, is a prerequisite for building a viable healthcare system. We must learn from past experiences, from within the country and outside, to be able to successfully build a system that is effective, accessible and affordable.

CHAPTER 2

THE ROLE OF THE GOVERNMENT IN HEALTHCARE

The Indian healthcare system is predominantly private sector driven. An NSSO survey in 2014 revealed that the private sector caters to 75 percent of the population's medical needs[18]. The public healthcare system is underfunded and ineffective. While the public primary care system remains grossly underutilised, public hospitals are inundated, as people with minor ailments also flock to them. The public infrastructure is ramshackled and salaries and wages remain below par, resulting in most talent opting for employment in the private sector. Quality of care in the public healthcare system has suffered, resulting in a loss of public faith. In the absence of a credible public system, the private sector has taken off as seen in Chapter 2. India receives the highest foreign direct investment in the world in healthcare. However, most of this money goes into the multi-specialty tertiary care hospitals, where the costs are high relative to the outcomes.

Governments in India are increasingly relying on social insurance programmes like Ayushman Bharat and Aarogyasri to make healthcare more accessible to the poor, and to reduce OOPE. While social insurance and risk-pooling may help reduce the burden on the poor, they simply transfer the burden onto the public exchequer and are not fiscally viable in the long run. Undeniably, this approach will deplete the public exchequer eventually without considerably improving the health of the people. In private sector driven healthcare models, costs are bound to spiral without commensurate benefits. A modern, multi-specialty hospital is extremely resource, skill, and technology intensive. As new technologies are invented, the cost goes up inexorably and the marginal value of additional expenditure is very low. The cost of quality buildings and furnishings, expensive equipment and highly skilled workers is prohibitive and the private sector has to charge premium fees to get even minimum return on investment.

The healthcare system of the United States is an archetype of an inefficient private healthcare market, characterised by market failures. At a healthcare spending of nearly 18 percent of the GDP, the highest in the world, and twice as much as the United Kingdom, the system fails to achieve commensurate benefits (refer to Table 1.2 and Table 1.3 in Chapter 1). About half of the total health expenditure in the United States is privately funded by the citizens mainly through insurance models. Despite the exorbitant overall spending, the health indicators in the United States have been lagging behind many other developed nations. The Bloomberg Healthiest Country Index, which ranks 169 countries based on their overall health, placed the United States 35th, almost at the bottom of OECD countries[32]! Spain with a health expenditure of nine percent (9%) GDP, topped the chart, followed by Italy, Iceland, Japan and Switzerland (refer to Table 3.1). The United Kingdom, where government-provided services cater to most of the health needs of the citizens, was placed 19th.

Table 3.1: Bloomberg Healthiest Country Rankings of Select Countries, 2019

Country	Rank	CHE as % of GDP	CHE per capita in USD
Spain	1	8.98	2736
Italy	2	8.67	2989
Iceland	3	8.47	6531
Japan	4	10.95	4267
Switzerland	5	11.88	9871
Sweden	6	10.9	5982
Australia	7	9.28	5425
Singapore	8	4.46	2824
Israel	10	7.52	3324
France	12	11.26	4690
Canada	16	10.79	4995
South Korea	17	7.56	2543
New Zealand	18	9.21	4037
United Kingdom	19	10.00	4315
Germany	23	11.43	5472
Costa Rica	33	7.56	910
United States	35	16.89	10624
Turkey	51	4.12	390
China	52	5.35	501
Mexico	53	5.37	520

CHE: Current Health Expenditure; **USD:** United States Dollar.

Note: The factors that are used to rank the countries include –
a. Health risks (tobacco use, high blood pressure, obesity)
b. Availability of clean water
c. Life expectancy
d. Malnutrition
e. Causes of death

Source:
1. Bloomberg Global Health Index 2019.
2. World Bank Open Data portal.

Table prepared by Foundation for Democratic Reforms.

It is important to understand the economic principles of free markets to understand why there are market failures in healthcare.

3.1. Market Failures in Healthcare

Free markets, under ideal conditions, allow efficient allocation of resources based on the forces of supply and demand. In the words of the economist, Jeffrey Hammer, *in the ideal market the subjective value to the buyer (private) is the same as the value to society (social), and in equilibrium both are equal to the cost to society of producing the commodity, thus ensuring that resources are allocated to their most efficient uses*[33]. Healthcare markets, however, are far from ideal, characterised by imperfect competition between providers, public goods, externalities, and information asymmetry, which destabilise the market equilibrium causing 'market failures', resulting in social welfare loss. In effect, market failures impair efficiency in production and consumption in healthcare markets leading to a wastage of resources, and drive up costs without improvements in overall health, and often, the poor bear the brunt.

Market deviations create a compelling case for government involvement in healthcare delivery for the following four reasons:

i. Communicable disease burden is high in India.

As discussed in Table 1.4 and Figures 1.9-1.12 in Chapter 1, infectious disease burden in India still remains significantly high. Infectious diseases are characterised by externalities. *Externalities are 'spillover' benefits or costs from one individual to another and not considered by the producer or consumer when deciding how much of the item to sell or buy*[34]. Treatment of infectious disease in an individual also prevents the spread of the disease to another individual. However, the individual's decision to get treatment does not take into account the risk of transmission to another. If this externality is ignored, the treatment of the disease will be priced too high in the private market and too little treatment will be provided. Individuals on their own may not treat the disease soon enough or through a full course of treatment, thereby failing to contain the spread or contributing to antibiotic resistance, both outcomes being perilous to public health.

Control of infectious diseases is a public good. *Public goods are those which cannot be withheld from persons who do not pay for them and which can be consumed by one person without reducing their availability to other consumers. The social value (total value) of such goods exceeds the private value of production, which is zero, because they will not be sold*[33]. The eradication or control of infectious disease vectors such as mosquitoes, health information campaigns, immunisations are some examples of healthcare services that are public goods. A child being immunised against an infectious disease also protects other children from contracting the disease.

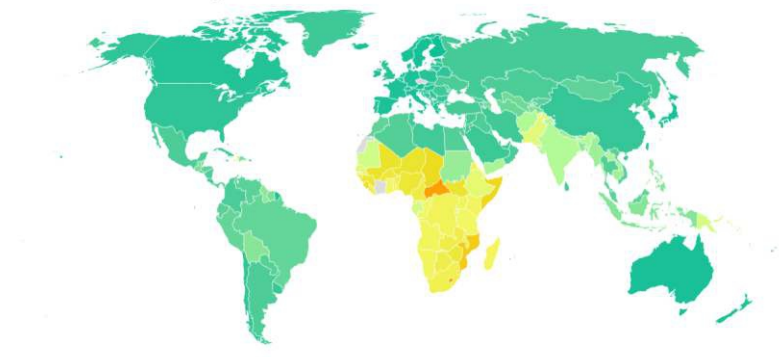
The COVID infection that started in one country quickly spread across the world and had a domino effect on not just public health but several other sectors, ultimately affecting the economy of all countries. The pandemic has shown that in an extremely globalised world, control of infectious

diseases is in fact a global public good. Vaccination against COVID is non-excludable – no country can be kept from realising the benefits – and non-rival in consumption – one country's enjoyment of the benefits does not reduce another's.

Vaccine development is an extremely expensive affair, without a guarantee of success. The private sector cannot risk investing vast amounts of money without a guaranteed return on investment. That is why governments across the world have spent vast sums on COVID vaccine Research & Development (R&D) and purchase in order to accelerate vaccine development and production and to mitigate the risk of vaccine developers. Given the extremely high demand, vaccines would have been priced too high in the absence of government involvement. In fact, had vaccines been released into the market directly, the rich would have been the first to get them, rather than the most vulnerable, the old and the poor.

What is more, infectious disease burden is disproportionately higher among the poor. Figure 3.1 shows that DALYs lost due to communicable diseases per 100,000 population is significantly higher in Sub-Saharan Africa and South Asia. Sub-Saharan Africa and South Asia have the highest and second-highest number and proportion of the world's extreme poor respectively, with 50.7 percent and 33.4 percent of the world's extreme poor living in these two regions[35]. Similarly, even within India, the communicable disease burden is higher among the poor. These diseases are best controlled at the primary care level. The private sector lacks the incentive for preventive care and early diagnosis and treatment. In the absence of government interventions to control infectious disease, the poor pay the highest price.

Figure 3.1: DALYs lost due to CMNNDs per 100,000 Population, 2019



Map: Foundation for Democratic Reforms • Source: IHME – Global Health Data Exchange, University of Washington, Seattle • Created with Datawrapper

ii. Information asymmetry between the doctor and the patient leads to failure of free markets in healthcare services.

The World Bank in its World Development Report, 1993, noted –

"A patient who knew the likely outcome and the cost to him or her of every possible treatment might yet be able to choose rationally between gains and costs. But patients do not have such knowledge, and the medical professional generally knows far more than the customer. This asymmetry of information means that the provider not only provides services but also decides what services should be provided. The result is a potential conflict of interest between what the provider stands to gain from selling more services and his or her duty to do what is best for the patient. The patient is at even more of a disadvantage when sick and unable to make decisions or when decisions must be made quickly because of threats to life[34]."

This information asymmetry particularly impacts the poorer sections who lack the education/access to information and are therefore more at risk of exploitation by the provider, leading to "supplier-induced demand". Further, the risk of exploitation is higher when the payor is a third party, such as an insurance company or the government, as neither the provider nor the patient is incentivised to minimise cost. *Passing costs on to others such as insurers because one does not bear the full consequences of one's actions is called "moral hazard." It arises because of uncertainty and because insurers cannot fully monitor consumers' behavior and make them responsible for their decisions[36]*. The insured may be less careful in preventing an outcome that is covered by insurance, or use excess care. According to Mark V. Pauly, an American economist, even though each individual realises that excess use of medical care makes the premium he/she must pay rise, they choose not to conserve. The reason is because *the incremental benefit of excess use accrues to the individual, whereas the cost is largely spread over other insurance holders[37]*.

The inefficiency in the American health system is widely acknowledged. A recent analysis by the Commonwealth Fund estimated that as much as one-quarter of total health care spending in the United States, between USD 760 billion and USD 935 billion annually, is wasteful[38]. 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[38]. Year after year, the largest frauds detected in the United States 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, even in a country with robust accountability mechanisms.

iii. Insurance markets are highly inefficient, particularly in healthcare.

Information asymmetry that exists between the insurer and the consumer about their individual risks results in another form of market failure known as 'adverse selection'. *People with greater hidden problems are more likely to buy health insurance than healthy people. As a result, for any insurance company to cover its costs, the price of health insurance must reflect the cost of a sicker-than-average person. Even people with average health*

may see the high price and decide to go without insurance. As people drop coverage, the insurance market fails to achieve its purpose of eliminating the financial risk from illness[39]. As premiums keep increasing relative to health risk, healthy people tend to opt out of such plans more and more, further escalating the premium costs, and in turn distilling out more healthy individuals, ultimately resulting in a 'death spiral'. These effects may lead to suboptimal insurance coverage, in that insurers may refuse to cover certain kinds of illnesses, treatments or patients. Often, insurers engage in 'cream skimming' by screening out the high-risk population, who most need the coverage, and incur enormous administrative costs in this process. The net results are market failure, catastrophic illnesses going without treatment, preventable loss of lives and livelihoods and perpetuation of mass poverty.

A study in 2017 found that the United States spends USD 2,500 per capita on healthcare administrative costs, 4.5 times higher than Canada (USD 550)[40], whose health system is based on a single-payer social insurance model. In addition to inefficiency, the American insurance model also failed to achieve equity. Although the Affordable Care Act which expanded coverage of Medicaid and provided subsidies in insurance markets reduced the number of uninsured Americans by half, over 25 million Americans still remain uninsured[42]. Nearly half (47%) of uninsured adults in 2018 had incomes that may make them eligible for either expanded Medicaid or subsidised marketplace plans[43]. Many Americans chose to pay penalties rather than buy insurance, as the former works out cheaper than the latter. In fact, the insured share of the population is expected to fall from 90.6 percent in 2018 to 89.4 percent by 2028[41].

Advancement in medical care and greater investment in hospitals generally improves the health of the rich, rather than the poor. In the American model for example, those who have insurance (insiders) are able to access cutting-edge medical treatments, whereas those without insurance (outsiders) find it hard to access basic care[44]. As economist Paul Krugman describes in his essay, "The Healthcare Crisis and What To Do About It?", *In response to new medical technology, the system spends even more on insiders. But it compensates for higher spending on insiders, in part, by consigning more people to outsider status—robbing Peter of basic care in order to pay for Paul's state-of-the-art treatment. Thus, we have the cruel paradox that medical progress is bad for many Americans' health*[44].

iv. Access to affordable healthcare can significantly alleviate poverty.

There is sufficient evidence from across the world to show that access to affordable healthcare can lift people out of poverty, increasing their productivity. Thailand, for example, introduced Universal Health Coverage (UHC) in 2002. Since then, the country has demonstrated exemplary health outcomes. The poverty incidence after spending for healthcare, measured by the percentage of households living below the national poverty line, was about 38.5 percent in 2000[45]. After full population coverage was achieved in 2002, poverty incidence decreased by about six-fold to 6.6 percent in 2015[45]. The incidence of impoverishment as a result of payment for medical bills in 2015 also shrank by four-fold, from 1.3 percent in 2002 at the beginning of UHC, to approximately 0.3 percent in 2015[45].

Healthcare spending remains the biggest cause of poverty in India, driving millions below poverty line each year. One study estimated that about 55 million people fell into poverty in 2011-12 on account of OOPE on healthcare (refer to Table 2.4 in Chapter 2). The proportion of OOPE in the total household consumption expenditure has risen from 4.9 percent in 1993-94, to 6 percent in 2004-05, and to 7.2 percent in 2011-12[23]. The increase has been the highest for the poorest and richest quintiles, driven largely by expenditure on diagnostics and ancillary non-medical expenditure (see Figure 2.6 in Chapter 2). Similarly, households incurring catastrophic health expenditure increased from 21 percent in 2004 to nearly 25 percent in 2014, with the highest increase seen in the poorest quintile (refer to Table 2.6 in Chapter 2).

OOPE accounts for 59 percent of the total health expenditure in India, whereas government spending is a mere 32 percent. An increase in the government share of the expenditure will significantly reduce the burden on the poor. Public investment in the health of the poor is an economically and politically sound strategy for alleviating poverty. Good health pays economic dividends in the form of higher labor productivity and in turn higher investment, improved human capital, higher national savings, and demographic changes such as reduced fertility rate and mortality[46]. Given the impact that a poor healthcare system has on the livelihood of the underprivileged, it becomes the collective moral responsibility of all the stakeholders in our system to introspect, analyse and innovate.

The time has come for a careful analysis and introspection of the healthcare system in India. Learning from the successful best practices and unlearning ineffective practices, inculcating a positive attitude and analysing global benchmarks is a good place to start. Let's take a closer look at the contrasting models in the United States and the United Kingdom, and learn from their experiences. Given below are the all-important cost implications and outcomes, revealing important lessons for the Indian healthcare system.

3.2. Comparison of Healthcare Systems of United Kingdom and United States

3.2.1. Primary Care

Primary care model of the United Kingdom is based on a PPP between the government and General Practitioners (GPs), wherein the GP is paid a fixed sum per patient registered and provides free of cost primary care to the entire population. This primary system is supported by a strong system of health records, and specialised care at the hospital level is based entirely on referrals from the GP except in emergencies. In the United States, the primary care system is mostly private. While there is no established primary care delivery system through GPs as in the United Kingdom, 87 percent of the population visits their family/personal physician for consultation as the first point of contact[47].

The United States has fewer primary care physicians and primary care consultations per year than the United Kingdom (refer to Table 3.2). The preventable mortality rate, from preventable causes including diabetes, hypertensive diseases, cancers, etc., is higher in the United States. In the United

Kingdom, preventable mortality reduced from 159 per 100,000 population in 2001 to 118 in 2016[48]. On the other hand, preventable mortality in the United States reduced at a slower rate from 195 to 166 from 2001 to 2012 and gradually increased to 174 by 2017[48]. This is indicative of inadequate access to primary and preventive care and chronic disease management in the United States. Only eight percent (8%) of Americans (age 35+) received all of the high-priority, appropriate clinical preventive services recommended for them in 2015[49]. Nearly five percent (5%) of adults did not receive any such services, found one study[49].

Table 3.2: Primary Care in United Kingdom and United States

Indicator	United Kingdom	United States
Practicing Physicians per 100,000 Population	76.5 (2019)	46.1 (2012)
Annual Primary Care Visits per capita	*4.77 (2019)	1.5 (2016)
Preventable Deaths per 100,000 Population	118 (2016)	174 (2017)

Note:
*Number pertains to England. It has been calculated as the total number of GP appointments attended in the year divided by the population of England, estimated as 56,286,961 in mid 2019 by the United Kingdom Office for National Statistics. It includes visits to other primary care providers such as nurse practitioners.

Source:
Practicing Physicians
1. United States - Rui P, Okeyode T., National Ambulatory Medical Care Survey: 2016 National Summary Tables, Centers for Disease Control and Prevention.
2. United Kingdom - Global Health Workforce statistics database, World Health Organization
Primary Care Visits
3. United States - Hing E, Hsiao CJ, 'State variability in supply of office-based primary care providers: United States, 2012', NCHS Data Brief no. 151, National Center for Health Statistics, 2014.
4. United Kingdom - Appointments in General Practice, December 2019: Summary, NHS Digital.
Preventable Deaths
5. Organisation for Economic Cooperation and Development Health Statistics Data portal.

Table prepared by Foundation for Democratic Reforms.

3.2.2. Hospital Care

As can be seen from Table 3.3, almost 80 percent of hospitals in the United Kingdom are public hospitals, whereas it is the opposite case in the United States, with 80% of the hospitals being privately owned, mostly in the non-profit sector. There is universal coverage of healthcare in the United Kingdom, with only 10 percent of the population opting for additional voluntary private insurance. In the United States, 68 percent of the population have private insurance. 34 percent of the population are covered by government insurance programmes such as Medicare and Medicaid, and roughly eight percent (8%) of the population is uninsured.

Table 3.3: Hospital Care Models in United Kingdom and United States			
Country	**Hospital Care Providers**	**Main Modes of Payment**	**Coverage**
United Kingdom	1. 1920 public hospitals 2. 515 private hospitals	1. Free hospital care for all in the NHS, on referral from the GP. 2. Voluntary private health insurance. 3. Out of pocket for prescription drugs. 4. Primary care – physicians are paid on a per capita basis.	1. Universal Healthcare Coverage. 2. Additionally, 10% of population has voluntary private insurance.
United States	1. 1427 public hospitals 2. 4783 private hospitals	1. Public insurance programmes – Medicare covers people who are 65 or older, certain younger people with disabilities and people with End-Stage Renal Disease. Funded by the federal government. Medicaid covers eligible low-income adults, children, pregnant women, elderly adults and people with disabilities. Jointly funded by federal and state governments. 2. Private insurance – Mostly employer based. 3. Out of pocket.	1. 68% of population has private insurance. 2. 34% of population has public insurance. 3. ~8% of population is uninsured.

Note: All health insurance premiums in the United States are borne by private individuals and or employees.

Source:
1. Organisation for Economic Cooperation and Development Health Statistics Data portal.
2. England, International Healthcare Systems Profile, The Commonwealth Fund, 5 June 2020.
3. National Health Statistics, Office for National Statistics, United Kingdom Government.
4. Health Insurance Coverage in the United States: 2019, United States Census Bureau.

Table prepared by Foundation for Democratic Reforms.

3.2.3. Cost Implications

i. **Healthcare Financing** – As can be seen in Figures 3.2a and 3.2b, approximately 80 percent of the healthcare expenditure in the United Kingdom is borne by the government, whereas in the United States, government and private expenditure is almost equal. Most of the remaining 20 percent of the expenditure comes out-of-pocket in the United Kingdom. Private insurance accounts for 62 percent of the United States's private expenditure. 10 percent of the United Kingdom population has additional voluntary private insurance to avail services in the private market.

ii. **Trends in Expenditure** – Figures 3.3a-g represent the healthcare expenditure trends in the United States and United Kingdom. The government health expenditure as a share of GDP is similar in both the countries, and as private expenditure is very high, the total health expenditure – public and private – is twice as high in the United States. Government health expenditure per capita in the United States is recording a steep increase, and OOPE as a percent of health expenditure is seeing a marginal downward trend. In contrast, the United Kingdom's government health expenditure per capita has remained constant, with OOPE recording a marginal upward trend due to the government's efforts to reduce costs by transferring some of the burden on the citizens in the form of co-payments for prescription drugs etc. In dollar terms, there is a steep rise in the healthcare expenditure of the United States across all sources of finance, pointing towards the ever-rising costs of healthcare services. Despite vast private expenditure, government spending per capita on healthcare has been substantially increasing in the United States, clearly indicating the fiscal unviability of insurance-driven healthcare models in the private sector.

Figure 3.2a: United Kingdom Health Expenditure by Programme

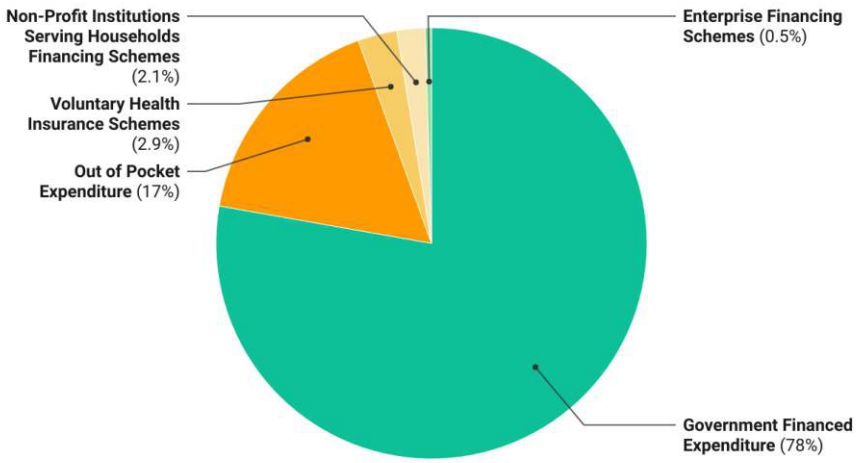
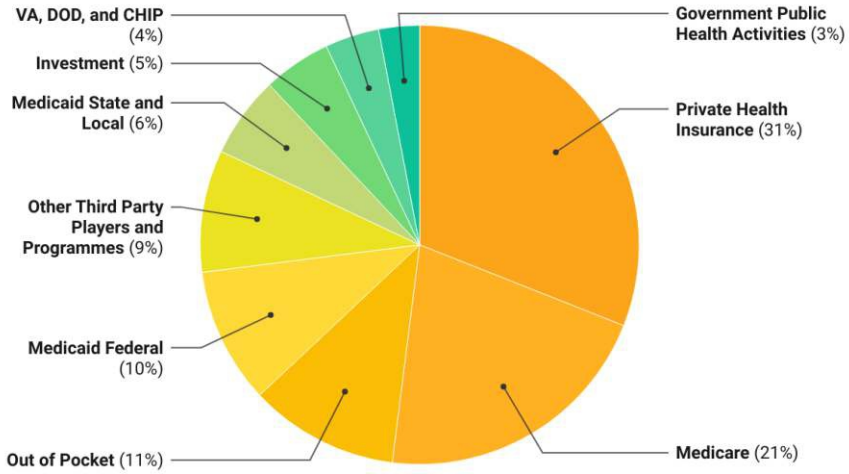


Chart: Foundation for Democratic Reforms • Source: National Health Accounts 2018, Office of National Statistics, Government of United Kingdom • Created with Datawrapper

Figure 3.2b: United States Health Expenditure by Programme



1. 'Other Third Party Players and Programmes' includes worksite health care, Indian Health Service, workers' compensation, general assistance, maternal and child health, vocational rehabilitation, Substance Abuse and Mental Health Services Administration, school health, and other federal and state health programmes. 2. 'Out of Pocket' includes co-payments, deductibles, and any amounts not covered by health insurance.

Chart: Foundation for Democratic Reforms • Source: Centers for Medicare & Medicaid Services, Office of the Actuary, National Health Statistics Group. • Created with Datawrapper

Figure 3.3: Trends in Health Expenditure – United Kingdom and United States

Figure 3.3a: CHE as % of GDP

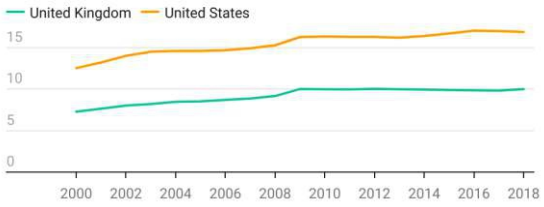


Chart: Foundation for Democratic Reforms • Source: World Bank Open Data • Created with Datawrapper

Figure 3.3b: CHE per capita (USD)

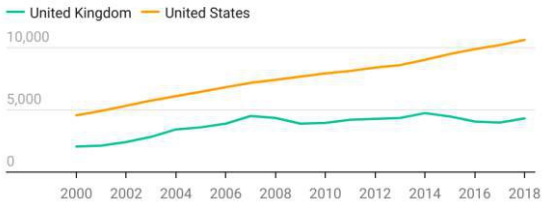


Chart: Foundation for Democratic Reforms • Source: World Bank Open Data • Created with Datawrapper

Figure 3.3c: GHE as % of GDP

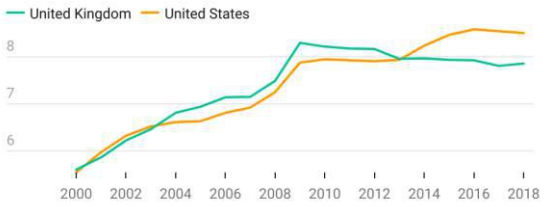


Chart: Foundation for Democratic Reforms • Source: World Bank Open Data • Created with Datawrapper

Figure 3.3d: GHE as % of CHE

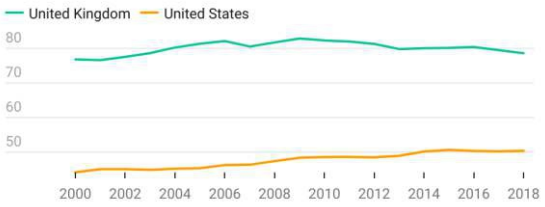


Chart: Foundation for Democratic Reforms • Source: World Bank Open Data • Created with Datawrapper

Figure 3.3e: GHE per capita (USD)

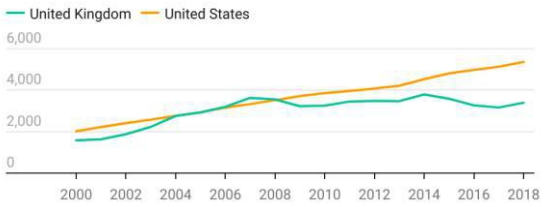


Chart: Foundation for Democratic Reforms • Source: World Bank Open Data • Created with Datawrapper

Figure 3.3f: PHE per capita (USD)

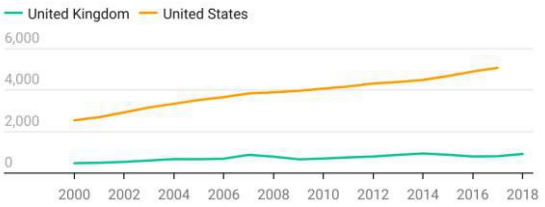
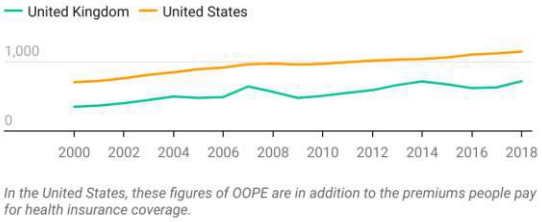


Chart: Foundation for Democratic Reforms • Source: World Bank Open Data • Created with Datawrapper

Figure 3.3g: OOPE per capita (USD)



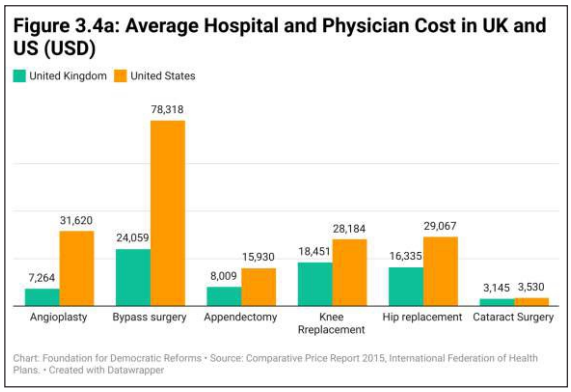
In the United States, these figures of OOPE are in addition to the premiums people pay for health insurance coverage.

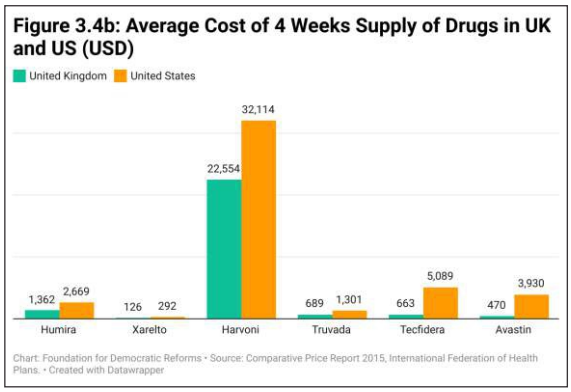
Chart: Foundation for Democratic Reforms • Source: World Bank Open Data • Created with Datawrapper

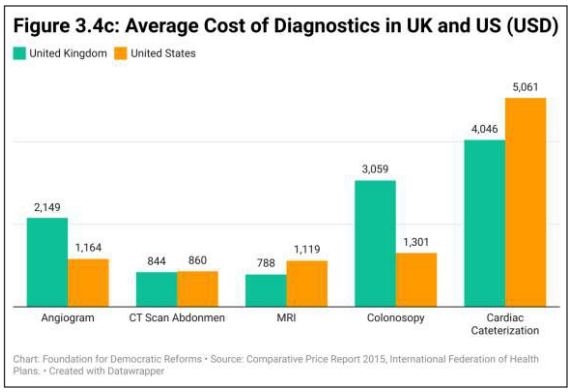
CHE: Current Health Expenditure; GHE: Government Health Expenditure; PHE: Private Health Expenditure; OOPE: Out of Pocket Expenditure.
Refer to Annexure 3.1 for data corresponding to the Figures.

iii. **Cost comparison of a few hospital services in the United Kingdom and United States** – Figures 3.4a-c compare the cost of certain procedures, drugs and diagnostics in the United Kingdom and the United States. Average price of hospital and physician treatments in the United States is two to four times higher than in the United Kingdom, while drugs are two to a whopping eight times costlier than in the United Kingdom. Additionally, except for two diagnostics, angiogram and colonoscopy, the United States prices for diagnostics are higher than in the United Kingdom.

Figure 3.4: Cost Comparison of Hospital Services – United Kingdom and United States

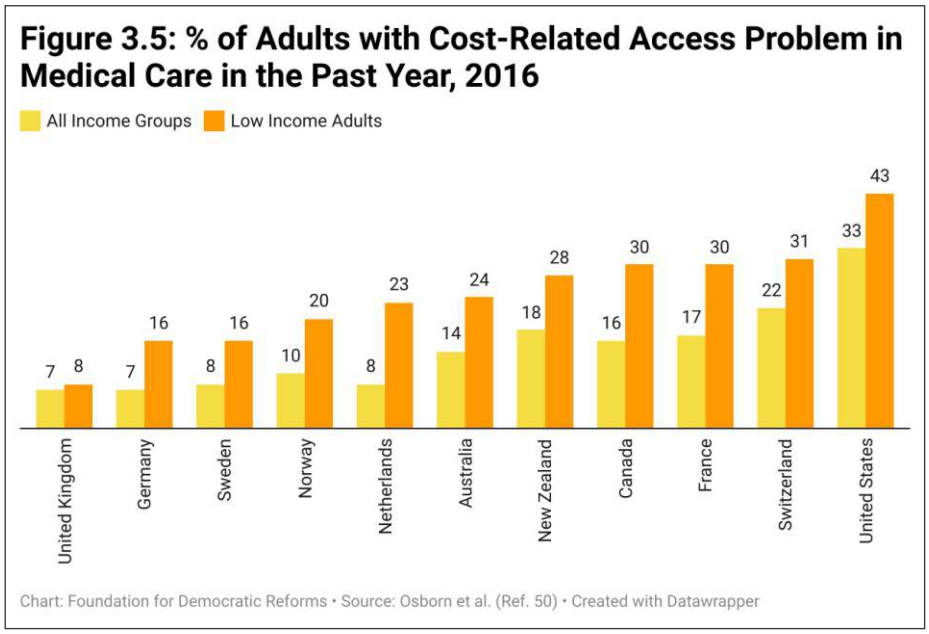






As the data glaringly reveals, there has been an inexorable rise of costs of medical care in the United States. This is due to several factors, including an ageing population, proliferation of new technologies, defensive medicine, cultural preferences and the dominance of the private insurance market. The failure of the United States in containing rising medical costs results from commercialisation of healthcare. Resources are increasingly allocated to create billing opportunities over medical needs resulting in either overtreatment or undertreatment and escalating costs, and thus failing to attain both efficiency and equity.

The United Kingdom, on the other hand, has managed to contain costs through a cost-effective model based on PPPs and a robust primary care network, supported by quality hospital care. In a survey of eleven high-income countries supported by the Commonwealth Fund in 2016, 43 percent of low-income adults in the United States reported cost barriers to health care – the highest rate in any country[50] (see Figure 3.5). Rates in other countries were between 8 and 31 percent (in the United Kingdom and Switzerland, respectively)[50]. The United Kingdom was the only country where low-income adults were not significantly more likely than the rest of the population to report cost-related problems[50].

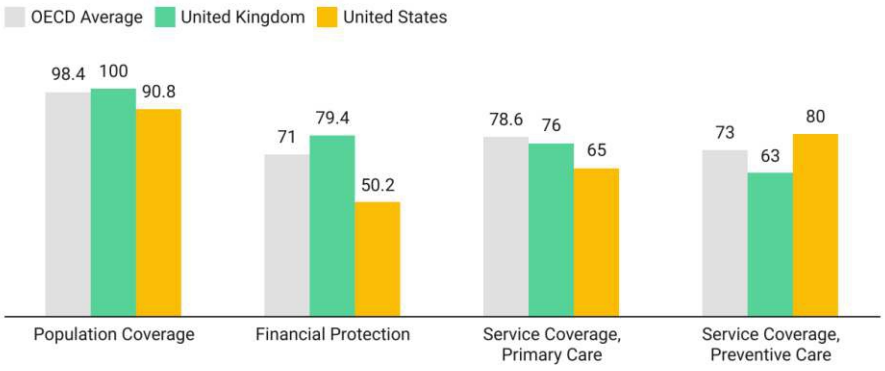


3.2.4. Health Outcomes

Figures 3.6a and 3.6b show the data of the United States and United Kingdom on various healthcare parameters mapped against the OECD average. 16 different parameters are categorised as follows – access to care, risk factors, quality of care and health status[48].

i. **Access to care** – As can be seen in Figure 3.6a, in terms of population coverage, most OECD countries, including the United Kingdom, have achieved universal (or near-universal) coverage for a core set of services, whereas, in the case of the United States, only ~90% of the population have some form of healthcare coverage. Population coverage, though, is not sufficient by itself. The degree of cost sharing applied to those services also affects access to care. Across the OECD, almost three-quarters of all healthcare costs are borne by the government or compulsory health insurance programmes, but in the United States, the government bears only 50 percent of the total costs.

Figure 3.6a: Access to Care in United Kingdom and United States in Comparison with OECD Average



1. Population Coverage – Population Eligible for Core Service (% Population). 2. Financial Protection – Health Expenditure from Public Source (% Total Expenditure). 3. Service Coverage, Primary Care – Needs-Adjusted Probability of Visiting Doctor (% of Population 15+). 4. Service Coverage, Preventive Care – Probability of Cervical Cancer Screening (% of population 15+).

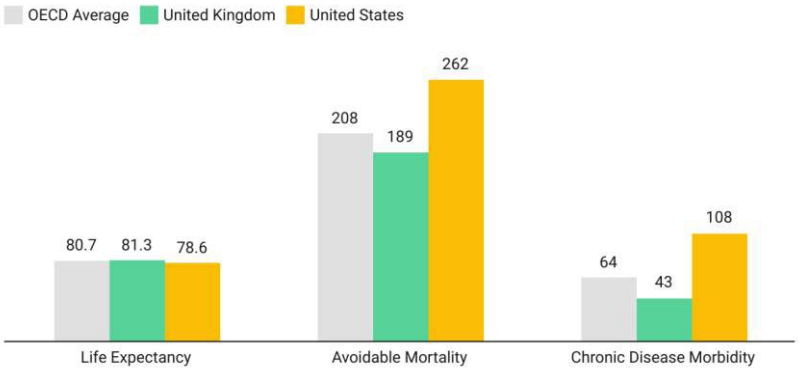
Chart: Foundation for Democratic Reforms • Source: Health at a Glance, 2019, OECD • Created with Datawrapper

ii. **Quality of care –** Good quality care requires health services to be safe, appropriate, clinically effective and responsive to patient needs. Avoidable hospital admissions for asthma and Chronic Obstructive Pulmonary Disease (COPD) measure the safety and appropriateness of primary care. Thirty-day mortality following acute myocardial infarction (AMI) and breast cancer survival are indicators of clinical effectiveness of secondary and cancer care. The quality of primary and secondary care services in the United States is on par with the United Kingdom, with breast cancer care being significantly better in the United States than in the United Kingdom. Once hospitalised, or if the patient has adequate insurance over, the United States offers world class cutting edge care.

iii. **Risk factors –** Smoking, alcohol consumption and obesity are the three major risk factors for NCDs, contributing to a large share of worldwide deaths. Smoking and alcohol consumption is more rampant in the United Kingdom than in the United States. Obesity, however, is a huge cause for concern in the United States, as it is a major risk factor for many chronic diseases, including diabetes, cardiovascular diseases and cancer.

iv. **Health status –** As can be seen in Figure 3.6b, life expectancy, which is a key indicator for the overall health of a population, is 81 years in the United Kingdom and 78 years in the United States. Avoidable mortality focuses on premature deaths that could have been prevented/treated and diabetes prevalence shows morbidity for a major chronic disease. On both these indicators, the United States is performing poorly, with the numbers being above the OECD average. Such upward trends of morbidity and mortality may be attributed to the rising rates of obesity and physical inactivity and their interactions with an ageing-population, along with the lack of access to universalised healthcare coverage at a low-cost.

Figure 3.6b: Health Status in United Kingdom and United States in Comparison with OECD Average

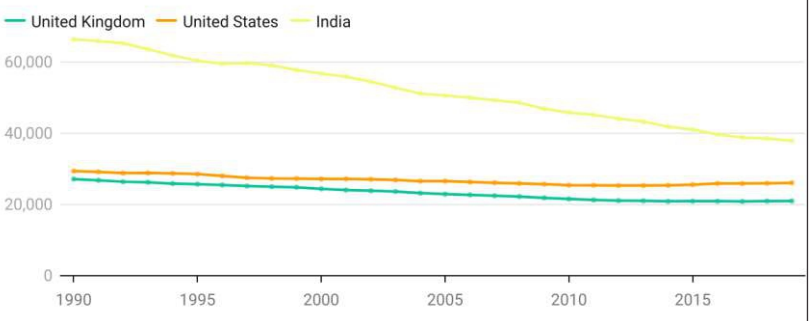


1. Life Expectancy – Years of Life at Birth. 2. Avoidable Mortality – Deaths per 100,000 People. 3. Chronic Disease Morbidity – Diabetes Prevalence, per 1000 Adults, Age-Standardised.

Chart: Foundation for Democratic Reforms • Source: Health at a Glance, 2019, OECD • Created with Datawrapper

The United Kingdom's healthcare system has far less variation in healthcare outcomes across its population than the United States. Despite higher smoking and alcohol consumption rates in the United Kingdom, it ranks better on parameters such as life expectancy, avoidable mortality and chronic disease morbidity. The United States spends (public + private) almost double the amount on healthcare compared to the United Kingdom. It is evident from our analysis of the data that higher expenditure does not necessarily translate to better outcomes. DALYs lost due to premature death and disability is a good way to measure overall disease burden. As can be seen from Figure 3.7, age-standardised DALYs per 100,000 in the United States is consistently higher than in the United Kingdom[51]. In 2019, age-standardised DALYs per 100,000 in the United Kingdom is 20956, whereas it is 26061 in the United States[51]. One of the major reasons for such poor outcomes in the United States is the high level of inequity in their healthcare system, with lack of access to healthcare disproportionately affecting the poor.

Figure 3.7: Trend in DALYs in United Kingdom, United States and India



Disability Adjusted Life Years lost per 100,000 population due to all causes from 1990 to 2019

Chart: Foundation for Democratic Reforms • Source: IHME – Global Health Data Exchange, University of Washington, Seattle • Created with Datawrapper

Public policy in health is successful if it leads to increased welfare through better health outcomes, greater equity, more consumer satisfaction, or lower total cost than would occur in the absence of public action[34]. The United States experience shows that high expenditure on healthcare does not necessarily mean better outcomes and that privatization of healthcare yields unequal and ineffective outcomes. The health outcomes in the United States are near the bottom of all OECD countries. As mentioned above, the United States is ranked 35th by Bloomberg in health outcomes. Despite the highest healthcare expenditure (public + private) in the world, 18 percent GDP or USD 10,624 per capita, about 26 million[42] Americans have no healthcare coverage and live in constant fear of catastrophic illness destroying their lives. The United Kingdom experience shows that public delivery of healthcare is cost-effective, especially when there is a solid foundation of primary care that caters to most healthcare needs and a referral based system for higher end hospital care. All people get quality care and no one is denied care for want of money. Despite much lower health expenditure of 10 percent GDP or USD 4315 per capita, the health outcomes in the United Kingdom are much better than in the United States. The United Kingdom, despite spending only about half of the total expenditure per capita on healthcare compared to the United States, is ranked 19th in the world by Bloomberg (refer to Table 3.1), sixteen places above the United States ranking, in healthcare outcomes. Several other countries with similar expenditure are achieving even better outcomes through larger government participation in healthcare delivery.

It does not necessarily follow that all healthcare must be delivered by the government. Some market inefficiencies can also be resolved through better regulation and innovative financing strategies, particularly in countries that spend much more public money on healthcare. However, in the Indian context, it is important to remember that the country spends the least amount of money on healthcare as a proportion of GDP. The union and state governments' healthcare spending together accounts for just over one percent of the GDP. Therefore, not only is there strong rationale but also sufficient room in the government budget for aggressive healthcare spending. The spending must be done in a manner that provides value for money and ensures quality care for all, particularly the poorer sections of the society. Government should judiciously encourage private participation in healthcare delivery through models based on competition and choice in primary care, and risk pooling and competition through a single payer system in secondary care. The private sector will continue to serve the higher income groups of the population, given their capacity and willingness to pay premium fees for premium care. However, it is necessary to ensure universal coverage under the public system through innovative PPPs to improve the quality of services, as services will improve significantly when the vocal sections of the population have stakes in it.

The objective of delivering quality healthcare at minimum cost to the exchequer and the public, the economic reasoning evidenced by real world experience, and careful consideration of the uniqueness of Indian circumstances form the basis for the health model proposed for India, as discussed in detail in the following chapters.

Guiding Principles for a Comprehensive Healthcare Model –

1. Publicly funded system of primary, secondary and tertiary care.
2. Minimum cost to the exchequer by improved efficiency of the system.
3. PPPs with altered incentives to improve efficiency, quality, and access to care.
4. Improved quality of healthcare delivery through choice and competition.
5. Integrated system with referral linkages across all levels for continuity of care and reduced burden on the hospital system.
6. Decentralised implementation and monitoring accompanied with strong accountability mechanisms.
7. Increased public consultation rate to 1.5 per capita per year to address the primary care needs of the citizens.
8. Enhanced access to comprehensive secondary level hospital care in rural and semi-urban areas.
9. Public hospitals as the mainstay of quality, cost-effective tertiary care services.
10. Reduced disease burden and OOPE.

PRIMARY CARE

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-focused (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 primary care. In this document, the term 'primary care' embraces preventive care as well. Most primary care is preventable in nature and all preventive care can be delivered by the primary care provider. Though preventive care hitherto has been considered to consist of mainly immunisations, with the increase in chronic disease burden such as hypertension, diabetes, cardiovascular diseases etc. (see Figures 1.13 & 1.14 in Chapter 1), primary care of these diseases itself is the preventive care for their complications such as stroke, heart attack, etc. Most of the primary care programmes are limited to immunisation, child and maternal health concerns; lacking focus on comprehensive, long-term, person-centric care. Moreover, there is no integration of programmes devoted to family welfare, nutrition and disease control, and different levels of care, resulting in uncoordinated and ineffective care.

India continues to reel under the burden of communicable diseases; at the same time, NCDs are growing. The evidence points to the disproportionate burden of diseases on the poor – the lost time and productivity have often a devastating impact on the lives of the poor, leading to impoverishment and indebtedness. In India, almost 90 percent of the workforce is in the unorganised sector and not covered by formal insurance from the employer. The effect, therefore, of medical expenditure (on non-hospitalised treatment) is more pronounced on the poor; with negligible risk protection, almost the entire expenditure is borne out-of-pocket. The rich with relatively higher income and insurance coverage are less affected (refer to Table 4.1).

Table 4.1: Average Medical Expenditure and Insurance Coverage Across Quintiles

Quintile Class	Average Medical Expenditure (in Rs.) incurred in 15 Days per Spell of Ailment for Non-Hospitalised Treatment		% of Population Covered by Employer Supported Health Protection (other than Governement/PSU)		% of Population Covered by Insurance Arranged by Households with Insurance Companies	
	Rural	Urban	Rural	Urban	Rural	Urban
Q1	528	627	0.1	0.9	0.0	0.6
Q2	619	602	0.1	1.5	0.0	0.5
Q3	613	752	0.1	2.1	0.1	1.6
Q4	545	686	0.2	2.8	0.2	4.1
Q5	619	822	0.8	7.1	0.8	12.1
Average	**592**	**710**	**0.3**	**2.9**	**0.2**	**3.8**

PSU: Public Sector Undertaking

Source:
1. Health and Family Welfare Statistics in India 2019-20, Ministry of Health and Family Welfare, Government of India, Pg. 140.
2. Key Indicators of Social Consumption in India: Health, NSS 75th Round, Ministry of Statistics and Programme Implementation, Government of India, Pg. A18.

Table prepared by Foundation for Democratic Reforms.

It is in this context that state intermediation or funding becomes vital to ensure access to quality care to all and especially the poor. We must note that a significant portion of the disease burden is often a consequence of failure of preventive and public healthcare. Significant improvements in health can be achieved with a little infusion of resources and readjusting the pattern of spending. There is enough evidence to show that focus on primary care can bring down the overall cost while improving the efficiency of the system. Inputs from the primary level help in the prevention of chronic diseases culminating into future complications and catastrophic illnesses. It therefore follows that a robust primary care network with linkages to secondary and tertiary care can keep the costs under check while improving health outcomes and quality of life.

In this regard, as discussed in Chapter 3, the United States and the United Kingdom present a stark contrast in terms of both healthcare expenditure and outcomes achieved. The United Kingdom healthcare system, centered around the National Health Service, focuses on family care and the referral system. The public spend is around 8 percent and the total healthcare expenditure is around 10 percent of the GDP. The United States healthcare system, driven by insurance and sophisticated high-cost interventions, spends 18 percent of the GDP; however, the health indicators in the United States are no better than that of the United Kingdom. India is currently emulating the United States' healthcare model – specialists being the first point of contact – which is neither fiscally prudent nor cost-effective. It is therefore imperative to relook at the role of primary care in providing accessible, affordable, reliable, and quality health care services to the citizens, and simultaneously ensuring that the system is both efficient and cost-effective.

4.1. Challenges in the Indian Primary Care System

The delivery of primary care in India is deficient in several respects, such as access, quality of care, regional disparities, amongst others. Let us examine each of these factors in detail.

4.1.1. Quality and Access

India has a vast pool of trained doctors and health workers (refer to Table 4.2), and yet there are severe shortages of human resources at the primary care level – a gross anomaly. The proportion of doctors working at the primary care level is about 24 percent (refer to Table 4.3) of the total number of (practicing) government doctors in India (refer to Box 4.1). This is a very low figure considering that the public sector accounts for merely 16 percent of the total number of (practising) doctors in the country. Out of the total physicians practising in India, the government primary care doctors constitute only about four percent (4%). The gross inadequacy of the strength of primary care doctors is further underscored upon a comparison with other countries that provide quality primary health services to their citizens, as seen in Table 4.3.

Table 4.2: Human Resource Availability across States

State/UT	Population	Number of MBBS Seats – Public and Private	Number of PHC Doctors	Number of PHC Doctors per 100,000 population	Number of PHCs	PHC Doctors per PHC
Andhra Pradesh	53,903,393	5,210	2,041	3.79	1,385	1.47
Arunachal Pradesh	1,570,458	50	214	13.63	124	1.73
Assam	35,607,039	1,000	1,498	4.21	1,002	1.50
Bihar	124,799,926	2,040	1,911	1.53	2,027	0.94
Chattisgarh	29,436,231	1,320	453	1.54	837	0.54
Goa	1,586,250	180	81	5.11	59	1.37
Gujarat	63,872,399	5,500	1,606	2.51	1,795	0.89
Haryana	28,204,692	1,560	584	2.07	485	1.20
Himachal Pradesh	7,451,955	870	493	6.62	588	0.84
Jharkhand	38,593,948	630	245	0.63	351	0.70
Karnataka	67,562,686	9,345	2,427	3.59	2,534	0.96
Kerala	35,699,443	4,105	1,212	3.4	932	1.30
Madhya Pradesh	85,358,965	3,585	1,206	1.41	1,476	0.82
Maharashtra	123,144,223	9,000	3,762	3.05	2,675	1.41
Manipur	3,091,545	225	327	10.58	93	3.52
Meghalaya	3,366,710	50	214	6.36	143	1.50
Mizoram	1,239,244	100	66	5.33	65	1.02
Nagaland	2,249,695	0	128	5.69	137	0.93
Odisha	46,356,334	1,950	914	1.97	1,377	0.66
Punjab	30,141,373	1,425	545	1.81	527	1.03
Rajasthan	81,032,689	4,100	2,241	2.77	2,477	0.90
Sikkim	690,251	50	35	5.07	25	1.40
Tamil Nadu	77,841,267	7,700	3,300	4.24	1,884	1.75
Telangana	38,510,982	5,090	1,683	4.37	885	1.90
Tripura	4,169,794	225	227	5.44	112	2.03
Uttarakhand	11,250,858	825	377	3.35	295	1.28
Uttar Pradesh	237,882,725	7,128	3,253	1.37	3,473	0.94
West Bengal	99,609,303	3,900	1,641	1.65	1,369	1.20
Andaman and Nicobar Islands	417,036	100	55	13.19	27	2.04
Chandigarh	1,158,473	150	70	6.04	48	1.46
D&N Haveli and Daman&Diu	615,724	150	16	2.6	13	1.23
Delhi	18,710,922	1,422	973	5.2	546	1.78
Jammu and Kashmir	13,606,320	885	1,027	7.55	972	1.06
Ladakh	289,023	NA	10	3.46	32	0.31
Lakshadweep	73,183	0	10	13.66	4	2.50
Puducherry	1,413,542	1,530	70	4.95	39	1.79
All India	**1,370,508,601**	**81,400**	**34,915**	**2.55**	**30,813**	**1.13**

UT: Union Territory **PHC:** Public Health Centre

Note:
1. The number of MBBS seats for D&N Haveli and Daman & Diu only include the seats for the former.

Source:
Population estimates
1. Unique Identification Authority of India estimates as of 31st December 2020
MBBS Seats
2. National Health Profile 2020, Ministry of Health & Family Welfare, Government of India, pg. 385
Number of PHCs and Doctors in PHCs
3. Rural Health Statistics 2019-20 (Data till 31st March 2020), pg 135, 149, 189.

Table prepared by Foundation for Democratic Reforms.

Box 4.1: Doctor Availability in India

- Number of Doctors registered in India – 12,55,786 (MCI for upto 2020)
- Number of Practicing Doctors – *8,47,145
- Number of Practicing Government Doctors – 141681 (National Health Profile 2020)
- Number of PHC Doctors – 34,915 (NHP'20)

The proportion of PHC Doctors to Practicing Doctors = 34256/8,47,145 = 0.04

Note: **The number for practicing doctors has been arrived at by the formula given in the paper – Potnuru B., "Aggregate availability of doctors in India: 2014–2030", Indian J Public Health 2017.*

Table 4.3: Human Resource Availability in Select Countries

Measures	United Kingdom (2019)	Italy (2019)	France (2018)	Canada (2019)	India (2019)
No. of Primary Care Physicians/GPs	51096	53114	94923	46132	34915
Primary Care Physicians per 100,000 population	76.4	88.1	141	122	2.5
Total no. of Doctors	393247	485190	424674	91375	847145
*GP to Doctor ratio	0.13	0.11	0.22	0.5	0.04

GP: General Practitioner

Note: *The ratio for India is calculated as a proportion of government primary care doctors to the total (practicing) doctors in the country as seen in Box 4.1.

Source:
Population
1. World Bank Open Data portal.
Number of Primary Care Physicians/GPs and Total no. of Doctors
2. The United Kingdom, Italy, France – Health Workforce: Medical Doctors, The Global Health Observatory, World Health Organisation.
3. Canada – Canada's Health Care Providers, Canada Institute for Health Information.
4. India – Calculated by Foundation for Democratic Reforms (Refer to Box 4.1).

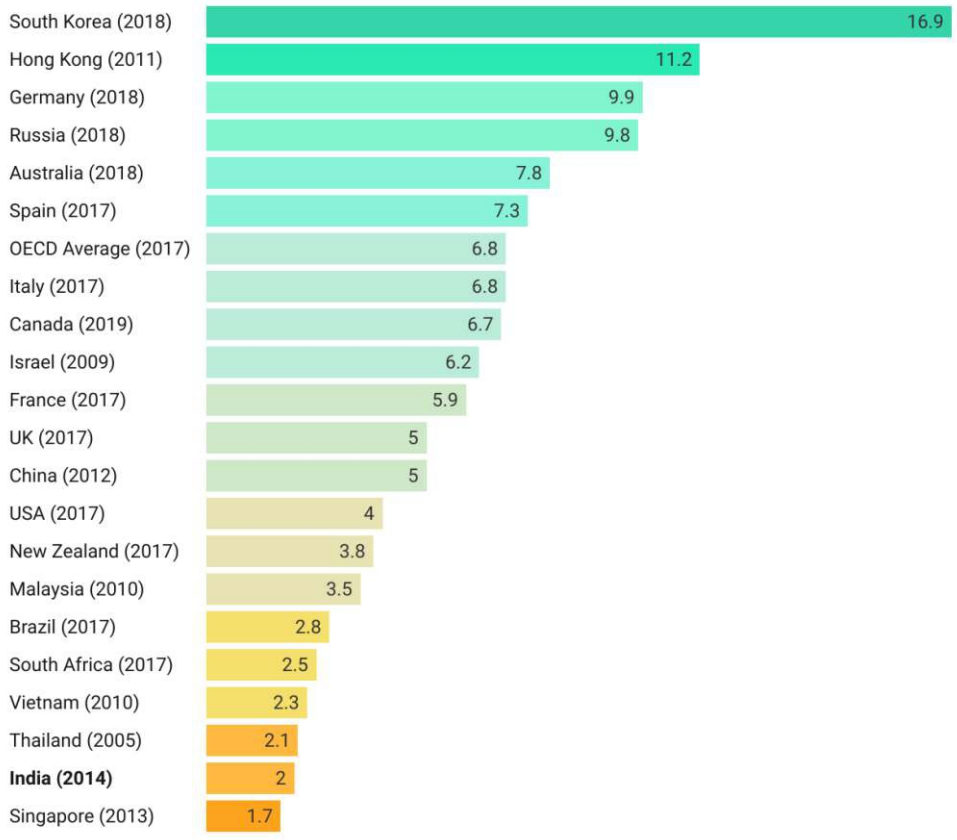
Table prepared by Foundation for Democratic Reforms.

There are only 2.5 physicians per 100,000 population in publicly funded primary care in India whereas that number ranges from 76 doctors in the United Kingdom to 141 in France! The abysmally low ratio indicates that the current primary care services are unsatisfactory and wholly insufficient to be able to ensure basic healthcare for all. A manifold increase in this ratio of primary care physicians to 100,000 population to reach OECD standards is neither realistic for India's income levels nor is it necessary given our demographic and epidemiological situation relative to these countries for the time being. We need to design a primary care model that ensures early diagnosis, treatment and management of communicable diseases and NCDs, gives physicians and healthcare workers sufficient incentive to serve the underserved populations, acts as a gatekeeper for referral hospital services, provides choice to consumers and competition among physicians, and institutionalises effective, reliable delivery and accountability.

At an aggregate level we have the human resources to build a viable and effective primary care system. India produces over 80,000 medical graduates a year which is the highest number amongst major countries, barring China (see Figure 2.7 in Chapter 2).

The annual outpatient consultation rate – an indicator of overall access to health services – in India is around 2.3, far below the OECD average (see Figure 4.1). Out of these, only 25 percent of the consultations are in the public sector (refer to Table 4.4) and the rest lie in the private sector (refer to Box 4.2 for explanation of state-specific conditions). In rural India, informal care providers account for 68 percent of the total providers. It is therefore likely that an overwhelming majority of the 75 percent private consultations at pan India level are with the informal providers who do not have any medical training.

Figure 4.1: Annual Doctor Consultations per capita



There are variations across countries in the coverage of different types of consultations, notably in outpatient departments of hospitals. The data comes from administrative sources or surveys, depending on the country. Consultation rate is measured per capita. The India figure of 2.3 consultations per capita is calculated by Foundation for Democratic Reforms based on NSS data (refer to Annexure 2.4a). This figure however includes consultations with all healthcare providers, formal and informal. Considering the widespread presence of informal providers in India, about 68% in rural areas alone, the per capita consultation rate in respect of formal providers would be far lower (possibly around 1.4, as shown in Annexure 2.4b).

Chart: Foundation for Democratic Reforms • Source: 1. India - "Health in India, NSS 71st Round, January - June 2014," Ministry of Statistics and Programme Implementation, Government of India. 2. Other countries - Organisation for Economic Co-operation and Development (OECD) • Created with Datawrapper

Table 4.4: Utilisation % by Healthcare Facility and per capita Consultations at Government Health Facilities in the Last 365 Days

State	*Utilisation % by Healthcare Facility in Select States				***Per Capita Consultations at Government Health Facilities
	**HSC/PHC and others	Public Hospital	Private Doctor	Private Hospital	
India	8.45	16.91	50.53	24.11	0.61
Andhra Pradesh	4.35	9.81	28.53	57.31	0.6
Telangana	5.25	9.05	36.42	49.27	0.35
Tamil Nadu	6.95	27.51	23.11	42.42	1.4
Kerala	10.74	22.89	35.48	30.88	2.52
Bihar	5.75	8.15	76.29	9.80	0.19
Uttar Pradesh	4.65	10.25	74.25	10.85	0.27
Gujarat	8.95	10.55	52.95	27.55	0.47
Maharashtra	7.50	10.25	62.15	20.10	0.33
Haryana	3.05	6.80	64.45	25.70	0.15
Odisha	45.55	26.70	25.85	1.90	****1.80
Assam	46.05	31.95	19.55	2.45	0.62

PHC: Primary Health Center; **HSC:** Health Sub-Center

Note:
*It is assumed that only 10% of this number would be the inpatients
**includes Auxiliary Nurse Midwives (ANM)/ Accredited Social Health Activist (ASHA), Anganwadi Workers (AWW)/Dispensary/ Community Health Centre (CHC)/ Mobile Medical Unit (MMU)).
***The count of ailments in a year is arrived at by extrapolation from 'No of persons reporting ailment during the last 15 days per 1000 population and further adjusted for the respective regional population. The Count of ailments in a year is further multiplied with the 'Percentage of ailments receiving non-hospitalised treatment from government sources' provided in the NSS survey, to arrive at the number of outpatient visits at government facilities. (Refer to Annexure 2.4a for more details)
****In some states, the consultation rates include visits by health workers other than physicians to provide reproductive and family planning services, and do not reflect physician consultations for an ailment or regular health checkups. (Refer to Annexure 2.3 for more details)

Source:
Calculated by Foundation for Democratic Reforms using –
Utilisation Rate
1. "Health in India, NSS 71st Round, January - June 2014", Ministry of Statistics and Programme Implementation, Government of India.
Population Estimates
1. Andhra Pradesh – Statistical Abstract Andhra Pradesh 2018, Directorate of Economics and Statistics, Government of Andhra Pradesh, pg. 8.
2. Telangana – Telangana State-Profile, Government of Telangana.
3. Other States – Provisional Population Totals, Paper 2, Volume 1, Census of India 2011, Government of India, pg. 2.

Table prepared by Foundation for Democratic Reforms.

The low doctor consultation rate in the public sector is indicative of two major deficiencies in our healthcare delivery; one, the people delaying much-needed primary health care; and two, increasing patronage of private facilities, mostly informal providers. Sadly, even the small proportion of visits to the public primary care facilities are in effect unsatisfactory as the public teaching hospitals end up bearing a disproportionate amount of burden of these visits to a government facility.

Box 4.2: Utilisation of Primary Care Facilities in Odisha and Assam

Odisha: A combination of factors, including – a higher utilisation of PHC facilities, a high proportion of nurses and midwives to doctors at 6.71, and the low fertility rate at 1.9, are indicative of effective family planning and reproductive services undertaken by the state government in Odisha. It appears that people largely avail family planning services at PHCs as more nurses and midwives are catering to the requirements of the system. The state, however, performs poorly on other health indicators such as IMR, MMR, and Life Expectancy (refer to Table 2.1 in Chapter 2).

Assam: The number of public and private beds in Assam are 17,142 and 7,036 respectively. It can be construed that the private sector did not invest heavily in the healthcare sector in the state, leading to higher utilisation of the primary care network.

Source:

1. *Ratio of Nurses and Midwives to Doctors – WHO South-East Asia Journal of Public Health, 2009.*
2. *Fertility Rate – SRS Statistical Report, 2018, Office of the Registrar General & Census Commissioner, Government of India, pg. 78.*
3. *Beds in Assam – Geetanjali Kapoor, et al., "State-wise estimates of current hospital beds, intensive care unit (ICU) beds and ventilators", Center for Disease Dynamics, Economics & Policy and Princeton University, 20 April 2020, (Kapoor, et al, 2020).*

The extent of reliance on private care and underutilisation of public sector health services, particularly the primary care facilities across states is clearly evident from Table 4.4. Less than 10 percent of hospital visits are to a public primary care facility. While the current capacity of the public primary care sector is wholly insufficient to cater to all the primary care needs of the country's population, sadly even the existing capacity remains underutilised. A study by Das & Hammer (2014) suggests that there is underutilised capacity at the local PHC level, as only 15 outpatients visit a public clinic a day.[52] Contrary to what one might expect, the situation appears to be no better for the private primary care physicians given the finding that hardly any rural provider spends more than an hour in a day actively seeing patients[52]. Furthermore, there is a high availability of primary care providers in rural India – an average of 3.2 primary care providers per village, nearly 70% of them untrained, unskilled service providers[20]. Therefore, it is evident that there is substantial underutilised capacity at the primary level and the consequent massive unmet demand at the hospital level.

The fact that even inadequate primary care capacity is underutilised proves that primary care in India does not enjoy public trust. The current model does not inspire public confidence, and most people either visit a hospital as a first point of contact, or suffer silently until an illness becomes catastrophic, and medical consultation or hospital intervention can no longer be avoided.

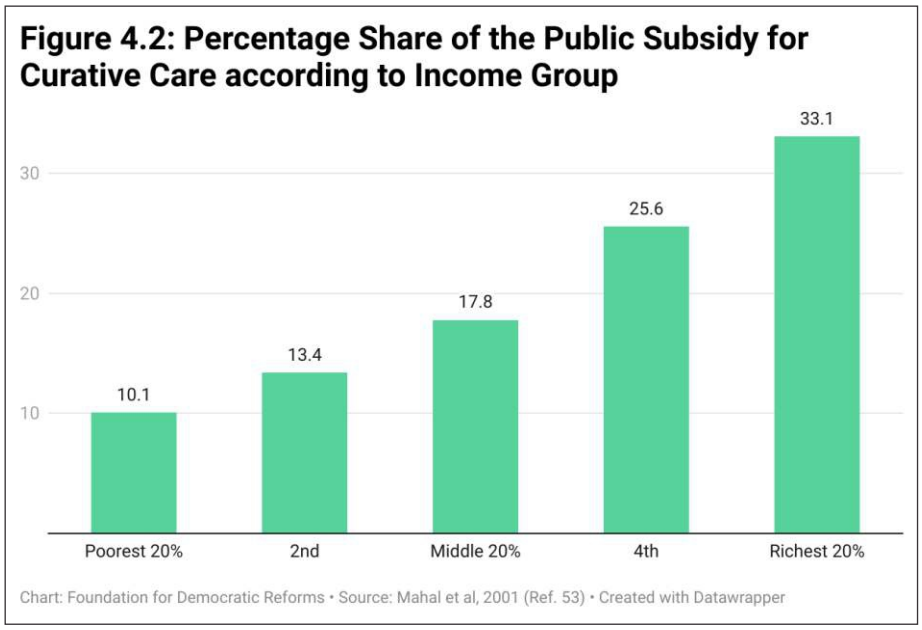
The quality of primary care overall, be it rural or urban, is quite poor. The lack of quality services operates at two levels[52] – one, what can be termed as 'the knowledge gap', and the other, referred to as 'the know-do gap'. Firstly, there is a considerable knowledge gap or deficiency in competency in primary care providers in general. However, a tremendous geographical variation exists between states. Startlingly, the informal providers in high-performing states (Tamil Nadu and Gujarat) routinely outperform MBBS providers in low-performing states (Uttar Pradesh, Jharkhand, and Bihar). Moreover, the availability of informal providers does not significantly decline with rising socio-economic status of the states but contributes towards improving their knowledge.

Secondly, Das and Hammer[52] identify a very low effort in doctor-patient interactions leading to 'know-do gap' whereby the care given by the provider falls short of the knowledge he/she possesses. They find that this gap widens as the degree of knowledge of the provider increases. Further, the gap between provider-effort and actual services offered is relatively larger in the public sector than in the private sector although the problem is significant even in the private sector. The study notes that the financial and social incentives in the fee-for-service model where the provider is completely accountable to the patient as opposed to administrative accountability in the public sector contribute towards a reduction in the 'know-do gap'.

The system is trapped in a vicious cycle – underutilised primary facilities and overburdened hospitals – affecting the overall access and quality of healthcare in the country.

4.1.2. Skewed Public Primary Expenditure

The pattern in healthcare spending determines the effectiveness of the services provided. Empirical evidence shows that preventive health care usually favours the poor, while curative care favours the rich. In public expenditure on curative care, the poorest quintile population shares only 10 percent of the resources, while the richest quintile shares nearly 33 percent. In other words, for every rupee spent for curative care on the poorest 20 percent of the population, three rupees are spent on the richest 20 percent of the population (see Figure 4.2). Therefore, strengthening the primary health system and preventive care is vital to improve the health of the poor.



Currently, of the total primary care expenditure, the government's share is a mere 31 percent (refer to Table 4.5). As the World Bank reports, *"The bulk of public spending on primary healthcare has been spread too thinly to be fully effective, while the referral linkages to secondary care have also suffered. As in other countries, preventive health services take a back seat to curative care"*[54]. The union government's share of the primary care expenditure is mainly linked to immunisation, family planning, and maternal and child health services. The major share of the states' primary healthcare expenditure, which constitutes the majority share of public financing, is tied to salaries and establishment expenses.

The healthcare spending pattern in countries which have built highly-effective health systems present insights into how the healthcare needs of the country could be financed and managed. While it is far-fetched to emulate the OECD countries in terms of share of GDP spent on healthcare, it is important to draw lessons from their experiences to provide quality care to the citizens and keep costs under control. Table 4.5 compares the pattern of healthcare spending in India with the United Kingdom, Italy, France and Canada. The four countries have a robust primary care network, referral linkages, and rank well in terms of health outcomes (Refer to Table 1.3 in Chapter 1).

Table 4.5: Comparison of Primary Care Spending in Select Countries					
***Measures**	**United Kingdom (2018)**	**Italy (2018)**	**France (2018)**	**Canada (2018)**	**India (2016-17)**
Per Capita CHE in ppp (USD)	4620	3624	5250	5200	190
Primary Care Expenditure as % CHE	51%	50%	43%	55%	45%
Share of Government Expenditure in Primary Care	73%	60%	78%	62%	31%
Per Capita Primary Care Expenditure in USD ppp (USD)	2346	1803	2253	2882	**86
Per Capita Government Primary Care Expenditure in ppp (USD)	1710	1085	1755	1790	27

CHE: Current Health Expenditure; **USD:** United States Dollar; **ppp:** Purchasing Power Parity

Note:

*As per WHO's global definition for primary care expenditure, the following healthcare functions have been considered under primary healthcare for the United Kingdom, Italy, France, and Canada:
• General outpatient curative care (HC.1.3.1)
• Dental outpatient curative care (HC.1.3.2)
• Curative outpatient care, n.e.c. (HC.1.3.nec)
• Home-based curative care (HC.1.4)
• Outpatient (HC.3.3) and home-based (HC.3.4) long-term health care
• Preventive care (HC.6)
• Part of medical goods provided outside health care services (80% of HC.5)
• Part of health system administration and governance (80% of HC.7).

(HC.1.3.1), (HC.1.3.2), and (HC.1.3.nec) are three of the four components of the overall head of Outpatient Curative Care (HC.1.3). Since data pertaining to the three components is not available for all countries, the (HC.1.3) was considered for calculations. For details, refer to Annexure 4.1.

**The primary care expenditure (ppp) per capita in India includes all private expenditure, most of which is out-of-pocket.

*** The numbers in the table are rounded off to the nearest decimal.

Source:
CHE
1. United Kingdom, Italy, France, Canada – Global Health Expenditure Database, World Health Organisation.
2. India – Calculated by Foundation for Democratic Reforms using National Health Accounts, Estimates for India, 2016-17, Ministry of Health & Family Welfare, Government of India.

Per Capita Primary Care Expenditure
3. United Kingdom, Italy, France, Canada – Global Health Expenditure Database, World Health Organisation; OECD Health Statistics Database.
4. India – Calculated by Foundation for Democratic Reforms using National Health Accounts, Estimates for India, 2016-17, Ministry of Health & Family Welfare, Government of India.

Per Capita Government Primary Care Expenditure
5. United Kingdom, Italy, France, Canada – OECD Health Statistics Database.
6. India – Calculated by Foundation for Democratic Reforms using National Health Accounts, Estimates for India, 2016-17, Ministry of Health & Family Welfare, Government of India.

Table prepared by Foundation for Democratic Reforms.

Higher and better-directed public expenditure on primary care is a necessary prerequisite for better health outcomes. Effective care at primary level not only prevents and treats communicable diseases early, but also helps in the early diagnosis and better management of chronic diseases such as hypertension, diabetes, cardiovascular disease and cancer preventing future complications and reducing morbidity and mortality. In the absence of a credible primary care network with linkages to secondary and tertiary care, the cost of hospital care is bound to increase exponentially without commensurate benefits.

4.1.3. Health Status Disparities:

The inter-state disparity in terms of high degree of variability in health outcomes achieved is another defining feature of the existing healthcare in India. On one hand, the states such as Kerala have achieved relatively high standards of public health; on the other, states such as Bihar are lagging. Even today, under-five mortality rates per 1000 live births are as high as 56 and 47 Madhya Pradesh and Uttar Pradesh respectively which is comparable to low income countries. At the other end of the spectrum, Kerala has a remarkably low rate at 10 per 1000 live births which is comparable to a high income country. Similar disparities emerge across various other health indicators (refer to Table 2.1 in Chapter 2). A combination of multiple factors – per capita expenditure on healthcare and pattern of spending, institutional capacity, public health measures, historical development patterns over the decades, local community involvement, accountability and monitoring systems, etc. – determines the healthcare outcomes of a state.

Inter-state disparities amongst states that have a similar level of income underscores the importance of better-directed public expenditure. Haryana's per capita income, for instance, is higher than all the better performing states, yet its outcomes are significantly poorer (refer to Annexure 4.2). Within the better performing states, Kerala's income levels are similar to the other states but outcomes are far ahead of the rest of those states.

A comparison of the per capita income and health outcomes gives us a measure of inequity of health services within India, and the distance we need to travel if a healthy future is to be ensured to the citizens. As discussed in Chapter 2, the OOPE is astonishingly high in India. Nearly 59 percent of THE in the country is borne out of pocket[4]. Consequently, millions of people descend into poverty annually on account of sickness and healthcare expenditure.

4.2. Family Physician-led Primary Care System with Choice and Competition

Guaranteeing quality healthcare necessarily requires a robust primary care system. At the same time, out-of-pocket expenditure should be kept at a minimum. The existing primary care structure in India has all but collapsed. There is limited, if not negligible, accountability of the healthcare providers to the patients and the system. As a result of the indifferent quality of services provided,

people's expectations from primary care physicians remain low. Any effort to improve the healthcare system should account for its demand-side deficiency and build incentives to improve the quality of healthcare in the country. Further, failure to address the challenges in primary care will undermine the efficacy of results achieved in other areas of healthcare – secondary and tertiary levels.

Therefore the highest priority should be accorded to designing and building an effective, accountable, accessible, publicly funded primary healthcare system that meets the primary care needs of all people, vastly reduces or eliminates the burden of OOPE for health needs, gives the patients choice among providers, creates competition and incentive among caregivers, acts as a referral gatekeeper for hospital services and is fully integrated with the existing primary care infrastructure and system.

In that regard, our goal must be to design and operationalise a public health system that guarantees quality healthcare services to all, reduces the financial burden on the patient in the form of OOPE, while simultaneously remaining cost-effective for the state exchequer.

The comprehensive primary healthcare model proposed in this paper seeks to achieve the following:

1. Increase the physician consultation rate (in the public sector) to about 1.5 per capita from the present 0.6 per capita per year. (Refer to Table 4.4 for state-wise details).
2. Minimize the financial burden on the poor.
3. Control healthcare costs for the government by improving efficiency in delivery.
4. Improve the quality of health care, and infuse accountability in the system.
5. Provide choice to patients, and create competition based incentives for caregivers.
6. Integrate with the existing PHC model.
7. Act as a referral gatekeeper for hospital services.

4.2.1. Comparative Study of Primary Care Models

A study of primary care systems across the world that have achieved a certain degree of success in serving patients would be useful in designing an appropriate model suitable for 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. 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 Table 4.6, some of which can be adapted into a primary care model for India. Structure and features of Mohalla Clinics in Delhi is also reviewed to identify innovative solutions.

Table 4.6: Comparative Study of Primary Care Models in Select Countries				
Primary Care System	**Form of Partnership between Government and Private Practitioner**	**Payment to Private Practitioner**	**Choice**	**Drug Supply**
United Kingdom - NHS	All the costs - for medical tools, office rental, and personnel - are borne by the GP.	Per patient registered (adjusted for age, gender, local morbidity and mortality), additional services provided (such as vaccinations), performance bonus	Yes, choice to register with any practitioner subject to whether practices are accepting new patients.	At free of cost to inpatients. Unless exempted, outpatients pay a co-pay of £9.35 on each medicine prescribed.
Canada	All the costs - for medical tools, office rental, and personnel - are borne by the GP.	Mostly fee-for-service, but varies from province to province	Yes, but patient may not be accepted if practitioner has a closed list.	Inpatient drugs are at free of cost. Outpatient drug benefit programs vary across provinces based on illness or individual eligibility.
Italy	All the costs - for medical tools, office rental, and personnel - are borne by the GP.	Per patient registered; financial incentives to work in rural and remote areas	Yes, choice to register with any practitioner whose list hasn't exceeded 1500 patients.	Free of cost to inpatients. Unless exempted, outpatients incur a co-payment which varies regionally based on drug category.
Delhi Mohalla Clinics	Government owns the facility and empowers doctors.	Per out-patient visit	None; doctor in the panel sent on daily basis to outpatient clinic.	Free of cost

Source:

1. United Kingdom - Official Website of NHS England; Official website of the NHS Business Services Authority, Department of Health and Social Care, accessed on 5 June 2021.

2. Canada - "International Health Care System Profiles: Canada", The Commonwealth Fund, 5 June 2020; Official Website of the Government of Canada under Health System & Services, accessed on 5 June 2021.

3. Italy - "International Health Care System Profiles: Italy", The Commonwealth Fund, June 2020; Official website of the Italian Medicines Agency - AIFA, accessed on 5 June 2021.

4. Delhi Mohalla Clinics - Based on a Field Study of Mohalla Clinics done by Foundation for Democratic Reforms.

Table prepared by Foundation for Democratic Reforms.

4.2.2. A Viable Primary Care System for India

The essential components of a good primary healthcare system are -

1. Providing the first point of contact for all medical needs of an individual (comprehensive care)
2. Competition between different practitioners and choice on the part of the patient to ensure accountability and quality
3. Referral system;
4. Health Records System that enables that facilitates coordination within the system
5. Integration with the other public health system measures such as programmes for improving immunisation, nutrition, and school health.

Establishing a strong and viable primary care system is a prerequisite for any successful public health system. We have to recognise that there are a large number of private players in the healthcare sector today. For it to be feasible, the primary care system must be designed to operate in the extant conditions where the patronage for private care facilities is very high relative to the public sector. Given Indian socio-economic conditions, the higher income groups will continue to rely on private healthcare at all levels. The public system, while it should be universal in scope, should cater to all those who seek services, and ensure quality care with minimal or no financial burden on the patient. A primary care system that caters to 70-75% of the population is a reasonably practical goal, with the rest 25-30% of the people continuing to avail healthcare services from a private provider. The public system should be non-discriminatory, so that the middle classes will avail the facilities provided it is credible, reliable and effective. It is important to ensure that all citizens have equal rights of access to the public healthcare system. When the better-off sections with voice and awareness have stakes in the system, the services will improve. A system designed only for the poor will deliver poor outcomes over time. With this backdrop, we propose a model that is designed to meet the above-mentioned goals.

An Integrated Family Physician-Primary Care Model is the most pragmatic and effective means of strengthening the primary care framework in the country. Under this model, a Family Physician (FP) will act as the first point of contact for all healthcare needs of a person and will provide treatment for basic and common illnesses and also manage health through routine checkups. Such a system would build doctor-patient trust and with the FP acting as the gate-keeper to the hospital system, it will forge strong linkages between primary, secondary and tertiary levels of healthcare, thereby reducing the burden on tertiary hospitals.

4.2.2.1. Family Physician as the Point of First Contact

With changing demographic profiles and epidemiological features across the globe, public healthcare systems find themselves in the need to continually adapt to evolving needs. In India, like elsewhere in the world, healthcare costs continue to rise as medical interventions become more

complex, accompanied by an increased incidence of NCDs. In order to ensure universal healthcare in such a situation, the focus in primary care must shift from dealing with ailments in isolation towards more patient-centric care.

A Family Physician lies at the heart of primary and preventive care. Primary care is not limited to providing for the lowest level of basic health needs but is central to an integrated and person-centric system of healthcare. In order to establish such a system, the concept of a Family Physician (FP) must be revived and strengthened in India.

A Family Physician is a trained doctor certified in family healthcare. The FP must act as the first point of contact for all health needs of a patient. 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. It leads to better health outcomes by preventing ailments through regular check-ups. Furthermore, The FP will act as a gate-keeper to the rest of the healthcare system by ensuring that only those ailments that require specialised care will be referred to the higher levels of hospital care. Since only a relatively small proportion of ailments would require such specialised care, this system inherently contributes towards controlling the costs of healthcare provision for both the provider and the patient.

Supposing that quality of services can be assured, the vast majority of the poor in the country will stand to benefit from healthcare coverage coupled with reduced OOPE on medical care, since the cost of getting treated at a primary clinic as compared to the treatment cost at a secondary or tertiary hospital will be considerably lower, and most or all of the primary care cost will be borne by the government.

Therefore, a modern primary care system envisages a long-term association between the FP and the patient, with the FP expected to provide comprehensive healthcare services for the overall well-being of the patient based on his/ her needs. It also facilitates early detection and treatment of ailments as the patients need not wait till a problem worsens to seek medical help. At the same time, healthcare costs are kept under check since an FP-led primary care system ensures that only the ailments that require special attention are referred for secondary or tertiary care, as the case may be. Ultimately, such a system alleviates the financial burden on the poor resulting from healthcare costs.

4.2.2.2. Training

A study[52] undertaken across the country has found that the quality of medical care being currently provided in the PHCs leaves much to be desired, despite the variation in the degree of quality across states. The quality of public primary care was found to be worse than that of private primary care even if the gap is not considerable.

It is evident that merely increasing the number of doctors in the PHC and appointing more doctors as government employees will not necessarily improve care or outcomes. Appropriate training of the medical personnel to suit the requirements of family practice and creation of an accountable

system are vital. Short, well-designed training programmes will be able to address the challenge of preparing physicians for family care. A focused training programme lasting one to three months may be designed for MBBS graduates to provide orientation towards catering to the specific needs of community and family healthcare. The modules must be designed to incorporate a primer on family medicine containing standard protocols and guidelines for the benefit of the FP.

Currently there is a dearth of family medicine practitioners at the primary level due to a lack of emphasis on community and primary care education in the country. Most of medical education is based on hospital care and sophisticated diagnostics and interventions. Overtime, changes may be made in the curriculum to place emphasis on family medicine.

4.2.2.3. A Pool of 10 FPs for a Unit Population of 150,000

The most critical elements in making the FP system work are accessibility and trust. Access will improve if the FP is located within 5-10 km in a small town that rural people habitually visit for other needs – buying and selling goods, or for services. Trust will improve if the patient chooses the caregiver among a pool of available doctors. Once the patient chooses the doctor on the basis of reputation, feedback from other patients, and personal experience, and he/she has the option of going to another physician for better services, trust in the system improves.

Considering that the current consultation rate for public facilities is merely 0.6, it is prudent to roll-out of the FP system of primary care at the rate of one FP per 15,000 population. Having a higher ratio of FP per unit population may result in excess capacity and inefficiencies, adversely affecting the viability and sustainability of the system. Additionally, given the widespread reliance on private providers in the healthcare sector, it is expected that only about 70 percent of the population would utilise the public healthcare system once it is fully rolled out, with the remaining 30 percent continuing to patronise the private providers.

India has the challenge of a very large proportion of informal care providers who currently act as the points of first contact for a predominant section of the poor, especially in the rural areas given the non-availability of qualified doctors at close proximity relative to urban areas. In light of the challenges discussed above viz. - one, there is a surplus supply of informal providers in India's villages; and two, that the rural populace tend to frequent the nearest urban or semi-urban centres for better healthcare and not travel to another village, it is abundantly clear that spreading the doctors across villages is not a workable solution.

Therefore, the lowest unit of population for provision of primary care services ought to be about 100,000-150,000 population ('centre'), roughly corresponding to a small town. There must be a pool of 8-10 FPs providing services in each of such centres with competition in delivery of services. Thus, there would approximately be one FP for every 15,000 people. India's population density of 500 people per sq. km would mean that there will be a pool of ten family physicians available in a small town within 5 - 10 Km radius for most people.

These small towns serving as primary care 'centres' should be chosen carefully, based on amenities, population, commercial activity, floating population from surrounding villages, transport services from and to the surrounding villages etc. It must be a 'centre' that the people from all surrounding villages habitually visit for commerce, services and entertainment.

The FP would reside in the 'centre' he or she practices in. Since there will be continuity of care, such consultations will also ensure holistic healthcare rather than merely treating the disease. The participation of physicians in the FP pool is voluntary subject to meeting certain standards, and they have to compete with other FPs in the pool to attract patients. It is the patient consultations that determine the income of FPs.

There may be a phased roll-out of FPs over three years, duly ensuring proper training, development of protocols and systems of performance monitoring and accountability are in place. At the end of three years of the roll-out, about 100,000 FPs must be providing primary care services in about 9,000-10,000 centres across the country. If spread over three years, it would mean an addition of over 30,000 FPs a year. In every state of India we have enough trained doctors available now. We only need to create an incentive of decent income as FP, subject to competition and performance, and a short, focused training to orient physicians to the needs of family practice.

It is evident from Table 4.7 that the challenge of inadequate primary care practitioners in India is not one of a lack of doctors but that of deployment of the existing manpower towards an integrated, competition and choice based family practice. With adequate short-term training and appropriate financial incentives, a large number of MBBS graduates that are not absorbed into the post-graduate programmes can be gainfully employed in the primary care sector.

Table 4.7: Proposed Number of Family Physicians

Family Physicians (1 FP per 15000 Population)	Number of Annual MBBS Seats	Number of Annual Post Graduate Seats	*Annual Pool of Doctors Available
91,367	81,400	48,031	33,369

* Calculated as the difference between the annual MBBS and Post Graduate intake.

Source:
1. Population estimates – Unique Identification Authority of India estimates as of 31st December 2020.
Medical Seats
2. National Health Profile 2020, Ministry of Health & Family Welfare, Government of India, pg. 385, 410.

Table prepared by Foundation for Democratic Reforms.

Box 4.3: Integration of Informal Rural Health Providers

The informal Rural Health Providers (RHPs) are currently the first point of contact for the medical needs of a majority of the rural population in India. They enjoy immense public patronage and have extensive networks within the communities they serve. This provider-patient bond can be leveraged for the benefit of the FP led primary care system. The RHPs can be productively employed by the FPs in their clinics based on an assessment of the skills of the RHPs. The RHPs integrated into the FP clinics will work under the supervision of the FPs and further facilitate increased utilisation of the FP services in the communities.

4.2.2.4. Fee-for-service Model with Choice and Competition

We have seen that the quality of primary care is the foremost challenge in our primary care system. Appropriate training is necessary, but training alone will not guarantee the quality of services. The system and the incentives therein must be designed in such a way that it engenders provision of quality care. Financial incentives play a crucial role[52]. Financial incentives to perform coupled with competition and choice for the patients will lead to the desirable outcomes.

The remedy lies in introducing elements of competition between FPs by providing the public with the choice of availing services at any of the FP clinics in their vicinity. Further, it must be linked with a fee-for-service model wherein the FP stands to gain with increased patronage for his or her clinic. In other words, the FP will be paid a fixed amount by the government on a per-patient visit basis. As a result, the primary care provider is incentivised to offer quality services in order to attract the most number of patients.

Quality of service can be ensured only when there is a competition between providers and a choice for the people. When the patronage for a FP depends on the choices of the people informed by the quality of care provided by the competing FPs, and the remuneration the FP receives is based on the extent of patronage, he/she is incentivised to provide high quality services. Such a model ensures the accountability of the FP to the patients, as the income depends on quality services and attracting more patients.

In order to be able to operationalise this system at the scale required (about 10 FPs per 150,000 population), but also without placing a large financial and administrative burden on the state, a model similar to the National Health Service may be adopted but with suitable modifications. Firstly, each FP being a private practitioner will be responsible for the establishment and running of their clinic, with all costs being borne by them. However, unlike the NHS model, the FP is to be reimbursed by the government based on the number of patient consultations in a particular month. This system of reimbursement, which is currently being followed in the Delhi Mohalla Clinics model, is relatively simple and is better suited for the Indian conditions. The United Kingdom model of payment based on the number of people registered is not viable for our conditions.

The remuneration to the FP should be fixed at a reasonable level to provide an economic incentive to participate in the programme, and offer quality service thereby attracting more patients subject to a ceiling. At the same time it should discourage frivolous visits to FP, or trivial consultations to inflate the numbers.

We assume that in the first phase, each FP will serve on average about 15,000 people (a pool of 10 FPs for a population of 150,000). If we assume 1.5 consultations per capita per year, and further assume that about 70 percent of the population will depend on the publicly funded FP, then there will be about 15,000 consultations in a year for each FP on an average, or 1250 consultations a month. That works out to a reasonable workload of 40 to 50 consultations in a day, or about 10 to 15 minutes for each consultation. At Rs. 125 per consultation, the remuneration to the physician will be about Rs 1,50,000 per month, and this will cover expenses in establishing and maintaining the clinic, hiring staff, maintaining health records etc. Additional incentives can be provided for digitization of health records, vaccinations, family planning services and other public health programmes. A net income of a FP will be in the range of Rs 90,000 - 1,00,000 per month after deducting expenditure. In today's conditions, for a physician who enjoys public confidence and provides quality primary care at the grassroots level, a net income of about Rs 100,000 per month is a reasonable incentive to attract competent doctors.

Out of the nearly a million trained physicians available, this design only enlists about 10 percent of them for publicly funded family practice. Over time some of the physicians who gained experience and enjoy public trust and reputation may choose to leave the FP system and establish their own private practice in the area. Others may get more attractive opportunities to serve in hospitals once they gain experience in family practice. Some others may get an opportunity for specialised postgraduate education and leave family practice. New FPs will be enlisted every year to fill the slots vacated by those who leave the family practice. As 80,000 new medical graduates are joining the health sector every year, about 10-15% of them can easily be attracted to serve as FPs. Such a system will be sustainable and effective in meeting the primary care needs of the bulk of the population.

While competition ensures quality delivery, we need additional measures to discourage frivolous consultations, and to prevent inflating the numbers to claim more remuneration. A mode of co-payment of Rs 25 per consultation by the patient will discourage frivolous consultations. It will also give the patient greater voice and incentive to demand quality service. However, given the abject poverty that still exists in our society, no patient should be denied consultation or treatment for want of money. Therefore the FP should have the discretion to waive the co-payment of indigent patients up to a ceiling of 10 percent of the patients. In underserved, poverty stricken areas, co-payment may be waived for even more patients.

In addition, there should be effective monitoring of FPs on clearly defined parameters: average consultation time, patient satisfaction, outcome surveys etc. This monitoring should be at the community level locally, and at the sub-district and district levels with suitable institutional

mechanisms involving local governments, public health officials, reputed voluntary organisations in the health sector, the specialists at the first referral centres (secondary care) and other stakeholders.

All the FPs, while being private practitioners being paid by the government, will operate under the general supervision of the Regional Health Board at the CHC level and the District Health Board will contract with the FPs, and will be responsible for disbursement of funds. In order to help FPs set up their clinics in the 'centre' as part of the primary pool, a scheme of soft loans may be devised for the purpose of initial establishment costs.

4.2.2.5. Referral System

A sustainable medical care system is one that deals with an ailment effectively and efficiently in a timely and appropriate manner. A referral system between the three levels of healthcare providers - primary, secondary, and tertiary - is therefore a crucial component.

Under a strict referral system, the patient is required to approach their FP as a first point of contact in case of any ailment or healthcare need. Only if the ailment is of the nature that it cannot be treated by the FP and requires specialist or surgical intervention, he/she shall then refer to a secondary care specialist or a tertiary care specialist in a public hospital based on the nature of ailment. Therefore, ordinarily no patient should directly approach a public hospital providing secondary or tertiary care services without a referral from an FP, with the sole exception of an emergency case. In case of potentially life threatening emergencies, the patients will go to the nearest hospital facility for timely and appropriate treatment without referral.

Such a strict referral system offers numerous benefits. First, it ensures that every ailment receives optimal resources and appropriate treatment. Second, it enhances the cost-effectiveness of healthcare provision for the state by eliminating the additional expenditure at secondary and tertiary care levels on treatments that should ideally be taken care of at the primary level. Third, it will reduce overcrowding at the hospital level, and will free up beds and physician time to address the serious diseases that need attention. Finally, it diminishes the financial burden on the patient by reducing the unnecessary OOPE currently being incurred at the secondary or tertiary levels for treatment of simple and common ailments.

4.2.2.6. Health Records System

In a healthcare system that is based on referrals and linkages across the three levels of hospitals, coordination between the different levels is imperative. The National Health Policy 2017[13] also recognised the significance of an integrated health records system in ensuring continuity of care across different healthcare providers. The National Digital Health Mission was launched in 2020 to achieve the goal of an integrated digital health ecosystem at the national level which will support delivery of safe, timely, effective, and affordable healthcare services for all. Under the Mission, each individual is given a Health ID to uniquely identify them, and to link and consolidate their health records.

When a patient's past medical history and health records are accessible instantly to a physician, it will prevent mistakes, facilitate quick and accurate diagnosis, and allow for timely and appropriate treatment. India lacks a robust health information system as well as the necessary infrastructure to put it in place. An FP based primary care system can provide the ideal starting point for building a health record system. A complete roll-out of a comprehensive health information system will take several years and cannot be done overnight. A phased approach to its implementation will allow for development of supporting infrastructure over time.

In addition, a Federal Health Monitoring Agency (FHMA) may be established. It will be an IT infrastructure based apex monitoring and controlling authority. All the FP clinics, diagnostic centres, the pharmacies, and Drug Supply Agencies may be linked to this central database. The FHMA may perform the following functions:

1. Assess cross-sectional health status of the population
2. Flag epidemics digitally
3. Flag unusual patterns at clinics, diagnostics, drug dispensaries - suspicion of foul play
4. Document innovations and best practices as guide for wider application

Since a digital collection of information regarding a person's medical history is liable to be misused, the union government has already initiated the process of enacting a law to secure such information, ensure data protection and to facilitate safe transfer of patient information across clinics. Enactment of a robust legal framework for protection of the health information so gathered must be a priority.

4.2.2.7. Integration with Public Health Initiatives

The focus of a public healthcare delivery system must be on offering holistic services to the patient in lieu of concentrating on specific healthcare needs in isolation. Consequently, a key feature of an efficient primary care system is the harmonisation of all the existing as well as future public health interventions, be it immunisation, maternal and child health, nutrition, new-born screening etc, with the medical care branch of the primary care system. A shift towards patient-centric care through the FP system provides the perfect platform for integration of the two main components of primary care, viz. public health interventions, and out-patient care.

A holistic approach will lead to better health outcomes for the population as a whole as it will be tailor-made for the particular needs and conditions of each individual patient. Focusing on specific challenges and working in vertical silos will give rise to inefficiencies in delivery of care since every requirement of a patient would not have been considered. Thus, the outcomes will be relatively sub-optimal despite the deployment of a large amount of resources towards these endeavours. Integration of all public health measures with the FP model, on the other hand, will avoid duplication of effort while producing better outcomes.

The FP clinics will work in coordination with the local Primary Healthcare Center and the nearest Community Health Centre, with a clear demarcation of each of their respective roles. The FP will maintain records, provide out-patient care and assist in public health programmes. 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 PHC will be responsible for disease control programmes, nutrition and sanitation programmes, family planning services, field visits and epidemiological survey. The PHCs have a good cold chain and other infrastructure. Therefore, they will supply vaccines and centrally procured drugs and consumables to the FP system and the local clinical laboratories and drug dispensaries which will be part of the primary care system.

4.2.2.8. Diagnostic Services

4.2.2.8.1. Public-Private-Partnership Model of Andhra Pradesh

Any endeavour towards guaranteeing universal healthcare must necessarily provide for a system of quality diagnostic services. By facilitating evidence-based care, diagnostics greatly contribute towards rational decisions pertaining to treatment, thereby enhancing the overall healthcare outcomes.

Recognising the significance of diagnostic services in the public health system, the Free Diagnostics Scheme was launched by the Union Government in 2015 with the goal of free provision of a set of essential diagnostics at various levels of government facilities.

Several states have adopted different models within the scheme to give effect to the broader mandate. Andhra Pradesh was the first state in the country to roll out a hybrid model for offering free diagnostics at all levels of government healthcare facilities under the scheme. Opting for a PPP framework, the state government has been able to successfully leverage the expertise and investments of the private sector for the purpose of ensuring quality diagnostic services to the people at a reasonable cost (refer to Box 4.4).

Box 4.4: Harnessing the Public Private Model for Free Diagnostics - Andhra Pradesh

Andhra Pradesh opted for a hybrid approach to provide free diagnostic services at all public healthcare facilities in the state, from the Primary Health Centres (PHCs) to District Hospitals. The services are offered at two levels – in-house laboratories and Andhra Pradesh Vaidya Pariksha Scheme (APVP). Basic Level I diagnostics are conducted at in-house laboratories at each of the facilities.The number of tests conducted at the PHC level is about 25 percent of the total outpatient visits. The entire costs for such services are borne by the government.

About 10 percent of all outpatients needed Level II tests which required samples to be sent to a centralised laboratory facility. Diagnostic centres offering more advanced services were set up under a PPP framework. A single private service provider (Medall Healthcare Private Limited) is currently running 104 such laboratories across the state, categorised into three types (see Table I).

Table I: Categories and Coverage of APVP Laboratories

Type	Number	Coverage
L3	97	All routine tests for all neighbouring PHCs and CHCs
L2		All routine tests for adjoining AHs/ DHs and for neighbouring PHCs and CHCs
L1	7	Advanced tests for AHs and DHs from multiple districts and all routine tests for neighbouring PHCs and CHCs

About 55-60 lakh patients avail the testing facilities under APVP in a year. Between January 2016 and June 2017, out of the total tests, the samples collected were highest at the PHC level (52%), followed by Community Health Centres (30%), Area Hospitals (12%) and District Hospitals (6%). Outpatients accounted for 97% of the tests while the rest were tests for inpatients.

The government reimburses the service provider on a cost-per-patient model at the rate of Rs 235 per patient. The programme was allocated Rs. 105.75 crores in both 2016-17 and 2017-18, with the state government contributing 40 percent of the amount and the rest being funded by the union government.

The availability of adequate diagnostic services has resulted in improved patient care, lesser OOPE on diagnostics for the people (decrease of 81% in OOPE in the public sector) and greater patient and doctor satisfaction in the government health facilities across the state.

Refer to Annexure 4.3 for more information

Source:

1. *Evaluation of the Free Diagnostics Scheme in Andhra Pradesh, World Health Organization and Government of India, 2018.*
2. *Reports of the Department of Health, Medical and Family Welfare, Government of Andhra Pradesh, accessed on 4 June 2021.*

4.2.2.8.2. Two Levels of Diagnostic Laboratories

The diagnostic services to be offered under the proposed model may be classified into two categories - Level I and Level II services. There will be one laboratory offering Level I category services for every pool of 10 FP clinics in the small town serving as primary care centre. Similar to the services offered by the in-house laboratories in the Andhra Pradesh Model, Level I laboratories will provide basic diagnostic services (refer to Annexure 4.3) for the pool of FPs in the town. The Level I laboratories will be privately run and will charge a fixed fee per test conducted. An analysis of outpatient visits and tests conducted in PHCs of Andhra Pradesh indicate that about 25 percent of outpatients require laboratory tests in in-house laboratories (refer to Annexure 4.3).

Laboratories providing Level II diagnostic services must be established in a manner similar to the PPP system in Andhra Pradesh. The level at which such laboratories must be established can be determined by the respective state government based on the local needs and considerations of economies of scale. The Andhra Pradesh experience shows that about 10 percent of outpatients will need Level II diagnostic services.

The cost of diagnostics at both levels should be borne by the government, with a 25 percent of co-payment by the patient, subject to a ceiling of Rs.100. In case of indigent patients, there will be an exemption of co-payment as determined by the FP. The principle of no patient being denied diagnostic services for want of money should be followed.

4.2.2.9. Drug Procurement and Supply

Ensuring the supply of generic and other drugs is a vital element of a primary care system. This is particularly important in our context because on average drugs account for more than 60 percent of all OOPE incurred by a person in case of non-hospitalised care[2]. An effort to guarantee quality services with marginal cost to the people cannot be effective unless supply of safe and effective drugs to the people is adequately addressed.

There are two elements to drug supply, one, procuring drugs and two, dispensing drugs. The extent of cost-effectiveness that the government can secure at the procurement stage determines the financial feasibility of supplying prescription drugs to the public at a greatly subsidised price.

4.2.2.9.1. Centralised Drug Procurement by the Government

Pioneered by Tamil Nadu in India, the practice of centralised drug procurement has several advantages to offer. In a centralised procurement system, the government formulates an Essential Drugs List based on past usage and need. Centralised procurement enables rational drug choice whereby money is not wasted on drugs that are relatively more expensive devoid of any added value. Government can, as far as practicable, procure generic drugs duly ensuring quality, so that the markup of price in branded drugs can be avoided in purchases. Such a system also facilitates adequate quality control in drugs to be distributed across the state. Bulk purchasing further means that the government will have strong negotiating power to lower the cost of procurement. As a

consequence of these factors, the overall cost of drugs is substantially reduced leading to cost-effectiveness, and quality of drugs and their rational application will improve.

Tamil Nadu reaped these benefits (refer to Box 4.4), and that experience encouraged other states to follow suit. Andhra Pradesh, for example, is one of the states that has opted for a centralised approach to procurement of drugs in the state.

As is evident from Tables 4.8 and 4.9, Tamil Nadu is able to supply drugs in the public healthcare system across all levels at a very reasonable cost. The per capita expenditure on drugs in a year amounts to a very low amount of around Rs. 60. The expenditure on procurement of drugs in Andhra Pradesh also shows a similar pattern (refer to Table 4.10).

Table 4.8: Expenditure on Drugs in Tamil Nadu

Year	State's Total Budget (Rs. Crores)	Healthcare Budget (BE in Rs. Crores)	Healthcare Budget as % of Total Budget	Expenditure on Drugs (in Rs. Crores)	Drug Expenditure as % of Healthcare Budget	Per Capita Expenditure (in Rs.)
2020-21	300,390.24	15,773.38	5.25%	521.37	3.31%	72.41
2021-22	329,106.62	19,111.03	5.80%	422.62	2.21%	58.7

Sources:
1. Tamil Nadu Annual Financial Statement 2021-22.
2. Demand 19, Tamil Nadu Demand List 2021-2022, State Budget Documents.
3.Provisional Population Totals, Paper 2, Volume 1, Census of India 2011, Government of India, pg. 2.

Table prepared by Foundation for Democratic Reforms.

Table 4.9: Break-up of Purchase of Drugs and Medicines in Tamil Nadu

Item No.	Heads	Budget Estimate 2020-21 (Rs. Crores)	Budget Estimate 2021-22 (Rs. Crores)
1	**Supply to Govt. Medical Institutions/ Hospitals**		
	a. Under Directorate of Medical and Rural Health Services	99	101.5
	b. Under Directorate of Public Health and Preventive Medicine	3	3
	c. Under Directorate of Medical Education	381.4	280.15
2	**Provision of Life Sustaining Drugs for Renal Transplantation**	1.65	1.65
3	**Supply to PHCs under Directorate of Public Health and Preventive Medicine**	36.32	36.32
	Total	**521.37**	**422.62**

Source:
Demand 19, Tamil Nadu Demand List 2021-2022, State Budget Documents.

Table prepared by Foundation for Democratic Reforms.

Table 4.10: Expenditure on Drugs in Andhra Pradesh

Year	Total State Budget (Rs. Crore)	Healthcare Budget (Rs. Crore)	Healthcare Budget as % of Total Budget	Expenditure on Drugs (Rs. Crore)	Drug Expenditure as % of Healthcare Budget	Per capita Expenditure (in Rs.)
2018-19	191,063.61	8,463.51	4.43	300	3.54	60.73
2019-20	227,975.00	11,399.23	5.00	179.98	1.58	36.43
2020-21	224,789.00	11,419.48	5.08	400	3.50	80.97

Source:
1. Andhra Pradesh Budget at a Glance – 2019-20 to 2021-22.
2. Andhra Pradesh Budget Estimates Volume III/8 – years 2018-19 to 2021-22.
3. Statistical Abstract Andhra Pradesh 2018, Directorate of Economics and Statistics, Government of Andhra Pradesh, pg. 8.

Table prepared by Foundation for Democratic Reforms.

The total expenditure on drugs in Tamil Nadu and Andhra Pradesh includes the drugs procured for distribution in all public secondary and tertiary care hospitals. In fact in Tamil Nadu more than two-thirds of the expenditure on drugs is in teaching hospitals, and PHCs consume only under 10 percent of the drugs procured. It is reasonable to assume that even with substantially enhanced primary outpatient care through FPs, a similar amount of Rs. 60/- per capita would be more than adequate to provide prescription drugs to all outpatients in the primary care system. In many countries with a robust and effective system, prescription drugs carry a co-payment. This will avoid excessive prescriptions and needless consumption of drugs like antibiotics, and will bring greater pressure on the system to ensure good quality and affordable price. Therefore a system of low-cost drugs at primary care level with a modest co-payment to be borne by the patient, and free drugs for in-patients in hospital care would be ideal.

Box 4.5: Tamil Nadu's Pioneering Drug Procurement and Distribution Model

The Tamil Nadu Medical Services Corporation (TNMSC), an autonomous body, was established in 1994 to ensure ready availability of drugs in public healthcare facilities. It follows a centralised drug procurement process. The Essential Drug List and the quantity thereof is prepared based on past utilisation trends. Suppliers are identified annually through a two-tiered tendering process. Transparency is ensured through third party quality control. Centralised payment mechanism further ensures that competitive lead payment time is maintained. The TNMSC follows a passbook system for distribution of drugs. Each user health facility is given a passbook in lieu of depositing 90 percent of their funds for drugs with the TNMSC. Each facility receives supplies from the nearest warehouse based on requirement and the same is reflected in the passbook enabling real-time tracking of the stock. Further, a computerised inventory management system tracks inventories in all ware-houses as well as the user facilities. Inter-warehouse transfers are made to avoid wastage.

This system has led to several positive outcomes. It has been successful in ensuring optimum availability of drugs in public facilities. It has improved the cost effectiveness of drug procurement for the state government. Equally importantly, it has led to a reduced OOPE on drugs in the state. For instance, Tamil Nadu saw a sharp decline in impoverishment due to OOPE on drugs from 1993-94 to 2004-05 (a 60% decrease from 4.2% to 1.7% as opposed to a 20% decrease in the national average, from 3.6% to 2.9%). Moreover, Tamil Nadu has the lowest share of medicines in OOPE amongst states with a comparable level of Monthly Per Capita Consumption Expenditure.

Refer to Annexure 4.4 for more information.

Sources:

1. *Drug Procurement Policy, Tamil Nadu Medical Services Corporation Limited Website, available at: tnmsc.tn.gov.in, accessed on 15th June 2021.*
2. *"Tamil Nadu Medical Services Corporation: A Success Story", Forbes India, 27 July 2010.*
3. *Singh PV et al., "Understanding public drug procurement in India: a comparative qualitative study of five Indian states", BMJ Open 2013.*
4. *Chokshi M. et al, "A cross-sectional survey of the models in Bihar and Tamil Nadu, India for pooled procurement of medicines", WHO South-East Asia J Public Health 2015.*
5. *Dr. S. Barik et al, "Study on Drugs Availability and Diagnostic Services in Tamil Nadu & Kerala", Ministry of Health and Family Welfare, Government of India, 2011.*
6. *Sakthivel Selvaraj et al., "Free Medicines in Tamil Nadu: sustainable reforms and effective financial protection", 3rd International Conference on Public Policy (ICPP3), Singapore, 2017.*

4.2.2.9.2. Drug Supply - Private Dispensary in Each Centre (of 10 FPs)

The supply of drugs can be ensured efficiently through the involvement of local dispensaries operated by private players. In each of the primary care centres (100,000-150,000 population) with 8-10 FPs, one common dispensary may be set-up which supplies government procured drugs at government decided prices, allowing a reasonable commission of about 10 percent to the dispenser to cover costs and ensure a reasonable net income. The dispensaries will be established by private entrepreneurs. As there will be a captive market and a reasonable margin on sales is available, it will attract many entrepreneurs. In all of India, there are about 850,000 retail pharmacies. The total Indian market for drugs is of the order of Rs. 150,000 crores, with average sales of about Rs. 18 lakh per year per such retail outlet. In the primary care model envisaged, there will be about 100,000 FPs in 10,000 centres (small towns), each town with 10 FPs serving about 400-500 outpatients per day. The total value of drugs supplied to the outpatients is estimated to be of the order of Rs. 8500 crore per year. Each of the private pharmacies dedicated to the FP-driven primary care system will have about Rs. 85 lakh sales per year, more than four times the average sale in retail pharmacies. With such volume of captive business, private, dedicated retail outlets to serve outpatients in the primary care system will be a viable and attractive option.

Access to medical care should include access to free pharmaceuticals for a lifetime. Ageing demographic and increased NCDs will entail higher usage of permanent prescription drugs over time. Ultimately, the cost of drugs for the state exchequer is bound to see a sharp rise, over time increasing the cost of healthcare.

As seen from Table 4.11, the doctors in Italy have to prescribe medicines only by the name of the active ingredient, unless a specific brand's medicinal product is non-replaceable for treatment. Such a policy should be introduced in the public healthcare system so that generic drugs of good quality and lower price can be supplied to patients. If the patients wish to have a branded drug when a generic alternative is available, then the difference of cost should be charged as co-payment.

The models of co-payment adopted across the globe provide guidance in designing one that is best-suited to the Indian conditions (refer to Table 4.11). A small co-payment on all drug purchases will help improve quality of service and reduce overconsumption. The indigent patients will be exempt from co-payments at the discretion of the FP.

It may be prudent to institutionalise a mechanism for cost control for drugs dispensed at the primary care level. The details of a viable model are given below in the section 'Nominal Fee for Services'. Given that the drugs - mostly generic - will be centrally procured by the state governments at significantly lower prices as compared to the market prices, the government will come up with a list of prices for the generic drugs supplied through the pharmacies in the primary care system. The prices in the list will be determined based on the procurement and distribution costs incurred by the government, with an allowance for a mark-up of 10 percent as a margin for the dispensary. For all outpatient care, drugs may be supplied at low cost, and the patient will bear 25 percent of the cost as co-payment, subject to a ceiling of Rs. 100. Indigent patients who cannot afford to buy even low cost drugs may get free supply, subject to a ceiling of 10 percent of the total number of outpatients, as determined by the FP physician. Chronic NCD patients may get free prescription drugs subject to a modest co-payment of 25 percent of the cost, subject to a monthly ceiling of Rs. 100. Indigent patients as determined by the FP, and all patients receiving treatments for chronic communicable diseases like TB, HIV-AIDS, Leprosy etc will be supplied completely free drugs without any co-payments. As explained above, physicians will be required to prescribe the drugs by ingredients only and not by branded name. If a patient insists on purchasing a branded drug when a generic alternative is available, the difference in cost of the drug will be borne by the patient as co-payment.

Table 4.11 : Drug Dispensation Models in Select Countries						
Features			**United Kingdom**	**Italy**	**France**	**Germany**
Model	**Inpatient**		Free of cost.	Fully reimbursed.	Included in hospital care cost. 70% covered by mandatory government insurance.	Free of cost.
	Outpatient		Co-payment of £9.35 on each prescribed item, unless exempted (children, elderly, maternity..etc.). Co-payment is not based on drug cost, the collected amount goes towards a fund for the NHS. NHS maintains a prescribable drug list based on their cost effectiveness. NHS regulates drug costs through profit caps and price cut negotiations.	Prescription of medicines only by name of the active ingredient, unless a branded product is non-replaceable for treatment. Reimbursement policies are based on drug categories and vary across regions. For instance, Class A generic drugs are free of cost, but if patients opt for branded Class A drugs, the difference in price is charged as co-payment.	Drugs are classified into four categories of reimbursement rates based on their usefulness and efficacy - 100% (drugs for long term chronic conditions), 65%, 35% and 0%.	Co-payment of 10% per prescription with a cap of EUR 10. The government controls drug prices through an independent committee based on the benefits and efficacy of any new drug.
Share of Total Expenditure on Drugs	**Government**		57.00%	63.00%	81%	*82%
	Private	**OOPE**	43.00%	37.00%	12%	*17%
		Insurance	NA	NA	7%	NA
Per capita Expenditure on Drugs in EUR (ppp) (2018)			366	434	467	615

Note:
OOPE - Out-of-Pocket Expenditure; ppp - Purchasing Power Parity

* The combined percentage share of Government and out-of-pocket expenditure for Germany is 99%. The OECD source does not mention the source of the remaining 1% of expenditure.

Source:
Model -
1. United Kingdom - Official website of the NHS Business Services Authority, Department of Health and Social Care, accessed 5 June 2021.
2. Italy - Ferre F, et al., Italy: Health System Review, Health Systems in Transition, European Observatory on Health Systems and Policies and WHO, 2014; Official website of the Italian Medicines Agency - AIFA, accessed on 5 June 2021.
3. Germany - Pharmaceutical Reimbursement and Pricing in Germany, OECD 2018.
4. France - "What Can the United States Learn from Pharmaceutical Spending Controls in France?", The Commonwealth Fund, 11 November 2019; International Health Care System Profiles, The Commonwealth Fund, 5 June 2020.
Percentage Share of Drug Expenditure and per capita Expenditure on Drugs -
5. Health at a Glance: Europe 2020.

Table prepared by Foundation for Democratic Reforms.

4.2.2.10. Nominal Fee for Services

Charging a nominal co-payment for the three services to be offered at the primary level - consultation, diagnostics and drugs - requires serious consideration because of the following three reasons:

1. **Accountability to the people -** as the patients pay a fee, even if nominal, to avail public services, they gain voice. They become direct stakeholders in the system which enable them to demand accountability from the service providers. Coupled with choice and competition, co-payment will become a potent tool in ensuring accountability in the system.
2. **Cost control** - the twin factors of increased demand for better healthcare with growing prosperity and the ever growing costs of health interventions will inevitably raise the burden on the government in providing healthcare which will eventually become unsustainable. Introducing a mechanism for cost control anew at that point will be strategically challenging. Therefore, it is wise to institutionalise a cost-control mechanism at this stage.
3. **Preventing overuse –** a nominal fee that is not otherwise restrictive of access to healthcare will act as a check on the tendency to over-prescribe unnecessary drugs and diagnostics tests

However, such a fee, if any, must be nominal so that it will not restrict access to healthcare services for the vast majority of the poor in the country. In extremely backward and underserved areas, even a small co-payment may be unaffordable, and the patients may avoid visits to FP, or prefer locally available informal, unqualified practitioners. In such areas, co-payments may be waived altogether.

The following framework of nominal fee is proposed, adjusting for local needs and conditions:

Table 4.12: Proposed System of Nominal Co-payment for Primary Care Services

<table>
<tr><th>Type of Service</th><th colspan="2">Model</th><th>Exemption</th></tr>
<tr><td>FP Consultation</td><td colspan="2">Rs. 25 per consultation</td><td rowspan="4">1. 10% of the patients - at the discretion of the FP on the ground of being indigent and being unable to afford services.

2. Basic principle should be no one will be denied care for want of money.

3. In extremely backward, underserved areas, all co-payments may be waived.</td></tr>
<tr><td>Diagnostics</td><td colspan="2">25% of the cost will be borne by the patient as co-payment, subject to a ceiling of Rs. 100/-</td></tr>
<tr><td rowspan="2">Drug Dispensation</td><td>One-time prescription - patients to pay 25% of the cost as co-payment, subject to a ceiling of Rs. 100/-</td><td rowspan="2">In respect of both one-time prescription and chronic illnesses, the physician is required to prescribe the drug only by the ingredient, unless a specific brand's medical product is non-replaceable for treatment, If the patient wishes to have a drug of a certain brand, the difference of cost of the drug is charged as co-payment.</td></tr>
<tr><td>Chronic illnesses - 25% of the cost will be borne by the patient as co-payment, subject to a ceiling of Rs. 100/- per</td></tr>
</table>

Table prepared by Foundation for Democratic Reforms.

Generally, charging a nominal co-payment will not discourage the people from availing public healthcare services as the co-payment amount itself is small. The immense benefits that will accrue to the system by collecting nominal fees and co-payments both in the short-term and the long-term far outweigh the small financial burden the patients will have to bear. Considering that the per-capita per-day expenditure of the poor in India is about Rs. 80, charging a nominal fee of Rs. 25 per consultation which the patient is likely to incur only twice a year will not restrict access. In case there is a substitutable or a cheaper private care option in terms of access, cost, as well as quality, increased patronage of such providers would not cause a loss to the healthcare system as a whole.

Nevertheless, the real risk lies in the possibility of unintendedly increasing the patronage of informal providers who charge comparable or lesser fees, but provide unscientific, indifferent care. Such a consequence will be harmful for the healthcare system. Therefore, the decision of adopting a fee system as well as the amount of fee must be made after careful consideration of the local needs and conditions. In any case, the central principle should be that no person will be denied proper care for want of money. All indigent persons should get free care, as determined by the FP.

4.2.2.11. Accountability and Monitoring

Accountability in the healthcare system is the most significant element without which the efficacy of the entire model will be in jeopardy. The elements of choice and competition along with charging a nominal co-payment for services from the patients provide effective mechanisms of ensuring accountability that are built into the very design of the system. In addition, it is necessary to have oversight mechanisms which can formally ensure and enforce accountability.

The responsibility for healthcare delivery and monitoring essentially lies with the states. Therefore, strong institutions to enforce accountability are required across various levels of government within a state. For the FP-led primary care system, the CHCs should constitute the first tier of the accountability framework. There are currently 5649 CHCs in the country across rural and urban areas[56]. Each CHC roughly corresponds to one or two primary care centres (having a population of 100,000-150,000) as discussed above. Depending on the local circumstances and the number of FPs in practice, each Regional Health Board at the CHC level can be responsible for the monitoring of 10-20 FPs. Furthermore, the CHCs will supervise the functioning of all the diagnostic laboratories and pharmaceutical outlets in the public primary care system within their jurisdiction.

The second tier of accountability should be at the district level. An independent District Health Board (DHB) may be constituted which will be entrusted with both administrative and supervisory functions. In its administrative capacity, the DHB will be responsible for contracting with the FPs, diagnostic service providers and pharmaceutical outlets as well as for making payments for their services in the primary care system. As a supervisory body, the DHB will oversee the overall functioning of the primary care system within the district. It will have control over all the data collected under the FHMA at the district level. The DHB may be constituted with representation from the elected local government, District Medical and Health Department, reputed voluntary organisations in the health sector and from the first tier CHC level body mentioned above.

The third tier of the system should be at the state level which is the focal point of healthcare delivery in the country. A State Health Board (SHB) may be created which will be responsible for the overall roll-out of the FP-led primary care system. The SHB will also be responsible for development of systems and protocols to be followed. Further, the SHBs will allocate resources to the DHBs while also being empowered to audit their utilisation. They will monitor the overall functioning of the DHBs. Being the aggregator of data on the healthcare system at the state level, the SHB will play a critical role in facilitating the identification of any malpractices and thereby deterring fraudulent practices. The composition of the SHB should include representatives of government, all heads of departments responsible for medical education, hospital care, primary care, and public health, elected representatives, healthcare experts, members from reputed voluntary organisations in the health sector, and representatives from the pharmaceutical and diagnostic industries.

At the union level, the Federal Health Monitoring Agency will guide state and local authorities in identifying trends, adopting best practices and correcting systematic errors.

The PM-JAY envisages a multi-tiered institutional structure for the implementation and monitoring of the delivery of services under the programme. The proposed framework can be suitably integrated with the existing PM-JAY structure.

4.2.3. Phasing and Cost Estimates

4.2.3.1. Phased Roll-out Over Three Years

Any policy recommendation, in general, but particularly in respect of healthcare which has many stakeholders and has large-scale impact on general society, must be cautiously implemented. The specific needs and characteristics of an area must be taken into account, and there should be flexibility and room for local innovation to suit the ground realities. Furthermore, the wide variation in the state of public healthcare system across states in the country means that the finer details of the proposed model must be suitably adapted to the conditions of each of the states.

Therefore, the model may be rolled out over a period of three years.

The key tasks to be accomplished are as follows:

- Establish a network of FPs in about 10,000 centres (100,000-150,000 population) throughout the country. Each such centre will have 8-10 FPs, depending on the needs of the area.
- Training all the doctors who are willing to participate in the programme as FPs in family practice in one-month capsules.
- Establish one privately run drug dispensary in each centre which will dispense government procured drugs at government determined prices to the patients of the FP clinics of that centre.

- Establish one diagnostic laboratory under the PPP model in each centre which will perform relatively simple diagnostic tests for the patients of the FP clinics.
- Outsource diagnostic services for the whole state to conduct Level II diagnostic tests.
- Initiate the process of digitising health records of the patients
- Establish procedures, rules, protocols, fund flow mechanisms and accountability systems.

4.2.3.2. Estimates of Annual Cost to the Government by the end of Three Years

Given the low patronage of public healthcare facilities which is around 25 percent, it is reasonable to expect that the utilisation of the public services will significantly improve with time once an effective FP system is fully in place, and trust in the publicly funded primary healthcare system is restored. Therefore, the estimates of the cost to the public exchequer have been made on an annual basis after the services are rolled out fully over a period of three years. We assume 1.5 outpatient consultations per year per person (now it stands at 0.6), and about 70 percent of the population, or 100 crore people will avail the services once they are available and accessible.

It is expected that 70 percent of the population shall avail the services of FPs. On that basis, at a population of 140 crore and consultation rate of 1.5 per person per year, it is estimated that there will be over 150 crore outpatients availing primary care services annually. The cost to the exchequer in lieu of provision of such a service will include the cost of FP consultations, drug dispensation, and diagnostics after deducting co-payments from 90 percent outpatients who fall in the non-indigent category.

4.2.3.2.1. Cost of FP Consultations

Table 4.13a: Cost of FP Consultations

A	Number of Potential Outpatient Consultations	150 crore
B	Fee per FP Consultation	Rs. 125
C	Total Amount incurred on FP Consultations = A x B	Rs. 18,750 crore
D	Non-Indigent Patient Consultations = 90% x A	135 crore
E	Co-Payment of Rs. 25 from 90% Outpatients = 25 x D	Rs. 3,375 crore
F	Net Cost incurred by the Exchequer towards FP Consultations = C - E	**Rs. 15,375 crore**

Note:
The fee-per-service amount of Rs 100 and Rs 125 was arrived at after considering the approximate income that would be earned by an FP at the consultation rate of 1.5.

Table prepared by Foundation for Democratic Reforms.

4.2.3.2.2. Cost of Drug Dispensation

Table 4.13b: Primary Care Cost Estimates – Cost of Drug Dispensation		
A.	Per capita Cost of Drug Procurement (Adopting Tamil Nadu Cost)	Rs. 60
B.	Total India Population	140 crore
C.	Total Amount incurred on Drug Dispensation = A x B	**Rs. 8,400 crore**

Note:
1. The per capita cost for procurement of drugs is based on the Tamil Nadu expenditure on procurement of drugs. Although that amount included expenditure on drugs for secondary and tertiary care as well, it is assumed that a similar amount would be needed to be spent at the primary care level alone with increased provision of services.

2. The estimate for Drug Supply does not account for any recovery of costs from the patients. The actual cost would differ based on the model of co-payment adopted by the state, if any.

Table prepared by Foundation for Democratic Reforms.

4.2.3.2.3. Cost of Diagnostics

Table 4.13c: Cost of Diagnostics		
Level I Diagnostics		
A	Number of Potential Tests (25% of the Outpatients)	37.5 crore
B	Average Cost per Test	Rs. 50
C	Amount incurred on Level I Diagnostics = A x B	Rs. 1,875 crore
Level II Diagnostics		
D	Number of Potential Tests (10% of the Outpatients)	15 crore
E	Cost per Patient (Adopting Andhra Pradesh Cost)	Rs. 235
F	Amount incurred on Level II Diagnostics (D x E)	Rs. 3525 crore
G	Total Amount incurred on Diagnostics (C + F) excluding Co-payments from non-indigent patients	**Rs. 5400 crore**

Note:
1. The cost estimates for Level I Diagnostics is based on the potential number of tests which has been assumed to be 25% of the total outpatient visits to the FP clinics. The ratio of tests has been arrived at based on the trends prevalent in respect of in-house laboratories in the PHCs of Andhra Pradesh.

2. The cost of Rs. 50 per test is an estimate of FDR based on prevailing costs, and the projected utilisation of these services, and is not based on any existing models.

3. In the case of Level II Diagnostics, the cost estimates are calculated on the basis of the number of patients getting tested, similar to the Andhra Pradesh Vaidya Pariksha Scheme. The per-patient tested cost is based on the amount being spent by the Andhra Pradesh government under the Scheme.

4. The number of outpatients requiring diagnostics at a Level II diagnostic centre was calculated as 10% of total outpatients based on the trends under the Andhra Pradesh Vaidya Pariksha Scheme.

Table prepared by Foundation for Democratic Reforms.

4.2.3.2.4. Total Cost to the Exchequer on Primary Care

Table 4.13d: Total Cost to the Exchequer		
A	Cost of FP Consultations	Rs. 15,375 crore
B	Cost of Drug Dispensation	Rs. 8,400 crore
C	Cost of Diagnostics	Rs. 5,400 crore
D	Cost to the Exchequer	**Rs. 29,175 crore**

Note:
The total cost to the exchequer may vary depending on the co-payment model adopted by the State. The number provided in the table does not take into account the recoveries to the exchequer by way of co-payments on drugs and diagnostics.

Table prepared by Foundation for Democratic Reforms.

This model envisages about 100,000 FPs in 10,000 centres across the country, providing services based on competition, and deriving income from co-payments for services. There will be 10,000 clinical and diagnostic laboratories in the private sector, one for each centre, providing Level I diagnostic services commonly required for outpatients. For more sophisticated tests, there will be outsourcing of Level II diagnostic services, whereby samples will be transported to laboratories spread across each state. There will be 10,000 retail pharmacies, one for each centre, distributing drugs and consumables centrally procured in each state to the patients served by the FP system. There will be nominal co-payments to give voice to patients and promote quality and accountability. Such a system can be put in place fully in three years in a phased manner. This system is expected to cater to 1.5 outpatient consultations per person in a year, increasing from the present rate of 0.5 per person per year. It will meet all the primary care needs of about 100 crore people and eliminate all out-of-pocket expenditure on outpatient visits, diagnostics and drugs in primary care, except for small co-payments. Indigent persons will be exempt from even nominal co-payments, and no patient will be denied care for want of money. It is expected that about 40 crore people, or 30 percent of the population of the country, have the means and will continue to rely on private care. But as a principle, free and quality primary care will be available to all people, so that well-informed, vocal, middle-income groups will avail the facilities and maintain the pressure on the system to ensure delivery of quality services. After five years, the adequacy of services can be reviewed based on data, experience and public demand, and if felt necessary, more and more FPs in more centres can be empanelled in the system.

CHAPTER 4

SECONDARY CARE

Secondary care, sometimes referred to as 'hospital and community care', includes all hospital care, obstetrics services including child birth and caesarean operations, planned elective care such as abdominal or cataract operations, or urgent and emergency care and trauma treatment including simple fractures. This level of hospitalisation typically involves relatively low-cost simple interventions and ideally, patients are referred to specialists by a primary care provider. In secondary care, typically there will be an operation theater, x-ray machine and other basic diagnostics, oxygen administration facilities, and all amenities required for inpatient and post-operative care.

Tertiary care includes a higher level of specialised care within the hospital, and involves high cost equipment and a high degree of expertise. Tertiary care deals with complex multi-specialty problems, sophisticated diagnostics, and highly skilled interventions like cardiothoracic surgery, renal failure, critical care, serious accidents and trauma, complex orthopaedic surgeries, knee or hip replacement, kidney transplantation, dialysis, chemotherapy, radiotherapy, and cancer surgery, etc.

Governments at the union and state level are beginning to address the problem of financial burden on the poor on account of secondary and tertiary care services through risk pooling and single-payer insurance based programmes including PPP. The National Health Protection programme, a flagship initiative of the union government, Ayushman Bharat – Pradhan Mantri Jan Arogya Yojana (PMJAY), was launched in September 2018. The programme aims to '*ensure financial protection against catastrophic health expenditure and access to affordable and quality healthcare for all*[57].'

5.1. Ayushman Bharat – PMJAY

Ayushman Bharat – PMJAY, the largest single-payer health insurance programme in the world, currently offers a financial coverage of upto Rs 5,00,000 per family on a floater basis for a range of secondary and tertiary care procedures, free of cost, in empanelled public and private healthcare facilities[57], for the bottom 40 percent of the Indian population (10.74 crore households)[57]. In the first year of its launch, the programme covered 1393 procedures across 24 specialties. The coverage was expanded to 1592 procedures during 2019-20. The programme covers three days of pre-hospitalisation and 15 days of post hospitalisation expenses including medicines, follow-up consultation and diagnostics[57]. As on 6 September 2020, 23,311 hospitals are empanelled under the programme, of which, 55 percent are public hospitals and 45 percent are in the private sector[57]. 32 states and UTs are implementing the programme[57]. About 60 private hospitals have been directly empanelled under the programme in four states which have not implemented it – Delhi, Telangana, Odisha and West Bengal – for the benefit of citizens living in those states[57]. In May 2021, the Telangana government signed an agreement with the Union to roll out the PMJAY programme in the state.

Beneficiaries for the programme are identified based on the deprivation and occupational criteria of the Socio-Economic Caste Census 2011 (SECC 2011) for rural and urban areas, respectively. In addition to these households, states have the flexibility to add their own database of already identified beneficiaries under state health programmes[57]. Based on the lessons learned from the Rashtriya Swasthya Bima Yojana (RSBY) programme, PMJAY has been designed in a flexible manner. There is no cap on the family size or age of the members under PMJAY, unlike the limit of five persons per family under RSBY[57]. Further, all pre-existing conditions are covered under the programme.

The National Health Authority (NHA), State Health Authorities (SHA) and District Implementation Units (DIU) have been established/converged for effective implementation of the programme. States and UTs are implementing the programme in three different modes. The most common mode implemented by states like Andhra Pradesh, Karnataka, Kerala, Goa, etc, is a trust model, where the programme is directly implemented by the SHA and the financial risk is borne by the government[57]. Some states and UTs like Punjab, Meghalaya, Puducherry have implemented the programme through an insurance model wherein the SHA pays premiums per beneficiary to selected insurance companies. States like Gujarat and Tamil Nadu have opted for a mixed mode[57].

The programme is supported by robust IT infrastructure, including the PMJAY dashboard, PMJAY portal, Hospital Empanelment System, Beneficiary Identification System, Transaction Management System, Grievance Management System, National Health Stack to capture data for future enhancement of the programme, anti-fraud measures, mobile apps, call center, and so on. Treatments are cashless and paperless for the beneficiary at the point of care.

Table 5.1 shows the progress of the scheme so far. As on 6th September 2020, 15 crore cards have been issued and 1.2 crore beneficiaries have availed treatments. 51 percent of hospitalisations were in the private sector, mainly for tertiary care procedures, and 49 percent were treated in public hospitals. Percutaneous Transluminal Coronary Angioplasty (PTCA), Fracture Fixation, Coronary Artery Bypass Graft (CABG), Total Knee Replacement and radiotherapy are the five most utilised tertiary care packages[57]. Similarly, the top five packages utilised under secondary care are haemodialysis, caesarean delivery, cataract, Intensive Neonatal Care Package and Laparoscopic Cholecystectomy[57].

Benefits of the PMJAY programme are portable across the country – beneficiaries can avail treatments at any empanelled hospital across all states irrespective of their state of origin/residence. 1.25 lakh such portability cases were treated as on 6 September 2020. In response to the COVID 19 pandemic, all beneficiaries under the scheme were made eligible for cashless tests and treatment across all empanelled hospitals. Since April 2020, the programme has provided 3,56,154 cashless COVID-19 tests and 31,340 cashless treatments[57]. So far, the programme has cost the exchequer about Rs. 9000 crores (Refer to Table 5.2).

Table 5.1: Beneficiaries under Ayushman Bharat – PMJAY				
As on	Hospital Admissions			Number of eCards Issued
	Public	Private	Total	
23 September 2019	2,180,000	2,470,000	46,50,000	10,30,00,000
6 September 2020	NA	NA	12,00,0000	12,55,00,000
18 June 2021	NA	NA	1,86,15,277	15,99,38,380

Source:
1. Ayushman Bharat PMJAY Annual Report 2018-19 (pg. 16, 23), 2019-20 (pg. 12).
2. Official Website, Ayushman Bharat - PMJAY, available at: www.pmjay.gov.in, accessed on 18 June 2021.

Table prepared by Foundation for Democratic Reforms.

Table 5.2: Ayushman Bharat – PMJAY Budget Estimates		
Year	Budget Estimate (Rs Crore)	Revised Estimate (Rs Crore)
2018-19	-	2,400
2019-20	6,400	3,200
2020-21	6400	3,100
2021-22	6,400	-

Source:
1. Notes on Demands for Grants – Demand No. 42, 2019-2020, Demand No. 42, 2020-21 and Demand No. 44, 2021-22, Department of Health and Family Welfare, Ministry of Health And Family Welfare, Government of India.

Table prepared by Foundation for Democratic Reforms.

The Ayushman Bharat single-payer health insurance model was based on a relatively successful state-run risk pooling system for hospital care called Aarogyasri, which was launched in 2007 in united Andhra Pradesh and is being implemented across Andhra Pradesh and Telangana. The state programme covers about 85 percent of the population, providing cashless services to poor families, including out-patient registration, free diagnostics, consultation, surgical procedures/medical treatment, consumables, post discharge medicines for ten days and follow-up for certain procedures[58].

Table 5.3: State Wise Progress of Ayushman Bharat – PMJAY

State	Number of Beds in Empanelled Hospitals per 1000 Population	Hospitalisation per Lakh Beneficiary Population	Percentage of Claims Paid (%)
Andhra Pradesh	1.7	1221	79
Arunachal Pradesh	1.0	136	86
Assam	2.6	1095	91
Bihar	0.8	377	79
Chhattisgarh	1.4	3784	79
Goa	8.1	5479	1
Gujarat	2.6	5410	74
Haryana	3.8	2090	92
Himachal Pradesh	5.7	2927	87
Jharkhand	1.0	2182	90
Karnataka	5.7	-	49
Kerala	3.3	6549	80
Madhya Pradesh	1.0	752	78
Maharashtra	2.5	798	95
Manipur	3.2	1518	93
Mizoram	2.9	1472	95
Nagaland	3.5	1272	84
Punjab	1.5	-	90
Rajasthan	1.9	1961	32
Sikkim	7.5	1036	59
Tamil Nadu	4.0	2205	88
Tripura	2.3	-	89
Uttarakhand	1.5	2145	91
Uttar Pradesh	2.6	705	86
Jammu & Kashmir	4.6	2915	92
Lakshadweep	6.8	14	0
Andaman and Nicobar Islands	6.2	181	5
Puducherry	-	601	99
Chandigarh	6.2	1651	89

Source:
1. Ayushman Bharat – PMJAY Annual Report 2019-20, pg. 19.

Table prepared by Foundation for Democratic Reforms.

From the standpoint of hospital care through insurance and risk pooling programmes, India now has a programme and a framework in place for providing quality secondary care to all its citizens. Eliminating minor shortcomings, integrating the union and state-specific models for better coordination, separating tertiary care cases and focusing on secondary care in the single-payer, risk pooling model, based on competition and choice, and universalising the care will lead to comprehensive secondary care at a moderate cost with PPP. The Aarogyasri programme in Andhra Pradesh and Telangana is a mature model of hospital care delivery through risk pooling single-payer insurance. An analysis of the evolution, operations and outcomes of the programme in the two states provides several key insights that will help design a viable model for secondary care delivery for the country.

5.2. Aarogyasri Programme in Andhra Pradesh and Telangana

Aarogyasri health insurance programme began in 2007 with a financial coverage of upto Rs 2,00,000 (rupees two lakhs) to all of the state's poor. The initial programme budget of about Rs. 160 Crores in 2007-08 had progressively increased to more than Rs. 1800 Crore in 2011-12 and the coverage of treatments increased from 163 identified treatments in six specialties to 942 procedures in 31 specialties[59]. Since division of the state, the two successor states of Andhra Pradesh and Telangana have continued to implement the programme, and have progressively increased the coverage. The Telangana government expanded the financial coverage of the programme from Rs two lakh, removing the cap on the cost of treatment[60]. The coverage goes up to Rs 10 lakh for some high end procedures[61]. Two to three lakh in-patients are treated in Telangana every year[60]. During 2020-21, nearly 2.5 lakh therapies were conducted at a cost of about Rs 577 crores, out of which 1,63,799 were in private hospitals and 83,113 were in government hospitals in the state[61].

With respect to Andhra Pradesh, after the division, the government enhanced the financial coverage from Rs. 2.00 Lakhs to 2.50 Lakhs per family per annum, adding a hundred procedures. In 2019, Aarogyasri coverage in Andhra Pradesh was increased upto Rs 5 lakh per family per annum and the state programme was integrated with the national programme Ayushman Bharat – PMJAY. Further, since 2019, Arogyasri coverage has been expanded to all the households with annual income of less than Rs. 5 lakh per annum thereby effectively covering the middle-class families of an income of Rs. 40,000 per month and all cases where the medical expenses cross Rs. 1,000[62]. One thousand such new procedures were identified and piloted in West Godavari district, and 200 identified procedures were added in 12 other districts with effect from March 2020[63]. As of 2021, a total of 2436 therapies are covered under the programme[64]. For the benefit of the families living in the bordering districts, 130 hospitals have been empanelled under the programme from the neighbouring states of Telangana, Karnataka and Tamil Nadu in 2019. About five lakh patients are now being treated annually under Aarogyasri in Andhra Pradesh. In 2020-21, therapies were pre-authorised in 7.58 lakh cases, and 5.33 lakh inpatients were treated under the programme in the state[65].

Tables 5.4 and 5.5 show an overview of the programme features, budget, and progress across Andhra Pradesh and Telangana.

Table 5.4: Aarogyasri Program Overview in Andhra Pradesh and Telangana

Item	Andhra Pradesh	Telangana
Programme Coverage		
BPL Families Covered (in lakh)	137	77
Therapies Covered	2436	949
Follow-up Procedures (one year post discharge date)	138	126
Financial Coverage per family per year	Up to Rs. 5 lakh	Rs. 2 lakh to Rs. 10 lakh
Hospitals Empanelled		
Government Hospitals	683	98
Private Hospitals	974	238
Health Camps Conducted		
Period	Between 2014-2021	Since 2014
Camps Conducted	5512	1174
Patients Screened	14,39,220	8,55,609
Patients Treated		
Therapies Preauthorized (in lakh)	Jun 2014 - Oct 2017: 14.08 *2018-19: 22.35 2019-20: 6.88 2020-21: 7.58	Since Jun 2014: 20.8
In-Patients (in lakh)	*2018-19: 13.97 2019-20: 4.41 2020-21: 5.33	Since Jun 2014: 21.1
Out-Patients (in lakh)	NA	Since Jun 2014: 31.6
Integration with Ayushman Bharat – PMJAY		
Year Integrated	2019	44317
Beneficiaries Identified (in lakh)	55.3	-

* Numbers for 2018-19 are unusually high since many treatments including child births have been included.

***Source**:*
Andhra Pradesh
1. Programme Coverage and Health Camps Conducted – Socio Economic Survey 2020-21, Government of Andhra Pradesh, pg. 201.
2. Hospitals Empanelled – Official Aarogyasri Website available at ysraarogyasri.ap.gov.in.
3. Patients Treated – Socio Economic Survey 2017-18 (pg. 177), 2018-19 (pg. 9), 2019-20 (pg. 336), 2020-21 (pg. 357), Government of Andhra Pradesh.
4. Integration with PMJAY – Andhra Pradesh State Health Profile, National Health Authority, October 2020.
Telangana
5. Programme Coverage – Socio Economic Outlook 2020-21, Government of Telangana, pg. 115.
6. Hospitals Empanelled, Health Camps Conducted, and Patients Treated – Official Aarogyasri Website available at aarogyasri.telangana.gov.in.
7. Integration with PMJAY – "State signs MoU with NHA for implementing Ayushman Bharat", Special Correspondent, The Hindu, 18 May 2021

Table prepared by Foundation for Democratic Reforms.

Table 5.5: Aarogyasri Program Budget				
Year	Andhra Pradesh		Telangana	
	Expenditure in Rs. Crore	Cost per capita in Rs.	Expenditure in Rs. Crore	Cost per capita in Rs.
2014-15	**500	92.76	**161	41.82
2015-16	**500	92.76	**123	31.95
2016-17	*1301	241.37	***344	89.35
2017-18	*1300	241.19	*276	71.69
2018-19	*1300	241.19	*621	161.3
2019-20	*1579	292.95	*720	187.01
2020-21	**1377	255.47	**720	187.01

* Accounts; ** Revised Estimate; *** Budget Estimate.

Note: UIDAI Population Estimates as on 31st December 2020 were used to calculate the cost per capita - Andhra Pradesh: 5.39 crore and Telangana: 3.85 crore.

Source:
1. Andhra Pradesh Budget Estimates Volume III/8 – years 2014-15 to 2021-22.
2. Telangana Budget Estimates Volume III/8 – years 2014-15 to 2021-22.

Table prepared by Foundation for Democratic Reforms.

There are significant trends in the coverage of Aarogyasri in both states:

1. The coverage of interventions has been significantly increasing over the years.
2. 85 percent or more of the total population is covered under the single-payer risk pooling insurance programme, irrespective of the norms of the poverty line.
3. As the Below Poverty Line (BPL) ration card is the basis for Aarogyasri coverage, there has been a great demand for those ration cards so that the families get health coverage under the programme.
4. The number of patients who received treatment and the expenditure on the programme have been constantly increasing. The programme started with an annual expenditure of Rs 160 crore in 2007-08 in the then Andhra Pradesh, and the total expenditure in the two successor states is of the order of Rs 2100 crore in 2020-21.
5. About 80 percent of all the in-patient treatments under Aarogyasri are in private hospitals. Only 20 percent are carried out in the government hospitals. This skewed expenditure in private hospitals is because of several factors including poor infrastructure and overcrowding in public sector hospitals, and preference of patients for private hospitals.
6. The big multi-specialty, tertiary care private hospitals showed considerable enthusiasm for participation in the programme in the early years. However, over time, many such tertiary

care hospitals are opting out of the Aarogyasri programme. This seems to be partly because of delayed payments by governments, and partly because the high-cost tertiary care hospitals find it unremunerative to treat patients within the costs allowed under the programme.

7. In Andhra Pradesh, nearly half of the expenditure every year under Aarogyasri is being incurred on four tertiary care interventions. For instance, in 2020-21, about Rs 220 crore has been incurred on cancer treatment, about Rs 200 crore on polytrauma and orthopaedic interventions, Rs 200 crore on cardiac care and heart surgeries, and Rs 85 crore on cases of renal failure and dialysis[66]. If we exclude tertiary care, the expenditure incurred on secondary care problems is probably 50-60% of the total expenditure under Aarogyasri in Andhra Pradesh[66].

8. Out of the 175 Assembly constituencies in Andhra Pradesh, only 85 have empanelled private hospitals under Aarogyasri in their territory, and in 90 constituencies there are no empanelled hospitals. Over six hundred small nursing homes, each with 30 beds or more, exist in the state[66], but they have not been empanelled in the programme as the current norms prescribe at least 50 beds. Efforts are now underway to relax these norms and empanel small nursing homes.

5.3. A Case for Universal Health Coverage in Secondary Care

The experience with Ayushman Bharat and Aarogyasri shows that we now have the basic infrastructure and framework to be able to scale up effective, universal secondary care coverage. As discussed earlier, we have a network of district hospitals and sub-district hospitals in the public sector. There are more private sector hospital beds in India than beds in the public sector. Competition among the care providers and choice to patients with appropriate checks and safeguards will ensure quality care at affordable cost.

There are many advantages in expanding coverage to all people irrespective of their income. Given the modest incomes and the economic devastation a family faces in case of a catastrophic illness, we cannot limit the coverage of hospital care to only families of low income. Andhra Pradesh and Telangana are already covering about 85 percent of the population. Our poverty line is defined in a very restrictive manner, and any person that can consume 2500 calories of food per head is deemed to to be above the poverty line. Vast numbers of people above the poverty line lead precarious lives at subsistence level. If the vast majority of the population is covered, and a small minority is excluded, the eligibility for coverage has to be based on determining who is entitled to subsidised food with a ration card, or income level of the family. Such linkage with the public distribution system, or income certificate, or other documentation will only make access to healthcare difficult and tortuous. Many poor families may be excluded for want of documentation, while many others who are above the income ceiling prescribed may get the coverage. The problem becomes

particularly acute for the large number of migrant workers from rural to urban areas. While India is largely rural, there is rapid urbanisation and mass migration to urban areas seasonally or permanently in search of jobs and better quality of life. Most poor migrant workers will be excluded from targeted healthcare coverage programmes for want of proper documentation.

There are several compelling arguments in favour of universal health coverage. First, exclusion of families on means criteria is cumbersome and complex, and our experience shows there are always errors in documentation. Second, healthcare should be regarded as a right, and it should be the primary duty of the State along with rule of law, infrastructure, basic amenities and quality education. Any rationing of healthcare services will undermine overall public welfare, productivity and economy. Third, services targeted only for the poor tend to decline in quality over time. A service will improve significantly when the vocal sections of the population have stakes in it. Therefore, inclusion of middle classes will improve quality of delivery.

However, there are legitimate concerns of the government's budgetary constraints. The publicly funded healthcare delivery system should be affordable and viable in the long term. India's total public health expenditure on healthcare (union + states) is just above 1 percent of GDP. It is unrealistic to assume that we can raise this expenditure to four or five percent of GDP in the foreseeable future. Hospital care is very expensive, and sophisticated, technology-intensive tertiary care costs are particularly high. In modern medicine, cost of interventions at the high end is escalating dramatically, while the marginal utility of such expenditure is very low. If care is not exercised while ensuring efficacy, quality and universal coverage, we may end up with an unaffordable cost escalation depleting the public exchequer. Even extremely prosperous countries like the United States are finding it difficult to allocate resources to meet the escalating costs. In a resource-poor nation, the government has many competing priorities for allocation of resources. Given the deep health crisis impoverishing tens of millions of people and causing unimaginable suffering to untold millions, healthcare should be the highest priority. However, it is important to minimise costs to the exchequer while ensuring quality care and universal coverage.

5.4. Moderating the Cost of a Universal, Single-payer, Insurance-based Secondary Care System

Happily, there are four factors that will moderate costs of secondary care in the Indian situation. First, as Andhra Pradesh data show, almost 50 percent of the Aarogyasri expenditure goes to cover only four tertiary care interventions, viz. cancer treatment; polytrauma and orthopedic interventions, cardiac care and kidney failure and dialysis. While the break-up of expenditure for tertiary care interventions in Ayushmann Bharat is not available, the largest expenditure is being incurred for PTCA, CABG, fracture fixation, total knee replacement and radiotherapy – all tertiary care interventions. Tertiary care is extremely technology-intensive and demands a high degree of skills and resources. We need to provide a framework for high quality tertiary care when needed, at a

moderate cost. The next chapter deals with tertiary care and presents a viable and effective model that reconciles the challenges of quality care with cost control. Once tertiary care is excluded from the single-payer, insurance-based risk pooling secondary care delivery system, the overall cost of the expanded Aayushman Bharat programme dedicated to secondary care will be reduced to manageable levels.

Second, cost of care in private tertiary care hospitals is prohibitively expensive. A modern tertiary care hospital in a big city is highly capital intensive. Given the high cost of land, state-of-the-art infrastructure and sophisticated equipment, the capital cost in tertiary care hospitals is of the order of Rs. one crore or more per bed (Refer to Table 6.1 in Chapter 6). In running the hospital, huge expenditure is involved in servicing the debt, hospital maintenance, drugs and consumables, diagnostics, and high cost of extremely skilled professionals. That is why the billing per bed in high-end tertiary hospitals tends to range from Rs 30 lakh to 100 lakhs per year. However most secondary care interventions do not need such costly infrastructure and equipment. Quality secondary care can be provided efficiently in small nursing homes with appropriate facilities. These small private nursing homes operate with 20-30 beds, an operation theatre, a labour room and oxygen facilities, and with two or three physicians – typically a physician, a general surgeon and an obstetricians and gynecologist – assisted by nursing staff. Such small nursing homes have been the mainstay of private healthcare in semi-rural areas and small towns, and even in cities for decades. They provide quality care including abdominal surgeries at affordable cost as infrastructure costs are kept low, and wage structure in small towns is lower than in big cities.

With the advent of huge investment in private tertiary care hospitals in big cities, small nursing homes are losing their importance. High quality infrastructure, sophisticated diagnostics, and multi-specialty care are luring many patients to these hospitals in big cities, often from distant rural areas and small towns. As the cost structure and billing in these expensive private tertiary care hospitals are inevitably high, most patients cannot afford the medical care costs and are economically on the verge of ruin. And yet the inexorable process of replacing small rural and small-town nursing homes by big-city tertiary care hospitals is continuing unchecked, reducing access to people in villages and small towns and dramatically increasing cost of care.

Quality secondary care can be provided economically in small towns if we make small nursing homes the mainstay of secondary care delivery. This will ensure coverage of the whole spectrum of secondary care interventions at affordable cost and improve access. All necessary steps should be taken to ensure that the required facilities are available and appropriate standards of care and protocols are observed. Such a policy reduces OOPE on account of travel, lodge and board for all rural and small town population seeking hospital care. It will also encourage more doctors and healthcare workers to spread into small towns where professional satisfaction, public recognition and economic incentive are available in a publicly funded, small nursing-home driven single-payer secondary care insurance programme.

The third factor that will keep hospital care costs under control is a robust primary healthcare system with the FP acting as a referral gatekeeper. Through an effective FP system, most infections can be prevented, or diagnosed quickly and treated appropriately before they become serious, life-threatening illnesses. Similarly, in an effective primary care system, most NCDs will be screened and early diagnosis is made. Appropriate management of NCDs at the primary care level will ensure maintenance of good health, and prevent or minimise catastrophic illness needing sophisticated and costly interventions. As the old adage says, a stitch in time saves nine. World over, an effective public health and primary care system has improved health, prolonged lives and reduced costs of hospital care. The model presented in this paper envisages a robust, effective, accessible, economical, viable primary care system. Such a model will keep the costs of universal secondary and hospital care relatively low.

The fourth factor that will reduce the burden on the exchequer on account of universal hospital care is our socio-economic structure. A large number of organised workers who already have health coverage under the Employees State Insurance (ESI) programme, and the high-income middle classes, professionals and self-employed people will most likely depend on their own insurance programmes. Given the dependence of a large proportion of population on private hospitals for decades, and the rapid growth of private sector healthcare institutions and health insurance industry, about 20-25% of the population will probably continue to avail healthcare on their own. ESI now covers 3.41 crore families and about 13.24 crore population[67]. The employee and employer are contributing to health insurance under the ESI programme. All organised workers under Rs 21,000 monthly income (Rs 25,000 for persons with disabilities) are by law covered under ESI[67], and there are adequate resources mobilised for the purpose of providing comprehensive healthcare to the workers and their families. The higher income workers and other well off sections of society will buy private insurance to suit their needs and preferences.

Broadly, the health insurance sector can be classified into government sponsored health insurance, which includes programmes such as PMJAY, ESI, Central Government Health Scheme (CGHS) and other union and state insurance programmes; and privately funded group health insurance (other than government sponsored), and individual health insurance. Table 5.6 shows the number of people covered yearly under each type of health insurance from 2015 to 2020. In 2019-20, 13.24 crore people were covered under ESI, 13.67 crore people under various private individual and group insurance programmes and 0.36 crore people under CGHS. There are also group insurance programmes for government employees in various states. Excluding the coverage of government employees in states, as of 2019-20, a total 27.27 crore employees have proper health insurance coverage under ESI, private individual and group insurance programmes and CGHS.

Table 5.6: Health Insurance Coverage in India by Type (in Lakhs), 2015-2020					
Type of Insurance	**2015-16**	**2016-17**	**2017-18**	**2018-19**	**2019-20**
*Government Sponsored Programmes for the Poor and Low Income Groups (excluding ESI & CGHS)	1876 (52%)	2079 (48%)	2229 (46%)	2182 (46%)	2259 (45%)
Employee State Insurance (ESI)	828 (23%)	1240 (28%)	1332 (27%)	1356 (29%)	1324 (26%)
Central Government Health Scheme (CGHS)	29 (0.8%)	31 (0.7%)	32 (0.7%)	33 (0.7%)	36 (0.7%)
**Group Insurance Programmes excluding Government Sponsored Programmes	570 (16%)	705 (16%)	894 (19%)	728 (15%)	935 (19%)
Individual Policies issued by General and Health Insurers	287 (8%)	320 (7%)	333 (7%)	421 (9%)	432 (9%)
Total Persons Covered	**3590**	**4375**	**4820**	**4720**	**4986**

Note:
* Government sponsored programmes include PMJAY, ESI, CGHS and other minor union and major state govt. insurance programmes such as Aarogyasri (AP & TS), Karunya Health Scheme (KL), Yeshasvini Health Insurance (KA), Chief Minister's Comprehensive Health Scheme (TN) etc. In this table, the number of persons covered under ESI and CGHS have been given separately.
** According to IRDAI, most group insurance programmes pertain to employer-employee groups. Non-employer-employee groups like employee welfare associations, holders of credit cards issued by a specific company, customers of a particular business where insurance is offered as an add on benefit, borrowers of a bank, professional associations or societies may also be treated as a group.

Source:
Government sponsored, group insurance and individual policies
1. Annual Report of Insurance Regulatory and Development Authority India, 2018-19, (pg 49), 2019-20 (pg. 58).
Employee State Insurance
2. ESI Annual Report, Ministry of Labour and Employment 2015-16, (pg. 7); 2016-17, (pg. 5); 2017-18, (pg. 5); 2018-29, (pg. 5), 2019-20, (pg. 5).
Central Government Health Scheme
3. National Health Profile 2020, Ministry of Health and Family Welfare, Government of India, (pg. 275).

Table prepared by Foundation for Democratic Reforms.

India's health insurance sector is diversifying and growing rapidly. A variety of private insurance programmes, growth of high-end private hospitals, and preference of better off sections for private care through insurance or OOPE will together account for a significant proportion of people depending on private coverage without government support. With economic growth and rising prosperity, the number of families depending on private insurance will increase further.

It is realistic to assume that about 20-25% of the population fall under these categories of ESI coverage, CGHS, private health insurance, premium insurance programmes for the wealthy, and OOPE of the wealthy. Given the large size of private healthcare in India and its rapid growth, such a trend of private funding of healthcare by those who can afford will also encourage continued growth of a robust private sector. This will encourage innovation and competition and promote quality care. India is already emerging as a global health service hub, and given our cost and quality advantages, this process will allow growth of the private sector and creation of jobs in the health sector, without burdening the poor and middle classes in the country. These well-funded insurance

programmes will address the healthcare needs of about 20-25% of the population, and to that extent the burden on government funded universal healthcare will be reduced.

Thus, a combination of segregating tertiary care from single-payer insurance-based secondary care on PPP model, greater reliance on small nursing homes for affordable, quality secondary care, a robust, effective primary care system reducing dependence on hospitalisation, and continued encouragement and incentives to ESI programme and private insurance, will moderate the burden on the exchequer. Such a cost effective secondary care model will address the needs of all people while ensuring quality. Private sector growth will continue to meet the demand from the better off sections and from outside India.

Principles that should govern government funded single-payer insurance based secondary healthcare –

1. Universal coverage for all secondary care services.
2. Referral from primary care network as a precondition for hospital care except in emergencies.
3. The CHCs and small private nursing homes as the key providers of secondary care.
4. Choice of the hospital lies with the patient, and there is competition among multiple private and public providers.
5. Pooling of diagnostics of CHCs and District Hospitals.
6. Segregation of tertiary care and dedicating the single-payer system exclusively to secondary care.
7. Cashless diagnostics, treatments, and post-operative care.

5.5. Proposed Features of the Universal, Single-payer, Insurance-based Secondary Care System

In order to derive full benefits of secondary care based on a risk pooling, single-payer PPP system, the following steps would be helpful.

1. As a rule, hospital care should be available under the programme only upon referral by the FP, except in emergencies (refer to Chapter 4 for more details).
2. Transport assistance may be provided to sick patients. Already, in several states, the government is providing free ambulance services run by EMRI (Emergency Management and Research Institute) or other non-profit organisations. EMRI is a not-for-profit organisation operating in the PPP mode, providing comprehensive and speedy emergency management services in India. Launched in 2005 in Hyderabad, it is currently operational in 17 states and UTs, with 12,420 ambulances[68] (including 108 emergency response ambulance services and 102 mother and child ambulance services under the government scheme –

Janani Shishu Suraksha Karyakaram (JSSK)) responding to over 20,000 emergencies and over 30,000 JSSK beneficiaries per day across the states[69]. Such emergency response services may be expanded to all states and strengthened to improve access to hospital care.

3. At the District Hospital and CHC level, certain diagnostic services may be pooled. For instance, it will be uneconomical for every small nursing home to purchase and maintain a CT scanner. If such facilities are available in the public hospitals, all empanelled hospitals in the area can avail the services for a fee.

4. Additional investments may be needed in District Hospitals and CHCs so that they are adequately equipped with diagnostic and therapeutic services. Since Ayushman Bharat is a single-payer insurance programme, there is a revenue stream available for services rendered. Therefore, the equipment will pay for itself, provided the public hospitals can compete and attract patients. Also, by pooling diagnostics and providing services to empanelled private hospitals for a fee, revenue can be generated. Therefore, private funding may be encouraged for such capital investment with an assured return of, say 8-10% interest. The government may create tax and other incentives to make such investment in public hospitals attractive. The maintenance of equipment also can be entrusted to the investors who have stakes in its proper functioning. Such innovative methods will minimise the capital cost burden on the government, reduce the time lag in equipping the hospitals fully, ensure efficient allocation of resources, and provide for their economic utilisation. This will also strengthen the public hospital system as competition and choice will determine patient preferences and create incentive for quality care.

5. As far as practicable, the CHCs should be the hospitals in the public system providing secondary care along with small private nursing homes. This would ensure cost-effectiveness for the government and encourage competition and choice in hospital care. CHCs are 30-bedded hospitals that are designed to act as both block level health administrative units and gatekeepers for referrals to higher level facilities. They provide specialist care in medicine, obstetrics and gynecology, surgery, paediatrics, dental and AYUSH. India has around 5649 CHCs (5183 rural and 466 urban)[56], at almost a CHC for every 2,40,000 population. In addition, there are 1234 sub-district[2] (sub-divisional) hospitals in the country with a varying strength of number of beds ranging from 31 to 100 beds, providing emergency obstetrics care and neonatal care. However, most of the secondary care services in the public sector are currently delivered at the 756 District Hospitals[2] across the country, as many of the CHCs and sub-district hospitals are inadequately equipped and staffed. Until the CHCs are adequately equipped and resourced, District Hospitals may play a key role. But progressively CHCs should be strengthened, and District Hospitals should be dedicated to tertiary care.

6. Small private nursing homes are in a unique position to operate successfully at relatively low costs in rural areas and small towns. In many states there are a large number of such small

private nursing homes existing. For instance, there are over 600 such nursing homes with at least 30 beds across Andhra Pradesh[66] and over 1000 in Telangana[70]. A well-run single-payer model secondary care programme will encourage many more doctors to establish such nursing homes. Private participation in the public insurance programmes should be largely limited to these small nursing homes. Expensive and capital intensive diagnostics can be pooled in CHCs and other public hospitals to ensure economies of scale, cost reduction and rational use of diagnostics. Over time, as a rule, all secondary care services should be delivered under the single-payer system by the CHCs and small empanelled private nursing homes. Teaching Hospitals and District Hospitals should focus on quality tertiary care at economic cost as outlined in the next chapter.

As a country, we have already gained experience in addressing the challenges of single-payer systems and risk pooling in hospital care. Ayushman Bharat and Aarogyasri are very successful and hugely popular. This experience should be leveraged to improve systems and procedures, establish protocols for patient care, monitor quality of care, review cost effectiveness, and issue periodic technical guidance to care givers in the form of protocols for diagnostics, patient care and therapeutics based on best scientific evidence. Hospital care is complex and management of many diseases is constantly evolving. Therefore, at the state and national levels, specialised expert teams should constantly monitor the medical, administrative and financial aspects of care.

5.6. Estimated Cost of Secondary Care

The Aarogyasri programme expenditure in Andhra Pradesh serves as a template for estimating the cost of the proposed model of secondary level hospital care. In the year 2019-20, the year of highest expenditure so far, Andhra Pradesh, with a population of 5.4 crore, spent Rs 1,579 crore on Aarogyasri, covering 2,436 interventions including both secondary care and tertiary care. A detailed analysis of expenditure shows that about Rs 700 crores of this expenditure, or about 44 percent was incurred on tertiary care interventions – viz. cancer treatment, polytrauma and orthopaedic surgeries, cardiac care and heart surgeries, and kidney failure and dialysis. In our model, tertiary care will be dealt with separately with adequate provision of resources in Teaching Hospitals and District Hospitals as outlined in the next chapter. Excluding the tertiary care costs, the expenditure incurred for secondary care services for 85 percent of Andhra Pradesh population in 2019-20 was Rs 879 crores. The per capita expenditure for secondary care comes to Rs 192. Expanding the coverage of secondary care to the whole population will cost about Rs 1035 crores. If we add 25 percent additional costs for more services to be covered, and higher costs to be allowed where needed, the cost of secondary care for 5.4 crore population will be of the order of Rs 1300 crores or Rs 240 per capita.

Extrapolating these numbers, the annual cost of secondary care in a single-payer insurance based programme with PPP will be of the order of Rs 33,000 crore for the whole country, assuming that

the whole population will utilise the services under the programme, and allowing 25 percent additional cost for new services to be added, and higher cost for interventions where needed. In reality, there are 27.27 crore people covered by ESI, private insurance and CGHS. Excluding these categories, and considering the propensity of the better-off sections of our society to seek premium private care, the population that will actually depend on Ayushman Bharat secondary care will probably peak at 110 crore or 80 percent of the population. Assuming 110 crore people will avail the services, the annual expenditure will be of the order of Rs 27,000 crore.

Table 5.7: Secondary Care Cost Estimates

Andhra Pradesh Aarogyasri Program Expenditure		
A	Total Andhra Pradesh Population	5.4 crore
B	% of Andhra Pradesh Population Covered under Aarogyasri	85%
C	Highest Expenditure on Aarogyasri so far (2019-20)	Rs. 1579 crore
D	Cost of Tertiary Care Interventions (approx.)	Rs. 700 crore
E	Cost of Secondary Care for 85% of Population = C - D	Rs. 879 crore
F	Expenditure on Secondary Care per capita = A / E	Rs. 192
G	Cost for Total Andhra Pradesh Population = A x F	Rs. 1035 crore
H	Estimated Total Expenditure on Secondary Care with 25% Additional Cost Allowance = G + 25% x G	Rs. 1293 crore
I	Estimated cost per capita	Rs. 240
Estimated Ayushman Bharat – PMJAY Expenditure for India		
J	Total India Population	140 crore
K	Cost of Secondary Care for Total India Population = F x J	Rs. 26,800 crore
L	Estimated Total Expenditure on Secondary Care with 25% Additional Cost Allowance = I x J	Rs. 33,600 crore
M	* Estimated Actual Expenditure = 80% x L	**Rs. 26,800 crore**

Note:
* Assuming only 80% of the population avails services under the programme.

Source:
1. Andhra Pradesh Budget Estimates 2021-22, Volume III/8.

Table prepared by Foundation for Democratic Reforms.

Therefore, the present risk pooling model adopted by the union and states such as Andhra Pradesh can be improved and expanded to cover all citizens for secondary level hospital care, excluding high-cost tertiary care. This single-payer, competition based PPP model for secondary care should be accomplished simultaneously by systematic and time-bound action to substantially improve the infrastructure and services in the public sector Teaching Hospitals and District Hospitals. Then the secondary care needs will be fully met by the PPP model in the CHCs and small private nursing homes. High quality tertiary care needs will be met for all in public tertiary hospitals at a moderate

cost to the exchequer. Since the rich and salaried sections will, by choice, avail private services, the private sector will not be stifled. Such a model will provide good quality hospital care for the benefit of the poor and middle-income groups at moderate cost to the public exchequer. Eventually, a small co-payment for hospital care may be introduced in the model to ensure voice to the customer and accountability, minimise hospital stay and to encourage cost-controlling behaviour. While rolling back from an existing free programme may be politically challenging, once the system affords quality care to patients and overall health and productivity of the country is improved, such a system of modest co-payments may be introduced. In any case all indigent patients, of upto 10 percent of the total number treated, should be exempted from all co-payments. The principle should be that no patient will be denied care for want of money.

CHAPTER 5

TERTIARY CARE

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 care and cardio-thoracic surgeries, polytrauma and joint surgeries, multi-system diseases, cancer treatment, neurosurgery etc. Tertiary care can be availed in tertiary level hospitals, both government (District and Public Teaching) hospitals, apex multi-specialty institutes and private or corporate hospitals. The treatments in tertiary hospitals are more advanced, involving high-end diagnostic support services, sophisticated surgical procedures and complex operations and interventions by specialised medical personnel.

Modern tertiary healthcare is extremely expensive. A modern, sophisticated, multi-specialty hospital has three high-cost requirements – good quality 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.

Most disease burden is a consequence of failure of preventive and public health care. Therefore, without improving preventive and primary healthcare, we cannot improve the health of the people. However, the credibility of a preventive and primary health system depends on the quality of hospital care that is available for those who need hospitalisation. Moreover, no matter how good preventive care is, some people are bound to fall sick and sickness has catastrophic consequences to the family's finances, reduces productivity of the individuals and impedes economic growth. Therefore, despite great risk of tremendous cost escalation in tertiary care without commensurate health outcomes, it is imperative to provide quality tertiary care to all, while ensuring it is affordable to the public as well as cost-effective for the government.

6.1. Cost of Private Tertiary Care

Table 6.1 shows average cost per year per operational bed in private tertiary hospitals in India, which is around one crore rupees. With a capital cost of about one crore rupees per bed, and an annual billing requirement of one crore rupees 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. Once the private sector makes huge investments in tertiary care facilities and incurs enormous maintenance costs for services, equipment and personnel, the venture can only be sustained with high billing and returns. The financial incentive inevitably drives the system in the direction of excessive, sophisticated diagnostics and high-cost, low-impact treatments. Underfunded and inadequate hospital care in the public sector is driving people to the

overcapitalised, expensive, private tertiary hospitals. In the absence of competition, accountability, effective regulation and robust institutions, there are serious complaints of overtesting, overtreatment and overbilling in private sector tertiary hospitals. Even when the hospital observes all professional and ethical standards, the cost of tertiary care in the private setting is bound to be high, given the explosion of high cost technology and equipment, and high capital cost of establishing a hospital. By the very nature of tertiary care, the outcomes are not always satisfactory to the patients. As a result, families are devastated economically and emotionally, and mistrust between the public and the medical profession is growing.

Public health insurance for tertiary care merely transfers these costs to the public exchequer, without commensurate improvement in healthcare. Our public health expenditure is now just above one percent (1%) of GDP. Even with determined efforts, it may not exceed 2.5 to 3% of GDP in the foreseeable future. The United States spends about 18 percent of GDP on healthcare, and about 9 percent of GDP is public expenditure. Even at that extraordinary scale of expenditure, millions are suffering for want of health coverage in a private-sector driven, insurance based healthcare system. Therefore, health insurance – private insurance or single-payer, government funded insurance – cannot address growing challenges of tertiary care in India at an affordable cost.

Figure 6.1: Average Cost Per Operational Bed of Listed Private Tertiary Hospitals in India (All values in Crore for Financial Year 2019)

Hospital	Total Revenue	Total Cost	Total Cost (Excluding Finance Cost & Rent Cost)	ARPOB	ACPOB	ACPOB (Excluding Finance and Rent Costs)
Shalby Ltd.	460.78	420.20	409.43	1.1	1.00	0.98
*Apollo Hospitals Enterprise Ltd.	4,450.62	4,210.26	3,926.66	1.3	1.23	1.15
Narayana Hrudayalaya Ltd.	2,077.10	1,888.30	1,792.76	1.0	0.91	0.86
HealthCare Global Ltd.	640.5	641.41	570.57	1.2	1.20	1.07
Aster DM Ltd.	594.78	628.89	601.79	2.1	2.22	2.12
Fortis Ltd.	642.96	998.00	795.47	1.5	2.34	1.87
Fortis Malar Ltd.	144.59	151.92	151.19	1.7	1.77	1.76
			Median	**1.3**	**1.23**	**1.15**

ACPOB: Average Cost Per Operational Bed.
ARPOB: Average Revenue Per Operational Bed.

Note:
1. Only Standalone values have been considered for Financial Information.
2. Only Operational Revenue has been considered for all entities.
3. The Average Cost Per Operational Bed has been calculated by using the following formula: ACPOB = (ARPOB/Total Revenue) x Total Cost
4. 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 proportionally adjusted.

Source:
1. Hospital Annual Reports (Financial Year 19).
2. ICICI Direct Healthcare Sector Report, 10 December 2019.

Table prepared by Foundation for Democratic Reforms.

With the private sector currently catering to the needs of 75 percent of the population[18] and NCD burden on the rise, the experience from the United States clearly shows that the cost of risk-pooling initiatives such as Ayushmann Bharat in tertiary care is bound to spiral out of control. As discussed in Chapter 3, spiralling costs in private funded insurance models are due to cream skimming and adverse selection. Information asymmetry and the insurer's inability to monitor adequately can result in over-diagnosis, overtreatment, and a culture of unethical practices that have become a menace in the United States, despite the existence of robust institutions and culture of accountability. In addition, collusion of the insurer with the provider can transfer excessive premium burden on the patients. It is important to learn from the failures of the American system and avoid the perils of an exploding healthcare budget without significant improvement in the health of the people. The United Kingdom model of a largely public sector driven hospital care provides hope for better cost-effectiveness. Hence, the need of the hour is to improve 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.

6.2. Public Tertiary Care in India

Excessive reliance on health insurance as a means of healthcare delivery is neither prudent, nor economical, as it will only address the symptoms of failure of public health, without reducing the disease burden. Most of the disease burden is a consequence of failure of primary care. Private tertiary care with public funds will eventually drain most public health budgets at the cost of primary and preventive care. Failure of preventive health will only escalate costs of curative medicine. 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. As pointed out earlier, the marginal utility of expenditure incurred in tertiary care is much lower than the same expenditure in primary and secondary care. While families may be relieved of the economic burden of treatment costs, the public exchequer will soon be depleted without any significant improvement in the overall health outcomes in the country. Instead, India needs to devise risk pooling models in tertiary care primarily involving public sector institutions. In a model where money follows the patient and public hospitals and healthcare professionals are partially rewarded on the basis of services delivered, the incentives will be dramatically altered, and service will improve. Such risk pooling will strengthen the public sector while providing relief for the poor.

However, a major impediment to having a public sector driven tertiary care system is the underfunding and overcrowding of public facilities in India. Table 6.2 shows that public hospitals see 500 to over 10,000 out-patients a day! The wages of highly skilled doctors, nurses and other personnel are very low, and working conditions are abysmal. This has led to increasingly poor infrastructure, diagnostics, interventions and treatment, low public trust and flight of talent to the private sector.

Table 6.2: In-patient and Out-patient Data of Select Public Hospitals

Name of the Public Hospital	Location	Beds	Period	In-Patients	Out-Patients
All India Institute of Medical Sciences	New Delhi	2,792	2017-18 2018-19 2019-20	2,45,565 2,54,605 2,68,144	43,55,338 38,14,726 44,14,490
Post Graduate Institute of Medical Education and Research	Chandigarh	1,948	2017-18 2018-19 2019-20	96,626 98,710 98,512	27,25,183 28,76,257 28,36,280
All India Institute of Medical Sciences	Bhubaneshwar	980	2016-17 2017-18 2018-19	15,336 18,026 20,179	4,26,014 5,64,160 7,11,849
All India Institute of Medical Sciences	Bhopal	960	2015-16 2016-17 2017-18	2,337 3,218 7,058	2,69,246 2,69,726 3,99,108
Christian Medical College	Vellore	2,476	2015-16 2018-19 2019-20	1,10,086 1,09,528 1,09,178	20,24,938 22,46,664 22,99,687
King Edward Memorial Hospital	Mumbai	2,250	2018 2019 2020	84,252 88,390 50,854	20,77,146 20,91,169 9,80,962
Silchar Medical College Hospital	Barak Valley	1,256	2016 2017 2018	49,666 52,353 54,574	4,05,603 4,23,215 6,21,697

Source:
1. In-Patients and Out-Patients – Hospital Annual Reports.
2. Beds – National Health Profile 2020, Ministry of Health and Family Welfare, Government of India, pg. 387-408.

Table prepared by Foundation for Democratic Reforms.

FDR studies of several Teaching and District Hospitals in Andhra Pradesh reveal a picture of underfunding and understaffing, and yet by an objective measurement, good value for the money spent. As discussed above, a high-end territory care private hospital can survive only with a billing of Rs. 50 lakh to one crore per bed per year. However, the total expenditure of teaching hospitals in the public sector is typically eight to ten lakh rupees per bed per year[71]. The government tertiary hospitals often have 30%-50% 'excess' beds beyond sanctioned capacity. These 'beds' are created to meet the burgeoning demand. If cost estimates are based on the actual beds in use in the hospitals, the expenditure in many cases comes up to somewhere between six to eight lakhs per bed per year[71]. This paltry amount includes all costs of the 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 moderate to low prices prevailing in the private sector, shows that these public hospitals are rendering services valued at four rupees 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. Public tertiary hospitals are often criticized for good reasons for the overcrowding,

shortages and unsanitary conditions. However, considering the underfunding, understaffing, poor equipment, and inadequate autonomy in managing the hospital, the outcomes are far in excess of what can be expected with the meagre resources allocated to them. Table 6.3 shows that the average expenditure per hospitalisation case is six to seven times greater in a private hospital compared to a public facility. Therefore, it is far more economical for the exchequer to provide free tertiary medical care at public hospitals while assuring quality of care and outcomes, rather than funding private tertiary hospital care for the patients where costs cannot be controlled. Rational application of medical principles and resource pooling are possible in the public sector allowing minimisation of cost. 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.

Table 6.3: Average Medical Expenditure per Hospitalisation Case in Rs (excluding childbirth)

Type of Institution	Area	Total Average Expenditure	OOPE	OOPE as a % of Total Average Expenditure
Public Hospital	Rural	4,290	4,072	94.9
	Urban	4,837	4,408	91.1
	Total	4,564	4,240	92.9
Private Hospital	Rural	27,347	26,157	95.6
	Urban	38,822	32,047	82.5
	Total	33,085	29,102	88.0
Charitable/ Trust/ NGO-run Hospital	Rural	21,599	20,658	95.6
	Urban	28,215	24,180	85.7
	Total	24,907	22,419	90
All	Rural	16,676	15,937	95.6
	Urban	26,475	22,031	83.2
	Total	21,576	18,984	88.0

Note:
1. Expenditure, in a case of hospitalisation, was calculated including bed charges, doctor's/surgeon's fees, total amount paid for medicines, diagnostic tests, attendant charges, physiotherapy, personal medical appliances, and blood, oxygen, etc. during stay at the hospital (within the reference period of last 365 days).
2. Expenses on transportation of the patient to or from the hospital were excluded, and so was expenditure on food.
3. Government/Public institutions include HSC/PHC/CHC/mobile medical unit, public hospitals, etc.
4. Out-of-pocket medical expenditure is the difference between total medical expenditure and reimbursement for treatment per hospitalisation case during the last 365 days.

Source:
National Health Profile 2020, Ministry of Health and Family Welfare, Government of India, pg. 259, 261.

Table prepared by Foundation for Democratic Reforms.

6.3. A Viable, Public Sector driven Tertiary Care Model

There are four major problems plaguing our public sector tertiary care hospitals that need to be addressed while operationalising a viable tertiary care model. First is inadequate funding. As explained above, even teaching hospitals spend only around ten lakh rupees per bed per year, and this cost includes all hospital services, maintenance, wages and running of medical and nursing colleges. By any objective analysis, a sum of around Rs. 2500 per bed per day is hopelessly inadequate to provide quality tertiary care. Modern diagnostics like PET scanner, MRI machine, CT scanner etc are extremely expensive to purchase and maintain. Certain machines for sophisticated therapeutic interventions like stereotactic radiotherapy cost as much as establishing a medium sized industry. All this costs money. Similarly consumables, drugs and blood products cost money. Once diagnostics and drugs are not available in the public hospital, the patients have to spend money out-of-pocket to procure them from the private sector even as they are inpatients in the public hospital. This adds to the financial burden greatly, and undermines the credibility and trust in the public hospital. While we cannot afford to spend one crore rupees per bed per year on par with private tertiary hospitals, a reasonable allocation of resources and their prudent and economic utilisation will vastly improve care in public tertiary hospitals. As explained above, public hospitals give excellent value for the money spent. Even if the allocation per bed in the tertiary sector is doubled, the cost will still be only one-third to one-fifth of most private tertiary care hospitals, even after including the cost of medical and nursing education. However, the economies of scale and pooling of diagnostics and other resources will allow vast improvement of tertiary care in government hospitals if the average allocation is increased to Rs. 20-25 lakh per bed per year. This number encompasses many services whose delivery is affected by inadequate funding – staffing, sanitation, clinical laboratories, nursing, diagnostics, drug supplies, consumables, operation theatre maintenance etc.

The second challenge public sector tertiary hospitals face is inadequate equipment and machinery, and poor maintenance. Shortage of capital, inadequate budgets, poor hiring practices, and lack of accountability together ensured over the years inadequate equipment needed for modern diagnostics and therapeutics, or when it exists, poor maintenance and disuse. We need to upgrade equipment and machinery in all Teaching Hospitals and District Hospitals so that they can effectively address the tertiary care needs of our population. This upgradation involves significant one-time capital expenditure. It will be time-consuming to procure machinery and equipment, hire skilled workers to maintain them and establish procedures and systems for their smooth operation. Innovative models need to be evolved and implemented to address this challenge speedily and efficiently. In some states, dialysis services have been outsourced in public hospitals. Private entrepreneurs build a state-of-the-art facility including machines and equipment, maintain the facility and provide service under the supervision of the specialist doctors in government. The government pays an agreed price for each dialysis. Such a model is providing valuable service at a moderate cost. Entrepreneurs are willing to invest because in public hospitals there is assured volume of captive business, and establishing the facility in the public hospital will significantly

reduce the cost. The maintenance of machinery also can be entrusted to the entrepreneur, as s/he has the incentive to maintain quality service. Such a Private Finance Initiative (PFI) in public hospitals can be implemented very effectively for various diagnostics and services – dialysis, MRI, CT scan, PET scan, blood and blood products, clinical laboratory services etc. Similarly, services like maintenance of sanitation, diet supply to patients and sterilisation of equipment can be outsourced and monitored for quality. This will give more time for the highly trained, skilled healthcare workers to focus on patient care. Government can easily facilitate bank credit for the PFIs for improvements in tertiary care, and provide tax incentives for such investments. Once an assured revenue stream guaranteeing 8-10% net return is created, it will be an attractive, and safe avenue of investment for many people. The PFI model may prove to be an optimal model to adopt in India. In a developing country with a reasonable expectation of continued high economic growth rates for a few decades, debt servicing for the equipment/facilities created by the PFI model will not pose a significant challenge.

The third challenge public tertiary care hospitals face is the inability to attract the most skilled, highly trained medical specialists. Until the eighties, the best doctors preferred to work in public tertiary care hospitals. But over the past three decades, most highly skilled doctors have shunned public hospitals, and are preferring the state-of-the-art private tertiary hospitals. Higher allocation of resources and better equipment in public hospitals will improve things over time. But they are not sufficient to attract the best talent. Even if there is conscious effort to recruit the best doctors, the monetary incentive in government cannot match the rewards in private hospitals. It takes years for new, young doctors recruited to acquire the skills and experience, and build the reputation to attract patients and make the hospital service credible. Even with the best efforts, it will be very difficult for the best talent to work in a government setting; highly skilled, accomplished professionals seek freedom, flexibility and a non-hierarchical, outcome-oriented environment to practice. However, the opportunity to teach and train young undergraduates and graduates is a great attraction for many reputed doctors. Therefore, by designing flexible models to attract reputed doctors to teach and practice in teaching hospitals – giving them attending privileges, part-time practice in teaching hospitals, remuneration on fee-for-service model and erasing the rigid distinction between government and private in respect of high-end professionals – public tertiary hospitals will benefit in the form of greater credibility, superior services and better training of medical students.

Another PPP model that can be implemented to significantly improve the quality of services in public hospitals is creating a system of independent consultants, who will take up leadership roles in these hospitals on a rotation basis. Similar to the AIIMS and Post Graduate of Institute of Medical Education & Research (PGIMER) models where the hospital generates revenue from private patients, 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. The stay facilities (private room, food, other facilities) will be different in the private block, whereas the treatment avenues (clinics, diagnostic facilities, operating theatres) will be the same as for the free patient. The independent

consultants will be able to engage in private practice with a certain number of beds for a certain number of days and there will be a standardised billing process including operation fees, consultation fees, etc. Such a system of teaching facility, independent work, leadership opportunities and incentivised private work, along with a reasonable remuneration, will attract many private and overseas specialists to join such institutions and sustain them. This will not only bring in revenue into the hospitals and make them competitive, but also improve quality of care.

Finally, a modern, tertiary care hospital cannot be run efficiently or provide quality services consistently in a centralised, bureaucratic setting. Autonomy at the hospital level, flexibility in hiring practices, speedy decision-making to address the day-to-day challenges, freedom to set the goals for the hospital and accomplish them, professional hospital management distinct from patient care, focus on clinical research and academic work, and constant innovation to improve quality of care are all vital to improve efficiency and credibility at an economic cost in a tertiary care hospital. Therefore the present model of high degree of centralisation at state level and antiquated decision-making needs to be completely restructured to provide for autonomy, local decision-making and innovation, subject to effective accountability systems and objective measurement of outcomes and performance monitoring.

Although a market-based private tertiary care model is not fiscally viable, some market elements such as choice and competition may be introduced within the public sector for select interventions in order to improve efficiency, better cost-control and promote specialisation among the public tertiary hospitals. For select interventions and surgeries, a fee-for-service model may be introduced, creating a revenue stream for the hospitals. Such a model will incentivise hospitals to gain expertise, build reputation and improve quality of service provision. 20 percent of the tertiary care funding for the hospitals may be set aside for these interventions on a fee-for-service model. This model will attract talent, incentivise performance, and encourage hospitals to provide specialised care in areas where they have strengths and comparative advantage.

6.4. Estimated Cost of Tertiary Care

There are 810 District Hospitals[56] and 274 Public Teaching Hospitals[56] with a total of about 2.87 lakh beds in the country[56]. The current expenditure per bed is of the order of Rs. 10 lakhs[71]. It is proposed that there should be one premier tertiary care Teaching Hospital per one crore population, serving as a Tier I Centre of Excellence for multi-specialty tertiary care with high-end equipment such as MRI machines, PET scanners, etc., as well as education, training, and research. 140 such hospitals with about 1000 beds each, with an annual expenditure of say Rs. 25 lakh per bed would require an additional investment of Rs. 21,000 crores. The remaining Medical Colleges and District Hospitals can be upgraded as Tier II tertiary care hospitals providing cost-effective services with adequate resource pooling. 1.47 lakh beds across these Tier II hospitals entail an additional expenditure of Rs. 10 lakh per bed, adding up to a total of another Rs. 14,700 crores. The total additional cost of such a

tertiary care model would be of the order of Rs. 35,700 crores. This includes the additional expenditure on account of capital investment as well as operating costs of good quality District and Teaching Hospitals in India. As costly equipment and new facilities are proposed to be installed in a PFI model, there will not be upfront capital outflow for infrastructure. Debt servicing burden of PFIs will be met from the additional fund allocation envisaged at Rs. 15 lakh/bed/year in Tier I hospitals and Rs. 10 lakhs/bed/year in Tier II hospitals.

Currently, patients incur about Rs. 4,500 OOPE per episode of hospitalisation (refer to Table 6.3). A majority of this cost can be attributed to unavailability of diagnostics or drugs at the public facilities, forcing patients to buy them elsewhere. Once public hospitals are sufficiently upgraded with the latest technology and improved drug dispensaries, the OOPE for hospital care in the public sector will be negligible. Then, a nominal charge, of say Rs. 300 per day of hospitalisation at a Tier II hospital and Rs. 500 per day of hospitalisation at a Tier I hospital, may be charged to the patients. Such a co-payment will prevent overuse of hospital care while also giving voice to the patients to demand quality service and ensuring accountability on the part of the hospitals. However, as suggested in respect of the primary and secondary care models, the indigent persons who cannot afford such payment should not be denied service. It should be at the discretion of the service provider to judge the financial capability of the patient and provide the same treatment regardless of the patient's ability to make the co-payment.

Providing quality tertiary care to all citizens is incredibly expensive. With the changing demographic profile, increasing incidence of NCDs, rising comorbidities, and multi-organ involvement in secondary problems resulting in an increase in tertiary level interventions, the demand for tertiary care will only increase. Moreover, rapid advances in medical technology also raise healthcare costs. Therefore, a strong primary and secondary care network and a need-based referral of specific cases to public tertiary hospitals is necessary to keep a publicly funded tertiary system fiscally viable and effective. Further, PPPs to bring in capital investment will allow for better risk management and enhance quality of service delivery. Inevitably, over time the public expenditure in tertiary hospitals will increase with the burgeoning demand. A regular assessment and course-correction is critical to keep the system solvent and effective.

Table 6.4: Tertiary Care Cost Estimates		
A	Number of beds in DHs & PTHs	2,87,025
B	Current total allocation per bed per annum	Rs. 10 lakh
C	Number of beds to be upgraded across Tier I Hospitals	1,40,000
D	Additional cost per bed	Rs. 15 lakh
E	Total additional cost = C x D	Rs 21,000 crore
F	Number of beds to be upgraded across Tier II Hospitals	1,47,000
G	Additional cost per bed	Rs. 10 lakh
H	Total additional cost = F x G	Rs. 14,700 crore
I	Total additional cost (Tier I + Tier II hospitals) = E + H	**Rs. 35,700 crore**
J	Phased over three years, incremental increase of allocation annually = I / 3	**Rs. 12,000 crore**

Note:
The current cost per bed has been estimated based on (i) FDR research in PTHs in Andhra Pradesh and (ii) the Andhra Pradesh DME Budget of 2019. It has been estimated that currently the operational cost of a District Hospital and Public Teaching Hospital bed is Rs 8 to 10 lakhs. If 140 such hospitals with 1000 beds each are converted to Tier I centers of excellence with high-end tertiary care services, the total additional cost will be Rs. 21,000 crores. The remaining DHs & PTHs with 1.47 lakh beds can be converted to Tier II hospitals, requiring an additional expenditure of Rs. 14,700 crores. These costs include basic infrastructure, maintenance & sanitation and salaries, amounting to a total of Rs. 35,700 crores by the end of 3 years, an annual incremental increase of Rs. 12,000 crores.

Source:
1. Total number of beds – Rural Health Statistics 2019-20, Ministry of Health and Family Welfare, Government of India, pg. 180.

Table prepared by Foundation for Democratic Reforms.

OPERATIONALISING THE MODEL – THE ROLE OF THE UNION AND THE STATES

7.1. Overview of the Recommendations

Providing quality healthcare services to the citizens through innovative public and private collaborations, to yield best outcomes at minimal cost to the exchequer, without placing a catastrophic health burden on the country's poor is the goal of the health sector reform. Health and economic prosperity go hand in hand, which makes healthcare one of the key areas of governance. Since private health markets fail to achieve efficient allocation of resources, government involvement in providing affordable and accessible healthcare to all becomes critical. However, higher expenditure does not mean better outcomes. The expenditure must be channelled in a manner where significant outcomes can be achieved at moderate costs. Ultimately, primary, secondary and tertiary care services should be available free of cost or at a modest fee for all citizens. In modern medicine, it is a great challenge to provide quality healthcare to the entire population as healthcare costs continue to rise with improvements in technology and new scientific breakthroughs resulting from medical research. Therefore, the investment must be prudent with focus on building a robust primary care system, where costs are low and outcomes good, while moderating costs at the tertiary care end, where costs are high and outcomes poor.

Given the constrained fiscal space in India, public delivery of healthcare services with PPP model harnessing the strengths of the private sector and effective accountability mechanisms to ensure quality of service provision is the most cost-effective strategy to improve overall healthcare outcomes. Fortunately, despite poverty, we have great advantages relative to our stage of development that make the creation of a robust and effective healthcare system at a moderate cost feasible. Once the more vocal and enlightened section starts utilising the public healthcare services, there will be pressure to improve and maintain quality of services. In actual practice, it is estimated that 70-75 percent of the population will avail these services – including all the poor and a large population of middle-income groups. The rich and salaried sections will, by choice, continue to avail private services. The private sector, which currently caters to a majority of healthcare needs in the country, will not be stifled. Simultaneously, strengthening public healthcare in the country will ensure that the poor and middle-income groups will not be driven to the private sector at unaffordable prices and at great economic cost to families, even as health outcomes improve significantly.

A viable, integrated healthcare system that guarantees quality healthcare services to all, founded on efficient primary and family care, will improve overall health outcomes and reduce financial burden on patients, while remaining cost-effective for the exchequer. A primary care system that acts as a first point of contact for all medical needs of an individual, encourages competition between different practitioners and choice for patients, mandates referrals to hospitals, facilitates coordination between all the levels of care through a health records system and integrates all public

health system measures is fundamental to quality healthcare delivery in India. Ensuring efficient supply of generic drugs and the provision of quality diagnostic services are crucial components of a strong and effective primary care system. Centralised procurement of drugs will ensure drugs can be dispensed to the public at a low cost. PPP in providing advanced diagnostic services will ensure high quality services to the people. Such innovations in drugs and diagnostics will improve patient care, reduce OOPE and increase patient satisfaction. Centralised drug procurement and supply, prescription of ingredients instead of branded drugs, generic drug supply, pooling and outsourcing of diagnostics wherever necessary subject to quality and cost control, and incentivising professionals by introducing fee-for-service model wherever possible – all these practices should be institutionalised across the board at all levels – primary to tertiary.

Additionally, charging a nominal fee for FP consultation, drugs and diagnostics will give voice to the patients, enabling them to demand better quality of services from the provider, prevent overuse of medical services, and ensure cost-effectiveness on the part of the government. Charging a nominal fee, on the face of it, may seem to be a discouraging factor for patients in availing services. However, the benefits outweigh the drawbacks in that due to the improved services in public facilities, people will be discouraged from going to private care providers, by which OOPE will be reduced. The proposed primary care model 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.

With respect to hospital care, the present PPP risk-pooling models such as Ayushaman Bharat and Aarogyasri can be integrated and expanded to cover all citizens, but should gradually exclude sophisticated, high-cost tertiary care interventions, while adding more secondary procedures. Secondary care under the programme can be effectively delivered through CHCs, sub-district hospitals and small private nursing homes in a competitive environment, providing adequate choice to the patient in availing secondary care services. Such a model will provide good quality of secondary care at moderate cost to the public exchequer.

It is imperative that Public Teaching and District Hospitals be significantly improved and converted into Tier I and Tier II tertiary care centres respectively, to match the private sector in quality of service delivery. Simultaneously, the sub-district hospitals and CHCs should be strengthened with better infrastructure, skills and equipment. Given the revenue stream in secondary care for services rendered, equipping these hospitals and pooling costly diagnostics to serve the needs of all secondary care providers with private finance initiatives are eminently feasible. Once this is done, the competition and choice based risk-pooling model for secondary care services can be implemented to full effect in sub-district hospitals, CHCs and small private nursing homes, allowing the District and Teaching Hospitals to focus mostly on tertiary care problems. With reduction in communicable diseases, demographic transition, and rise in the incidence of NCDs, tertiary care needs will progressively increase. With rising comorbidities like diabetes, hypertension, heart disease, chronic kidney disease, pulmonary disease, and autoimmune disorders, even secondary care problems

become tertiary care challenges. Therefore, it is important to have a strong, effective, economical tertiary care system in the public sector.

Excluding tertiary care interventions from the risk pooling mechanisms and delivery of these services at public facilities is a better approach from a fiscal standpoint. This is because public delivery of services will alter incentives and allow rational application of medical principles and resource-pooling across facilities. Increased 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, will significantly improve public tertiary care services at a moderate cost. Once the system is improved and OOPE significantly reduced at public tertiary hospitals, a nominal charge of about Rs. 300-500 per day of hospitalisation may be considered as a means to give voice to the patients, encourage shorter hospital stay, and enforce accountability. A referral based system with the primary care facility as the first point of contact and a strong and effective secondary care delivery are critical to reduce the burden on these hospitals and ensure quality of service in tertiary care. Such a system of hospital care, with a clear distinction in the level of service and universal access, will significantly reduce costs by allowing better allocation of resources and lead to improvement in standards of care.

This model of integrated care also facilitates the collection and maintenance of health records of the population. A robust health information system and digital health records, with adequate privacy safeguards, will not only allow efficiency in health services – allow continuity of care, save time, minimise wastage and reduce costs – at the individual level, but also provide for better disease surveillance and epidemic response, clinical research and development and evidence-based policy making at the national level.

Developing mechanisms to enforce accountability in the healthcare system is important. A three-tier mechanism – Regional Health Boards at the community level, District Health Boards and State Health Boards – needs to be set-up to ensure the efficient delivery of healthcare services in the country. Such institutions will effectively monitor the functioning of government facilities such as PHCs, monitor FP system and secondary care, review financial expenditure and budget utilisation on healthcare, supervise health activities at the ground level and oversee all the patient data.

The Table 7.1 shows the overall cost of the proposed recommendations across all three levels of care for three years:

Table 7.1: Total Cost of Proposed Recommendations

Level of Care	Cost (in Rs. Crores)
Primary Care	Rs. 30,000
Secondary Care	Rs. 27,000
Tertiary Care	Rs. 36,000
Total	**Rs. 93,000**

Currently, the total public expenditure on healthcare by both the union and states is a little above one percent (1%) of the GDP. The total cost of our recommended interventions across all three levels of care is about Rs. 90,000 crores, which is approximately 0.5 percent of GDP. Implementation of these recommendations will require additional expenditure as well as restructuring of the existing healthcare expenditure of the union and the states. Some portion of the existing expenditure would likely be redirected towards the initiatives under this model. However, even in the scenario that the entire expenditure required is incurred in addition to the current level of healthcare expenditure, the fiscal burden will be significantly low. In fact, the Economic Survey 2020-21 argued that a modest increase in healthcare expenditure to three percent (3%) of the GDP will lead to a substantial decrease in OOPE from the current 60 percent to 30 percent[72]. The model proposed herein places a much lesser additional burden of 0.5 percent of GDP on the State exchequer while also ensuring a viable, effective, sustainable, and accessible healthcare system.

Once operationalised, the total public expenditure on healthcare by both the union and states will be well under two percent (2%) of GDP (0.5 percent in addition to the current level), which will still be the lowest public expenditure among all significant economies in the world. Only civil-war ravaged and strife-torn countries spend less than two percent (2%) of GDP on publicly funded healthcare, Malaysia, spending 1.92 percent of GDP, and Indonesia spending 1.42 percent of GDP being outliers in this respect. Even in Malaysia and Indonesia, despite less than two percent of (2%) GDP government health expenditure, the government spends about 50 percent of CHE (refer to Table 1.2 in Chapter 1). More allocation is much-needed and welcome, but given our resource constraint, it is unlikely that India will be able to deploy three or four percent of GDP on public healthcare for quite some time to come. These proposals are modest, affordable, cost-effective, and achievable with least disruption, building on our existing infrastructure and strengths.

If spread over three years, in primary care, annually around 33,000 FPs can be introduced. The requisite number of diagnostic clinics and drug dispensaries can be correspondingly increased based on the number of FP clinics in each centre. After the three years, the implementation of the programme can be evaluated, and based on the demand for the services, availability of funds and the institutional capacity to deliver, the model can be expanded and more FPs can be added. With respect to secondary care, gradually, tertiary care procedures should be removed and more secondary care procedures should be added. The initial focus should be on bringing small private nursing homes into the programme. Cost-effectiveness of the model can be assessed and gradually, the scope of the programme can be expanded to cover all secondary care procedures for all citizens.

In tertiary care, incremental investment may be made across all Public Teaching and District Hospitals over three years so that about 140,000 beds in Tier I hospitals with all equipment, resources and skills are in place for advanced tertiary care, and the remaining 147,000 beds in Tier II hospitals are equipped and strengthened to provide quality tertiary care at economic cost. By the end of three years, the per-bed expenditure reaches Rs. 25 lakhs in Tier I hospitals and Rs. 20 lakhs in Tier II tertiary care hospitals. The expenditure and bed strength may be further increased as the demand grows and quality of services is improved. A phased approach over a period of three years to the

implementation of these interventions 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.

All state-of-the-art, sophisticated equipment and services can be funded by private finance initiatives with suitable incentives and a reasonably assured rate of return. This will reduce delays in rolling out hospital care, and minimise the initial financial outlays for the cash-strapped public exchequer. Flexible systems based on freedom, excellence and fee-for-service should be evolved to attract the most skilled and trusted experts to serve in tertiary Teaching Hospitals on a part-time basis to enhance the quality of services and credibility of the system. Depending on local conditions, there should be flexible models and space for innovation in hospital care. Additionally, a rational, systems approach will help in integrating existing structures and programs seamlessly with the new initiatives.

7.2. The Role of the Union and the States

According to the National Health Accounts[4], the total public and private expenditure on healthcare for the year 2016-17 stood at Rs 581023 crores, amounting to 3.8 percent of the GDP. The government expenditure on healthcare accounts for a mere 32 percent of THE. Most of the private expenditure is in the form of OOPE, imposing enormous burden on families whenever somebody falls sick.

The heavy and often debilitating burden imposed by high OOPE on healthcare has already been discussed in the preceding sections of the paper. Moreover, the necessity of an increase in public healthcare spending in India is universally acknowledged. The source of financing of the additional expenditure required is a crucial issue that needs to be addressed. Public expenditure on healthcare in India comprises expenditure at both the union and state levels. Expenditure at the state level includes transfers from the union as part of several Centrally Sponsored Schemes in respect of areas that fall in the States List in the Seventh Schedule of the Constitution. These schemes are contributory in nature[73].

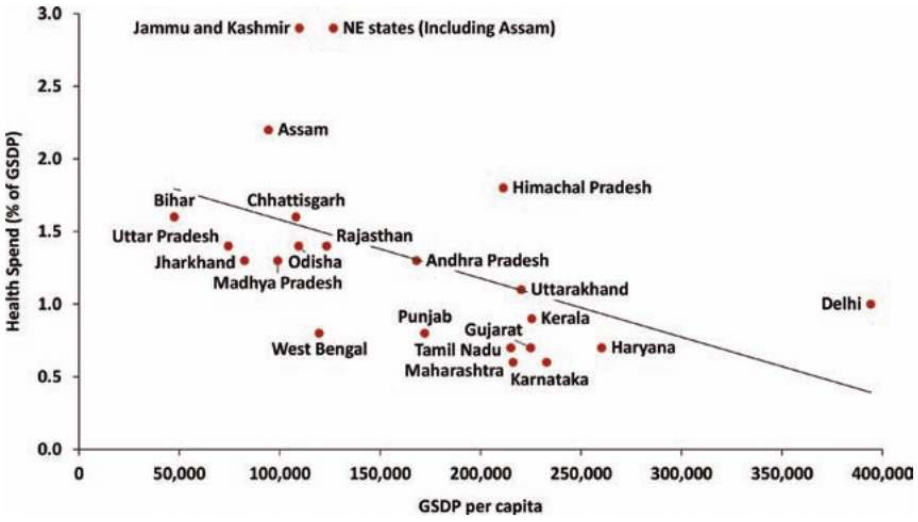
Given that health and sanitation and hospitals and dispensaries are state subjects, it is the state governments that account for a major portion of the government expenditure on healthcare. According to the National Health Accounts, out of the Rs 188010 crores of government health expenditure in 2016-17, the shares of the union and state governments were 31.4 percent and 68.9 percent respectively[4]. A study by the Reserve Bank of India shows that the share of the union and state health expenditure has consistently maintained a similar ratio over the years (see Figure 7.1).

Figure 7.1: Components of Government Health Expenditure as % of GDP

Source: State Finances: A Study of Budgets 2020-21, Reserve Bank of India, 2020, pg. 55.

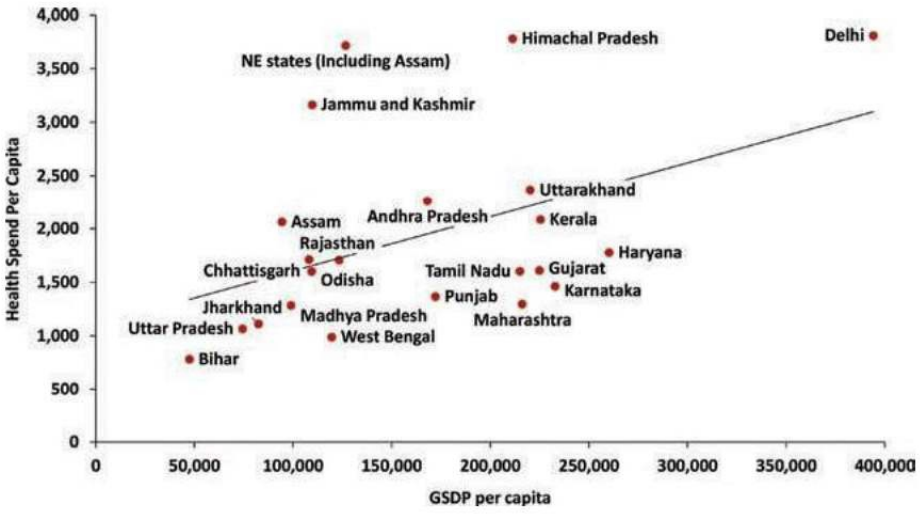
However, considerable variation in healthcare expenditure is evident across states. As can be seen in Figures 7.2 and 7.3, in spite of spending a higher percentage of their Gross State Domestic Product (GSDP) on healthcare, the relatively poorer states (Uttar Pradesh, Bihar, Jharkhand) end up with lesser per capita expenditure on healthcare as compared to states with higher per capita income (Kerala, Tamil Nadu, Gujarat).

Figure 7.2: State-wise Health Expenditure as % of GSDP



Source: The Economic Survey 2020-21, Ministry of Finance, Government of India, Volume I, pg. 160.

Figure 7.3: State-wise per capita Health Expenditure



Source: The Economic Survey 2020-21, Ministry of Finance, Government of India, Volume I, pg. 159.

The proposed model envisages a predominant role for the union government in financing the roll out of services. A leading role for the union becomes especially critical because of three factors. Firstly, the states already bear the majority of the financial burden of providing healthcare in the country (about 70 percent of the total government healthcare expenditure). Therefore, the union contributing to the increase in healthcare expenditure would mean a more balanced distribution of healthcare responsibility. The union government is currently spending about 0.35 percent of GDP on public healthcare (see Figure 7.1). Even after fully meeting the cost of the proposals made in this paper, the union government's healthcare expenditure will be under 0.9 percent of GDP, an extremely low figure by global standards. Once all proposals are fully implemented, the combined expenditure of the union and states will be of the order of 1.7-1.8 percent of GDP, still the lowest figure among all significant economies in the world. Secondly, an unusually high degree of disparities exist amongst the Indian states in terms of their revenue generating capacities and healthcare services. Entrusting the complete responsibility of financing the proposed healthcare sector reforms to the states alone would result in equally uneven results across states both in terms of implementation of the recommendations and the consequent health outcomes. Thirdly, as the COVID crisis has made abundantly clear, there is a need for ramping up healthcare facilities across states, irrespective of their current performance in provision of healthcare services. Therefore, there is a need for a common, national, and foundational template for a strong healthcare system. Hence, the union must lead the endeavour to revitalise and strengthen the healthcare system in the country.

Although the union needs to take lead in this respect, healthcare is essentially a state subject. States will fully own the reforms and are incharge of implementation – they may make any additions or modifications to the model as per the particular needs and circumstances of the region. In fact, the proposed framework envisages a high degree of flexibility in the specific design of the various components of the model in order to be adaptable across states. The state governments will be at liberty to supplement the union funds to the degree and in the manner that they see fit. Ultimate responsibility for healthcare delivery and monitoring, supervision and leadership of all healthcare providers vests in the states.

Summary of Recommendations	
Primary Care	
Integrated Family-Physician (FP) primary care model	First point of contact providing treatment for basic illnesses and managing health through routine checkups.
Pool of FPs	Pool of 8-10 FPs providing services in a small town of 100,000-150,000 population ("primary care center"). The center chosen should be a natural economic and social hub for surrounding villages. FP to be residing in the area she practices in. FP to be responsible for the establishment and running of her own clinic.
Referral gatekeeper	FP to act as a gater-keeper to the rest of the healthcare system. No patient to directly approach a public hospital providing secondary or tertiary care services without a referral from an FP, with the sole exception of an emergency case.
Competition and choice	Competition between FPs to be encouraged by providing public the choice of availing services at any FP clinic in their vicinity. Each FP to be paid a fixed amount by the government on a consultation basis, ensuring quality and accountability.
Health Records System	Efficient digital collection and storage of information regarding a person's medical history to be enabled.

Summary of Recommendations	
Primary Care	
Co-payment for FP consultation	Nominal fee of Rs. 25 per FP consultation to be charged to patients enabling demand for better services and preventing overtreatment. 10% of patients exempted at the discretion of the FP on grounds of being indigent.
Training in family care	Short, well-designed training programmes lasting 1-3 months for medical graduates to be adapted to specific community needs.
Integration with public health initiatives	FP clinics to work in close coordination with local PHCs with a clear demarcation of roles, ensuring integration with public health initiatives.
Drug procurement and supply	Tamil Nadu and Andhra Pradesh's centralised drug procurement to be emulated to reduce overall cost of drugs and ensure quality. Similar expenditure to be incurred at the primary care level with increased provision of services.
Dispensary for each primary care center	A common dispensary to be set up by private entrepreneurs in each primary care center which supplies government procured drugs at government decided prices.

Summary of Recommendations	
Primary Care	
Co-payment on drug purchases	For one-time prescription, patients to pay 25% of the cost subject to a ceiling of Rs. 100 per month. Physician to be required to prescribe the drug only by the ingredient.
Diagnostic services	Andhra Pradesh's Model of PPP providing free diagnostics at all levels of public healthcare to be replicated throughout the country.
Clinical laboratory in each center	A common, independent diagnostics lab in each primary care center providing Tier I services —10 to 12 simple tests to be conducted locally. More sophisticated Tier II services to be outsourced to the private sector based on the Andhra Pradesh Model.
Co-payment on diagnostic services	25% of co-payment by the patient, subject to a ceiling of Rs. 100. Exemption of co-payment for indigent persons.

Summary of Recommendations	
Primary Care	
Accountability mechanism	Regional Health Boards at the community level may be responsible for monitoring FPs and supervising diagnostic laboratories and pharmaceutical outlets that fall within its jurisdiction. District Health Boards may be responsible for contracting with FPs and disbursing funds. State Health Boards may be created to implement, guide, monitor and supervise the FP-led primary care system.
Cost Estimates for Primary Care - Rs. 30,000 crore per annum	
Secondary Care	
Single-payer insurance model	Integration of Ayushman Bharat with state programmes such as Aarogyasri.
Universal coverage	Programme coverage to be expanded to the entire population. Universal access will remove bottlenecks such as beneficiary identification and improve quality of service.
All secondary care services covered	All secondary care services to be included and all high-cost, tertiary care interventions to be excluded progressively.
Referral from FP	All hospital care under the programme is only available on referral from FP, except in emergencies.

Summary of Recommendations	
Secondary Care	
Choice and competition among CHCs and small private nursing homes	Small private nursing homes to be empanelled under the programme for cost-effective secondary care services in semi-rural areas and small towns. CHCs and sub-district hospitals to be adequately equipped to provide quality secondary care services in the public sector. District Hospitals to gradually become centers of tertiary care.
Pooling of diagnostics	Pooling of diagnostics among District Hospitals, CHCs, and small private nursing homes. Empanelled hospitals in the area can avail service from the public hospitals for a fee. Private funding may be encouraged for capital investment and maintenance of equipment with assured return.
Cost Estimates for Secondary Care - Rs. 27,000 crore per annum	
Tertiary Care	
Public sector driven tertiary care	Free of cost tertiary care at Public Teaching and District Hospitals.
Referral from FP or secondary care provider	Tertiary care to be provided only on referral from the FP or secondary care provider, except in cases of emergency.
Upgradation of public hospitals	100 Public Teaching Hospitals with about 140,000 beds to be upgraded as Tier I hospitals with all equipment, resources, and skills for advanced tertiary care services. Remaining Public Teaching Hospitals and District Hospitals with 147,000 beds to be equipped as Tier II hospitals for all other tertiary care services.

Summary of Recommendations	
Tertiary Care	
Upgradation of public hospitals	By the end of three years, the per-bed expenditure reaches Rs. 25 lakhs in Tier I hospitals and Rs. 20 lakhs in Tier II tertiary care hospitals.
Choice and competition for select interventions	A fee-for-service model may be introduced for select interventions within public hospitals to attract talent, incentivise performance, and encourage specialised care in areas where hospitals have strengths and competitive advantage. 20% of the tertiary care funding for the hospitals may be set aside for these interventions.
PPP	Private Financial Initiative (PFI) and outsourcing of maintenance services may be implemented in public hospitals for one-time capital investment for various diagnostics and services. Flexible models such as independent work in private blocks, leadership opportunities, part-time practice in teaching hospitals, and remuneration on fee-for-service model may be adopted to incentivise reputed experts to teach and practice in tertiary hospitals.
Autonomy	Existing model restructured to provide for autonomy, local decision-making and innovation, subject to effective accountability systems and objective measurement of outcomes and performance monitoring.
Cost Estimates for Tertiary Care - Rs 36,000 crore per annum	
Total Additional Cost to the Exchequer - Rs 93,000 crore or 0.5% of GDP	

AFTERWORD

In a democratic society all roads lead to politics. True politics is about promotion of human happiness. Health is a key ingredient of happiness, and governance is about reconciling conflicting demands and allocation of limited resources to meet unlimited needs through proper prioritisation. Finally, the art of governance lies in efficiently managing institutions to give the best value for the money spent, and to create systems of incentives and accountability.

Successive governments in India have historically accepted too many responsibilities without building the institutional capacity to deliver. This has resulted in the neglect of vital functions of the state. In a modern civilized society, apart from the sovereign functions of security, public order, rule of law and justice, the most vital requirements for fulfillment of human potential and creation of opportunities for vertical mobility are healthcare and education. Therefore, the recent initiatives to vacate areas otherwise not meant for the state are long overdue and welcome. The growing recognition of the state's primary role – infrastructure, education, healthcare, social security – is indicative of the fact that the state envisages for itself a role of facilitator rather than a doting parent. We should focus our energies and resources on those areas which help unleash human potential. A bit of wisdom, sensible policies, well-directed and modest allocations, and effective delivery systems can accomplish a great deal to promote growth and human happiness.

Our resources are limited, and our wants are many. Given the severe fiscal constraints, it would be unrealistic to expect vast increases in budgetary allocations for healthcare. However, healthcare has for long been underfunded. It is a sector where money properly utilised gives multiple returns. Improved healthcare is the fastest road to ending abject poverty. Therefore, an increase of 0.5 percent of the GDP in public expenditure on healthcare is prudent and reasonable. Even such a modest allocation will go a long way. Integrated and pragmatic design, and an accountable delivery system incorporating competition and choice wherever feasible will generate significant outcomes at low cost.

Equally important is to alter the nature of contemporary political discourse. In mature democracies not a day passes without public attention being focused on health and education policies or the state of those services. Most elections are fought on education and healthcare issues. In India, much of our political process is divorced from real issues of life and death and empowerment. Health and education are relegated to the background, and politics has been reduced to a relentless adversarial power game. In the ultimate sense, quality healthcare and citizen-centred democracy go together. The struggle for better health, the fight for accountable democracy, the quest for people's sovereignty, and the urge for best value for public money spent are all inseparable. We have strength and resilience as a society; our workers have skills and enterprise; and our people have good sense and ambition. We are privileged to live in the 21st century, when most human predicaments have practical solutions, and avoidable suffering can be prevented as never before. We have the cumulative experience in our own country and throughout the world to guide us. If we internalise those lessons and strive to build and sustain a viable healthcare system, we will surely attain a state of health and happiness in keeping with our full potential.

ANNEXURE

Annexure 1.1: Data on COVID Incidence in Select Countries as on 14th May 2021

Data on COVID Incidence in Select Countries as on 14th May 2021					
Country	**Total COVID Cases**	**Total COVID cases/ 100,000 Population**	**Total COVID Deaths**	**Total COVID Deaths/ 100,000 Population**	**Case Fatality Ratio**
India	24046809	1760	262317	19	1.09%
United States	32852998	10009	584487	178	1.78%
United Kingdom	4460405	6674	127912	191	2.86%
Italy	4139160	6864	123745	205	2.99%
Germany	3580646	4309	85852	103	2.40%
France	5902343	8802	107411	160	1.82%
Spain	3598452	7635	79281	168	2.20%
Brazil	15433989	7313	430417	204	2.79%
South Africa	1605252	2741	55012	94	3.43%
Turkey	5083996	6094	44059	53	0.87%
Russia	4866641	3370	113182	78	2.33%
China	102681	7	4846	0.3	4.72%
Japan	668672	530	11252	9	1.68%

Case Fatality Ratio = Total Deaths/Total Cases*100

Data from this table has been used to generate Figures 1.1, 1.2, 1.4, 1.5 and 1.7.

Source:
COVID data
1. Johns Hopkins University Coronavirus Resource Center.
Population
2. World Bank Open Data portal.

Annexure 1.2: COVID Incidence during Peak Periods in Select Countries

COVID Incidence during Peak Periods in Select Countries				
Country	**Date of Peak**	**New Cases around Peak/100,000 Population**	**Deaths around Peak/100,000 Population**	**Case Fatality Ratio at Peak**
India	**6th May 2021**	**27.44**	**0.27**	**0.98%**
United States	2nd Jan 2021	68.43	0.87	1.27%
United Kingdom	8th Jan 2021	81.45	1.36	1.67%
Italy	13th Nov 2020	57.43	0.92	1.60%
Germany	30th Dec 2020	21.55	0.77	3.57%
France	**11th Apr 2021**	**53.61**	**0.44**	**0.82%**
Spain	25th Jan 2021	110.95	1.12	1.01%
Brazil	25th Mar 2021	35.94	1.27	3.53%
South Africa	8th Jan 2021	28.61	0.9	3.15%
Turkey	16th Apr 2021	68.05	0.35	0.51%
Russia	24th Dec 2020	19.11	0.38	1.99%
China	13th Feb 2020	0.22	0.01	4.55%
Japan	29th Apr 2021	3.92	0.04	1.02%

Case Fatality Ratio at Peak = Average Deaths at peak/Average New Cases at peak*100

Data from this table has been used to generate Figures 1.3, 1.6 and 1.8.

Note:

New cases around the peak was calculated using 15 day centered average of new cases around the peak per 100,000. The deaths were calculated using 15 day centered average of new deaths around the case peak per 100,000 population.

Source:
COVID data
1. Johns Hopkins University Coronavirus Resource Center.
Population
2. World Bank Open Data portal.

Annexure 1.3: Annual Incidence of Non-communicable Diseases in India, 2010-2019

Annual Incidence of Non-communicable Diseases in India, 2010 - 2019			
Year	**Cancer**	**Diabetes and Kidney Diseases**	**Cardiovascular Disease**
2010	19,928,150	4,581,352	6,629,348
2011	20,405,817	4,753,576	6,857,030
2012	20,881,136	4,958,461	7,104,178
2013	21,367,426	5,180,624	7,356,542
2014	21,845,204	5,403,975	7,603,265
2015	22,352,692	5,610,924	7,837,003
2016	22,851,138	5,807,503	8,037,991
2017	23,340,334	6,015,941	8,249,064
2018	23,849,045	6,296,035	8,502,285
2019	24,353,552	6,662,798	8,746,953

Data from this table has been used to generate Figures 1.13 and 1.14.

Source:
1. Institute for Health Metrics and Evaluation (IHME) – Global Disease Burden Database, University of Washington, Seattle.

Annexure 1.4: Annual Incidence of Communicable Diseases in India, 2010 - 2019

Incidence of Communicable Diseases in India (2010 - 2019)			
Year	**Dengue**	**Malaria**	**Tuberculosis**
2010	25,889,395	20,747,981	3,080,049
2011	26,186,685	17,311,452	3,059,851
2012	26,395,152	19,183,742	3,018,036
2013	26,559,514	15,380,105	2,930,135
2014	27,690,336	13,655,635	2,969,505
2015	26,724,915	12,417,498	2,916,874
2016	26,937,548	9,983,733	2,911,021
2017	27,314,868	11,028,260	2,904,151
2018	27,896,616	9,841,525	2,965,404
2019	27,991,971	9,894,050	3,043,256

Data from this table has been used to generate Figures 1.10-1.12.

Source:
1. Institute for Health Metrics and Evaluation (IHME) – Global Disease Burden Database, University of Washington, Seattle.

Annexure 2.1: World Bank Averages of Select Indicators by Income Level

World Bank Averages of Select Indicators by Income Level					
Category	**TFR (2018)**	**IMR (2019)**	**Under-5 Mortality Rate (2019)**	**MMR (Modelled Estimate)**	**Life Expectancy at Birth (2019)**
High Income	1.6	4.3	5	11	80.79
Upper Middle Income	1.9	11.3	13.3	57	75.53
Middle Income	2.34	26.81	35.12	183	72.05
Low & Middle Income	2.55	30.61	40.98	231	71.2
Lower Middle Income	2.77	36.6	48.9	265	68.64
Low Income	4.6	47.9	67.6	455	63.84

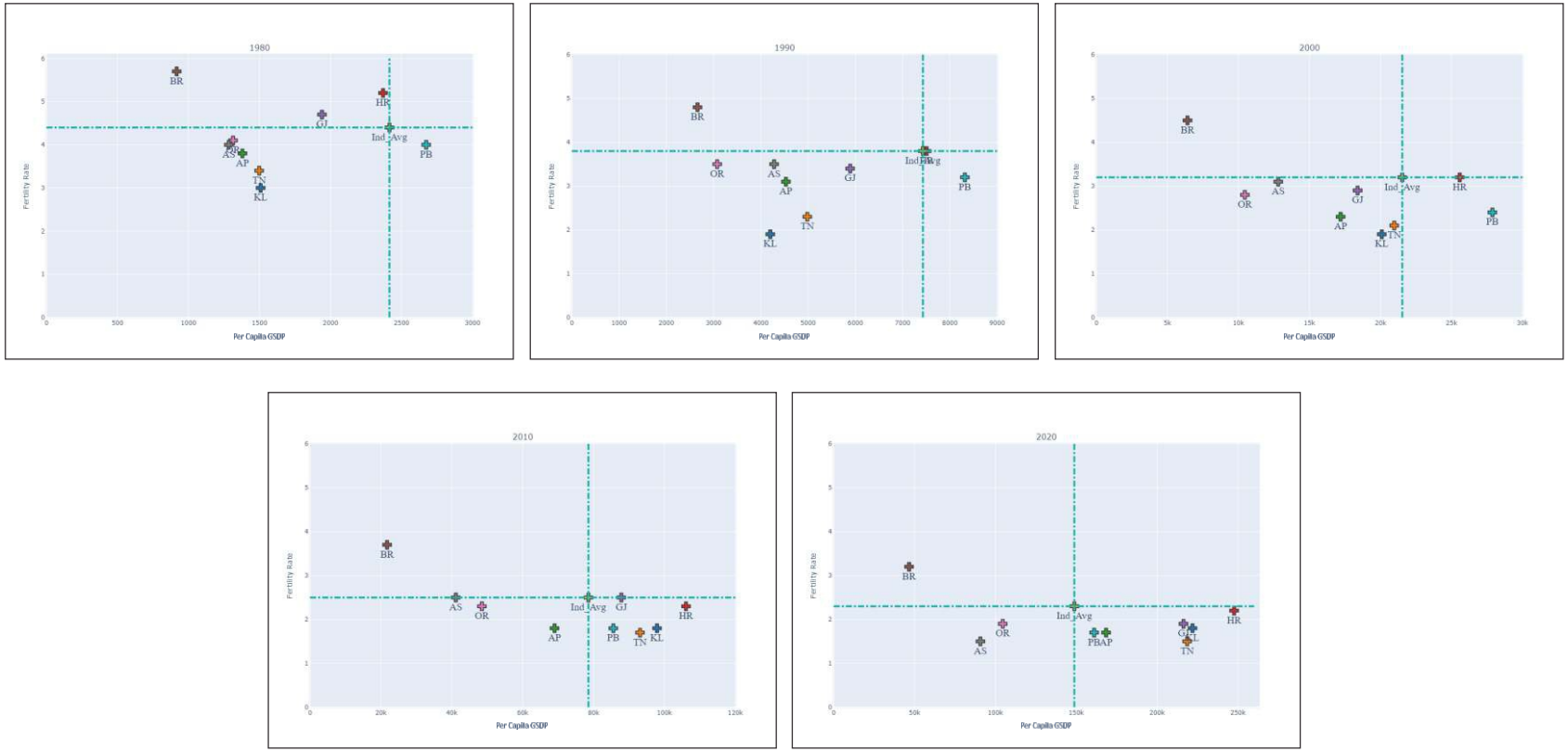
TFR: Total Fertility Rate; **IMR:** Infant Mortality Rate; **MMR:** Maternal Mortality Rate

Data from this table has been used to classify state-wise indicators in Table 2.1.

Source:
1. World Bank Open Data portal

Annexure 2.2 - Progress of Select States in respect of Select Indicators

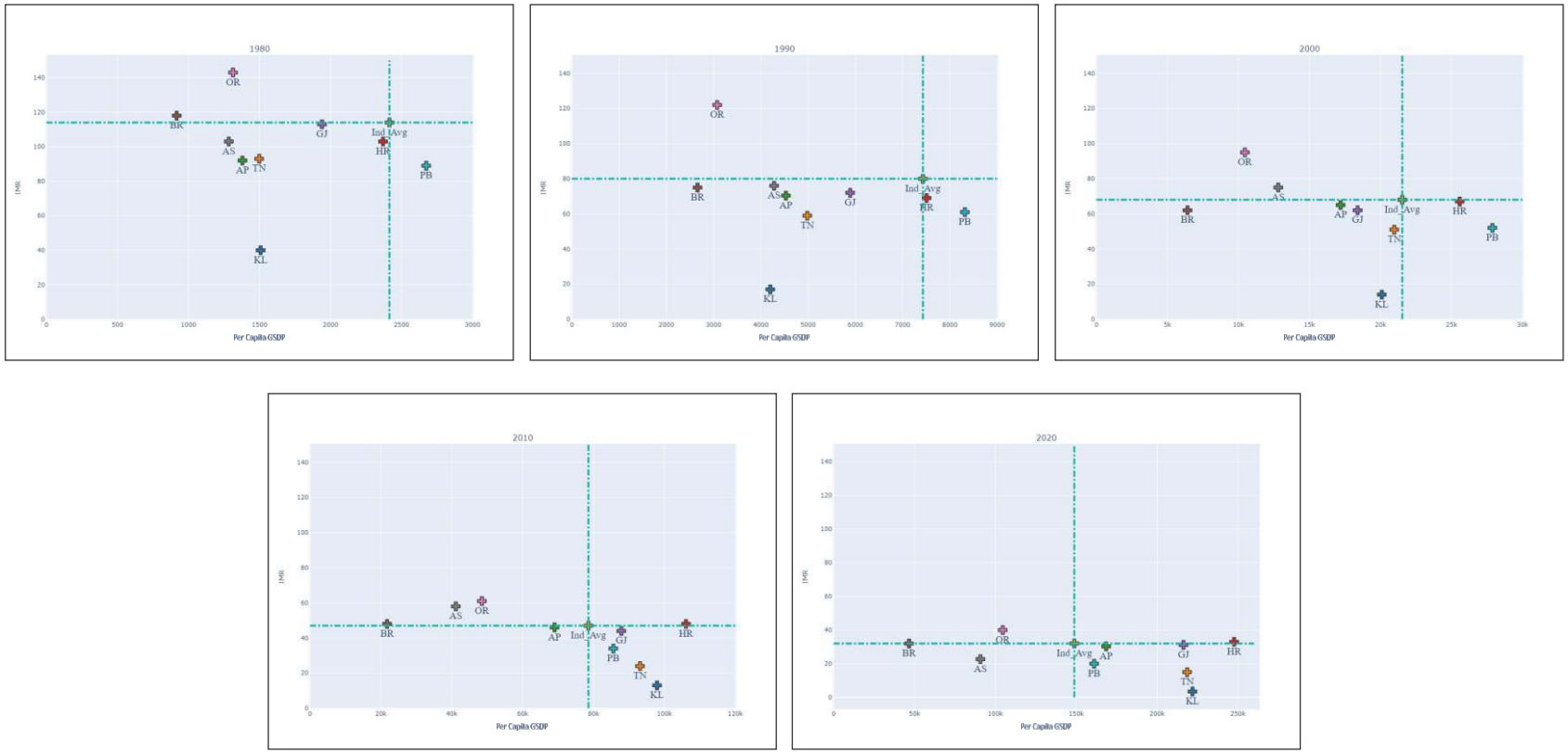
Annexure 2.2.1: Total Fertility Rate in Select States, 1980-2020



Ind Avg: India Average; AP: Andhra Pradesh; AS: Assam; BH: Bihar; GJ: Gujarat; HR: Haryana; KL: Kerala; OR: Orissa; PB: Punjab; TN: Tamil Nadu.

Source: Health Indicators – Sample Registration System, Office of the Registrar General & Census Commissioner, Government of India, Government of India; Per capita GSDP (at current prices in Rs.) – Ministry of Statistics and Programme Implementation, Government of India.

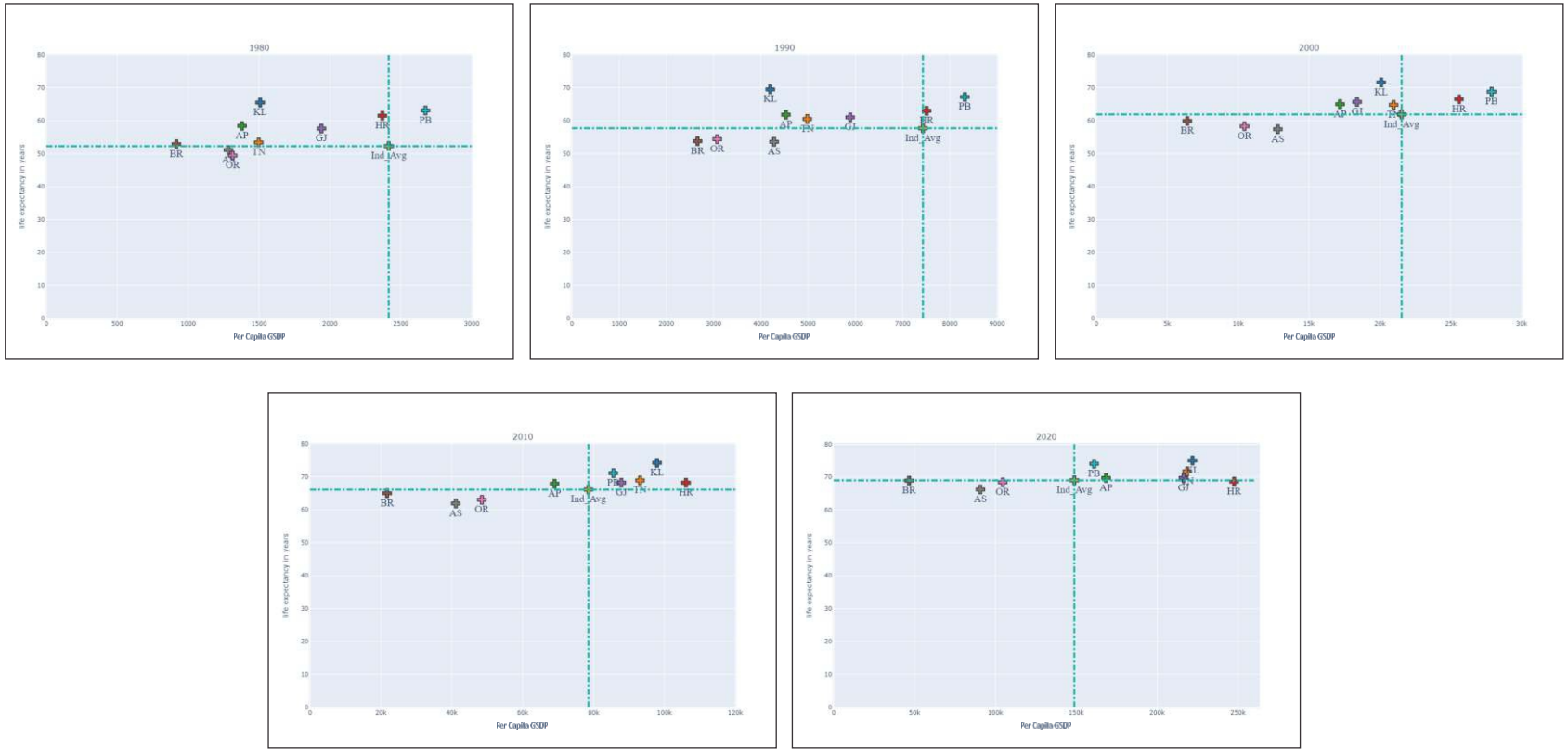
Annexure 2.2.2: Infant Mortality Rate (IMR) in Select States, 1980-2020



Ind Avg: India Average; AP: Andhra Pradesh; AS: Assam; BH: Bihar; GJ: Gujarat; HR: Haryana; KL: Kerala; OR: Orissa; PB: Punjab; TN: Tamil Nadu.

Source: Health Indicators – Sample Registration System, Office of the Registrar General & Census Commissioner, Government of India, Government of India; Per capita GSDP (at current prices in Rs.) – Ministry of Statistics and Programme Implementation, Government of India.

Annexure 2.2.3: Life Expectancy in Select States, 1980-2020



Ind Avg: India Average; AP: Andhra Pradesh; AS: Assam; BH: Bihar; GJ: Gujarat; HR: Haryana; KL: Kerala; OR: Orissa; PB: Punjab; TN: Tamil Nadu.

Source: Health Indicators – Sample Registration System, Office of the Registrar General & Census Commissioner, Government of India, Government of India; Per capita GSDP (at current prices in Rs.) – Ministry of Statistics and Programme Implementation, Government of India.

Annexure 2.3: Calculation of Percentage Share in Utilisation across Different Healthcare Facilities

Per Thousand Distribution of Ailments Treated Across Different Facilities					Percentage Share of Each Facility				Percentage Share of Public and Private Facility	
State	HSC/PHC and others (includes ANM/ASHA/AWW/ dispensary/CHC/MMU)	Public Hospital	Private Doctor	Private Hospital	HSC/PHC and others* (includes ANM/ASHA/AWW /dispensary/CHC/MMU)	Public Hospital	Private Doctor	Private Hospital	Total Public Facility Utilisation	Total Private Facility Utilisation
India	84.5	169	505	241	8.45	16.90	50.50	24.10	25.35	74.60
Andhra Pradesh	43.5	98	286	572.5	4.35	9.80	28.60	57.25	14.15	85.85
Telangana	52.5	90.5	364	492.5	5.25	9.05	36.40	49.25	14.30	85.65
Tamil Nadu	69.5	275	231	424	6.95	27.50	23.10	42.40	34.45	65.50
Kerala	107.5	229	355	309	10.75	22.90	35.50	30.90	33.65	66.40
Bihar	57.5	81.5	762.5	98	5.75	8.15	76.25	9.80	13.90	86.05
Uttar Pradesh	46.5	102.5	742.5	108.5	4.65	10.25	74.25	10.85	14.90	85.10
Gujarat	89.5	105.5	529.5	275.5	8.95	10.55	52.95	27.55	19.50	80.50
Maharashtra	75	102.5	621.5	201	7.50	10.25	62.15	20.10	17.75	82.25
Odisha	455.5	267	258.5	19	45.55	26.70	25.85	1.90	72.25	27.75
Assam	460.5	319.5	195.5	24.5	46.05	31.95	19.55	2.45	78.00	22.00
Haryana	30.5	68	644.5	257	3.05	6.80	64.45	25.70	9.85	90.15
Himachal Pradesh	58.5	424.5	372	145	5.85	42.45	37.20	14.50	48.30	51.70

HSC: Health Sub-Centre; **PHC:** Primary Health Centre; **ANM:** Auxiliary Nurse Midwives; **ASHA:** Accredited Social Health Activist (AHSA); **AWW:** Anganwadi Workers; **CHC:** Community Health Centre; **MMU:** Mobile Medical Unit.

Note:
1. The 'Health in India' report gives the average utilisation per thousand spells of ailments of the four types of facilities mentioned in this table for males and females. Alongwith the overall figure for the country, the averages are given state-wise as well. The combined 'Per Thousand Distribution of Ailments Treated Across Different Facilities' in this table has been calculated by taking an average of the values for males and females for India and the respective states.

Data from this table is reflected in Tables 2.2 and 4.4.

Source:
1. "Health in India, NSS 71st Round, January - June 2014", Ministry of Statistics and Programme Implementation, Government of India, pg. S-7.

Annexure 2.4a: Calculation of Total per capita Consultation Rate and per capita Consultation Rate in respect of Government Faclities

Calculation of Consultation Rate for India (2014)						
	Number of Persons Reporting Ailment during the Last 15 days per 1000 population	Number of Ailments Reported per 1000 population per Year	Percentage Share in Population (2014)	Total Average Number of Ailments Reported per 1000 Population per Year	Number of Ailments Treated on Medical Advice per 1000 Population per Year	**Annual per capita Consultation Rate**
Rural	89	2162.7	65	2409.3	2337.06	**2.3**
Urban	118	2867.4	35			
Government Consultation Rate (2014)						
	Number of Persons Reporting Ailment during the Last 15 days per 1000 Population	Percentage of Ailments Receiving Non-hospitalised Treatment from Government Sources	Number of Ailments Reported per 1000 Population per Year	Number of Ailments Receiving Non-hospitalised Treatment from Government Sources	Total Average Number of Ailments Receving Treatment from Government Sources	**Annual per capita Consultation Rate in Public Facilities**
Rural	89	0.28	2163	605.6	604.4	**0.6**
Urban	118	0.21	2867	602.1		

Note:

1. The 'Number of Ailments Reported per 1000 population per Year' has been calculated by extrapolating the 'Number of Persons Reporting Ailment during the Last 15 days per 1000 Population' for the entire year.
2. The 'Total Average Number of Ailments Reported per 1000 Population per Year' has been calculated as the weighted average of the rural and urban figures for 'Number of Ailments Reported per 1000 Population per Year' based on the 'Percentage Share in Population'.
3. The 'Number of Ailments Treated on Medical Advice per 1000 Population per Year' has been calculated by subtracting 3% of ailments that were not treated on medical advice as mentioned in the source.
4. The 'Number of Ailments Receiving Non-hospitalised Treatment from Government Sources' has been calculated based on the '% of Ailments Receiving Non-hospitalised Treatment from Government Sources' provided in the source.
5. 'Total Average Number of Ailments Receving Treatment from Government Sources' has been calculated as the weighted average of the rural and urban figures for 'Number of Ailments Receiving Non-hospitalised Treatment from Government Sources' based on the 'Percentage Share in Population'.

The consultation rates calculated in this table have been used throughtout the paper and were important considerations in formulation of the recommendations.

Source:

Number of Person Reporting Ailments in the Last 15 Days; Percentage of Ailments Receiving Non-hospitalised Treatment from Government Sources; Percentage of Ailments Treated on Medical Advice –

1. "Health in India, NSS 71st Round, January - June 2014", Ministry of Statistics and Programme Implementation, Government of India, pg. 30, 33, S-5, S-6.

***Percentage Share in the Population** –*

2. World Bank Open Data Portal

Annexure 2.4b: Calculation of per Capita Consultation Rate in respect of Formal Providers

Consultation Rate - Formal Providers (2014)			
	Number of Annual Visits to Informal Providers	Number of Annual Visits to Formal Provider	**Per capita Consultation Rate - Formal Providers**
Rural	1471	692	**1.4**
Urban	NA	2867	

Note:
1. The 'Number of Annual Visits to Informal Providers' have been calculated based on the 'Number of Ailments Reported per 1000 population per Year' in Annexure 2.4a.
2. 68% of the visits to a healthcare providers in rural India have been assumed to be to an informal provider based on *Das, et al., 2020*. Since the percentage of visits to an informal provider in urban areas was not known, it has been assumed that all visits to a healthcare provider in urban areas are to a formal provider.
3. 'The per capita Consultation Rate - Formal Providers' has been calculated as a weighted average of the per capita 'Number of Visits to Formal Provider' based on the 'Percentage Share in Population' (given in Anexxure 2.4a.).

Sources:
Number of Person Reporting Ailments in the Last 15 Days –
1. "Health in India, NSS 71st Round, January - June 2014", Ministry of Statistics and Programme Implementation, Government of India, pg. 30, 33, S-5, S-6.

Percentage Share in the Population –
2. World Bank Open Data Portal

Share of Informal Providers in Rural India –
3. Jishnu Das, et al., "Two Indias: The Structure of Primary Health Care Markets in Rural Indian Villages with Implications for Policy", Social Science & Medicine, 2020, pg. 2, 5 (Das, et al., 2020).

Annexure 2.5: Public and Private per Capita Healthcare Expenditure

Public and Private Per Capita Healthcare Expenditure in ppp (USD)		
Year	**Public Expenditure**	**Private Expenditure**
2000	18.31	67.86
2001	18.59	77.61
2002	18.45	80.63
2003	19.42	82.77
2004	20.09	89.13
2005	23.58	91.79
2006	25.07	95.42
2007	25.17	100.8
2008	30.51	101.8
2009	36.57	104.77
2010	38.12	105.93
2011	43.35	105.48
2012	45.75	116.17
2013	45.43	150.97
2014	48.67	155.48
2015	56.55	162.43
2016	62.52	168.93
2017	68.76	182.62
2018	74.16	199.06

ppp: Purchasing Power Parity; **USD:** United States Dollar.

Data from this table has been used to generate Figure 2.4.

Source:
1. World Health Organisation - Global Health Observatory Data Repository, accessed on 25 June 2021.

Annexure 3.1 Trends in Health Expenditure - United Kingdom and United States

Annexure 3.1a: CHE as % of GDP

CHE as % of GDP		
Year	**United Kingdom**	**United States**
2000	7.28	12.54
2001	7.65	13.22
2002	8.02	14.01
2003	8.21	14.52
2004	8.48	14.61
2005	8.53	14.61
2006	8.70	14.70
2007	8.87	14.92
2008	9.17	15.29
2009	10.02	16.28
2010	9.99	16.35
2011	9.97	16.30
2012	10.05	16.29
2013	9.98	16.21
2014	9.96	16.41
2015	9.90	16.71
2016	9.87	17.05
2017	9.83	17.00
2018	10.00	16.89

CHE: Current Health Expenditure

Data from this table has been used to generate Figure 3.3a.

Source: World Bank Open Data portal.

Annexure 3.1b: CHE per capita (USD)

CHE per capita (USD)		
Year	**United Kingdom**	**United States**
2000	2054.18	4564.46
2001	2128.29	4914.94
2002	2417.06	5332.49
2003	2833.68	5741.30
2004	3429.65	6103.58
2005	3599.93	6454.68
2006	3893.59	6821.11
2007	4505.47	7172.17
2008	4351.28	7410.70
2009	3892.01	7681.25
2010	3955.45	7930.15
2011	4208.42	8130.76
2012	4282.05	8399.24
2013	4350.26	8599.53
2014	4740.87	9023.61
2015	4472.52	9491.09
2016	4066.09	9877.87
2017	3978.62	10209.63
2018	4315.43	10623.85

CHE: Current Health Expenditure

Data from this table has been used to generate Figure 3.3b.

Source: World Bank Open Data portal.

Annexure 3.1c: GHE as % of GDP

GHE as % of GDP		
Year	**United Kingdom**	**United States**
2000	5.60	5.54
2001	5.86	5.97
2002	6.22	6.32
2003	6.46	6.52
2004	6.81	6.61
2005	6.94	6.63
2006	7.14	6.81
2007	7.15	6.92
2008	7.49	7.25
2009	8.30	7.88
2010	8.22	7.95
2011	8.18	7.93
2012	8.17	7.91
2013	7.96	7.94
2014	7.97	8.24
2015	7.94	8.47
2016	7.93	8.59
2017	7.81	8.55
2018	7.86	8.51

GHE: Government Health Expenditure

Data from this table has been used to generate Figure 3.3c.

Source: World Bank Open Data portal.

Annexure 3.1d: GHE as % of CHE

GHE as % of CHE		
Year	**United Kingdom**	**United States**
2000	76.83	44.19
2001	76.59	45.15
2002	77.54	45.13
2003	78.63	44.91
2004	80.24	45.25
2005	81.34	45.39
2006	82.12	46.32
2007	80.53	46.41
2008	81.70	47.44
2009	82.85	48.39
2010	82.28	48.64
2011	81.98	48.67
2012	81.29	48.55
2013	79.80	48.97
2014	80.03	50.21
2015	80.14	50.70
2016	80.38	50.39
2017	79.48	50.25
2018	78.60	50.41

CHE: Current Health Expenditure; GHE: Government Health Expenditure

Data from this table has been used to generate Figure 3.3d.

Source: World Bank Open Data portal.

Annexure 3.1e: GHE per capita (USD)

GHE per capita (USD)		
Year	**United Kingdom**	**United States**
2000	1578.19	2017.04
2001	1630.05	2219.11
2002	1874.30	2406.62
2003	2228.21	2578.68
2004	2751.95	2761.66
2005	2928.30	2929.81
2006	3197.44	3159.27
2007	3628.10	3328.56
2008	3554.92	3515.82
2009	3224.72	3716.60
2010	3254.43	3857.07
2011	3450.12	3957.62
2012	3481.04	4078.01
2013	3471.56	4210.84
2014	3794.27	4530.34
2015	3584.39	4811.91
2016	3268.36	4977.19
2017	3162.26	5130.77
2018	3392.09	5355.79

GHE: Government Health Expenditure

Data from this table has been used to generate Figure 3.3e.

Source: World Bank Open Data portal.

Annexure 3.1f: PHE per capita (USD)

PHE per capita USD		
PHE per capita USD	**United Kingdom**	**United States**
2000	475.83	2547.42
2001	498.08	2695.83
2002	542.57	2925.87
2003	605.24	3162.62
2004	677.44	3341.92
2005	671.35	3524.87
2006	695.83	3661.83
2007	877.03	3843.60
2008	796.02	3894.88
2009	667.01	3964.64
2010	700.71	4073.09
2011	757.94	4173.14
2012	800.63	4321.23
2013	878.27	4388.69
2014	946.15	4493.28
2015	887.67	4679.18
2016	797.26	4900.68
2017	815.86	5078.86
2018	922.78	5268.06

PHE: Private Health Expenditure

Data from this table has been used to generate Figure 3.3f.

Source: World Bank Open Data portal.

Annexure 3.1g: OOPE per capita (USD)

OOPE per capita USD		
OOPE per capita (USD)	**United Kingdom**	**United States**
2000	351.13	705.99
2001	367.69	724.51
2002	402.35	763.28
2003	448.85	813.05
2004	500.34	849.98
2005	479.18	894.31
2006	492.17	918.90
2007	644.33	965.98
2008	566.21	973.93
2009	477.90	960.37
2010	509.61	971.56
2011	551.99	996.31
2012	591.77	1016.53
2013	664.89	1033.07
2014	717.46	1041.08
2015	675.18	1064.91
2016	620.05	1105.88
2017	631.73	1123.43
2018	721.04	1148.32

OOPE: Out of Pocket Expenditure

Data from this table has been used to generate Figure 3.3g.

Source: World Bank Open Data portal.

Annexure 4.1: Details of Calculation of Values for Cross-country Comparison of Primary Care Spending

Annexure 4.1a: Per Capita Primary Health Expenditure by Function in ppp (USD), United Kingdom, 2018

Per Capita Primary Health Expenditure by Function in ppp (USD), United Kingdom, 2018		
Healthcare functions	**Government**	**Total**
*Outpatient curative care	930.7	1106.3
Home-based curative care (HC.1.4)	107.0	112.0
Outpatient long-term health (HC.3.3)	3.0	3.0
Home-based long-term healthcare (HC.3.4)	224.0	277.0
Medical goods (non-specified by function) (80% of HC.5)	252.0	543.8
Preventive care (HC.6)	159.0	235.0
Governance, and health system and financing administration (80% of HC.7)	34.0	69.1
Per capita primary care expenditure	**1709.7**	**2346.3**

ppp: Purchasing Power Parity

Data from this table has been used to calculate numbers for Table 4.5.

Note:
*Includes Outpatient curative and rehabilitative care

Source:
Per Capita Primary Care Expenditure
1. Global Health Expenditure Database, World Health Organisation.
2. OECD Health Statistics Database.

Per Capita Government Primary Care Expenditure
3. OECD Health Statistics Database.

Annexure 4.1b: Per Capita Primary Health Expenditure by Function in ppp (USD), Italy, 2018

Per Capita Primary Health Expenditure by Function in ppp (USD), Italy, 2018		
Healthcare functions	**Government**	**Total**
Outpatient curative care	485.0	851.0
Home-based curative care (HC.1.4)	NA	12.0
Outpatient long-term health (HC.3.3)	61.0	72.0
Home-based long-term healthcare (HC.3.4)	52.0	57.0
Medical goods (non-specified by function) (80% of HC.5)	329.0	602.0
Preventive care (HC.6)	135.0	160.0
Governance, and health system and financing administration (80% of HC.7)	23.0	48.7
Per capita primary care expenditure	**1085.0**	**1802.7**

ppp: Purchasing Power Parity.

Data from this table has been used to calculate numbers for Table 4.5.

Source:
Per Capita Primary Care Expenditure
1. Global Health Expenditure Database, World Health Organisation.
2. OECD Health Statistics Database.

Per Capita Government Primary Care Expenditure
3. OECD Health Statistics Database.

Annexure 4.1c: Per Capita Primary Health Expenditure by Function in ppp (USD), France, 2018

Per Capita Primary Health Expenditure by Function in ppp (USD), France, 2018		
Healthcare functions	**Government**	**Total**
Outpatient curative care	637.0	818.0
Home-based curative care (HC.1.4)	182.0	193.0
Outpatient long-term health (HC.3.3)	NA	NA
Home-based long-term healthcare (HC.3.4)	128.0	141.0
Medical goods (non-specified by function) (80% of HC.5)	581.0	771.0
Preventive care (HC.6)	61.0	94.0
Governance, and health system and financing administration (80% of HC.7)	166.0	235.6
Per capita primary care expenditure	**1755.0**	**2252.7**

ppp: Purchasing Power Parity.

Data from this table has been used to calculate numbers for Table 4.5.

Source:
Per Capita Primary Care Expenditure
1. Global Health Expenditure Database, World Health Organisation.
2. OECD Health Statistics Database.

Per Capita Government Primary Care Expenditure
3. OECD Health Statistics Database.

Annexure 4.1d: Per Capita Primary Health Expenditure by Function in ppp (USD), Canada, 2018

Per Capita Primary Health Expenditure by Function in ppp (USD), Canada, 2018		
Healthcare functions	**Government**	**Total**
Outpatient curative care	961.0	1441.0
Home-based curative care (HC.1.4)	NA	4.0
Outpatient long-term health (HC.3.3)	22.0	22.0
Home-based long-term healthcare (HC.3.4)	170.0	173.0
Medical goods (non-specified by function) (80% of HC.5)	272.0	804.0
Preventive care (HC.6)	310.0	310.0
Governance, and health system and financing administration (80% of HC.7)	55.0	128.4
Per capita primary care expenditure	**1790.0**	**2882.3**

ppp: Purchasing Power Parity.

Data from this table has been used to calculate numbers for Table 4.5.

Source:
Per Capita Primary Care Expenditure
1. Global Health Expenditure Database, World Health Organisation.
2. OECD Health Statistics Database.

Per Capita Government Primary Care Expenditure
3. OECD Health Statistics Database.

Annexure: 4.1e: Per Capita Primary Health Expenditure in ppp (USD), India, 2016-17

Per Capita Primary Health Expenditure in ppp (USD), India, 2016-17	
Indicator	**NHA 2016-17**
THE per capita in Rs.	4381.0
CHE as a percent of THE	92.8
CHE per capita in Rs.	4064.6
CHE per capita in ppp (USD)	190.4
Percent CHE attributed to primary care	45.2
Current primary care expenditure in ppp (USD)	**86.1**
Total GHE per capita in Rs.	1418.0
Current GHE as a percent of total GHE	77.8
Percent GHE attributed to primary care	52.1
Current governement primary expenditure per capita in ppp (USD)	**26.9**

ppp: Purchasing Power Parity; THE: Total Health Expenditure;
CHE: Current Health Expenditure; GHE: Government Health Expenditure.

Data from this table has been used to calculate numbers for Table 4.5.

Note: *PPP used for calculations 21.35.*

Source: *National Health Accounts, Minsitry of Health & Family Welfare, Government of India.*

Annexure 4.2: Disparity in Health Outcomes and Expenditure Across Select States

Disparity in Health Outcomes and Expenditure Across Select States								
State	**TFR (2018)**	**IMR (2018)**	**U-5MR (2018)**	**MMR (2016-18)**	**Life Expectancy (2014-18)**	**Per Capita GSDP (2018-19, in Rs.)**	**Per Capita Health Expenditure (in Rs.)**	**Per Capita State Health Expenditure 2016-17 (in Rs.)**
Karnataka	1.7	23.0	28.0	92.0	69.4	232874	5183	1,389
Kerala	1.8	7.0	10.0	43.0	75.3	225484	8083	2,149
Telangana	1.8	27.0	30.0	63.0	69.6	225047	NA	NA
Gujarat	1.9	28.0	31.0	75.0	69.9	224896	3703	1,429
Maharashtra	1.7	19.0	22.0	42.0	72.5	216169	5210	1,216
Tamil Nadu	1.6	15.0	17.0	60.0	72.1	215049	4734	1,293
Himachal Pradesh	1.7	19.0	23.0	85.0	72.9	211325	5501	2,816
Punjab	1.6	20.0	23.0	122.0	72.7	172149	5960	1180
Andhra Pradesh	1.6	29.0	33.0	65.0	70	168083	4600	1,125
	2.2	**32.0**	**36.0**	**113.0**	**69.4**	**142719**	**4381**	**1418**
Haryana	2.2	30.0	36.0	91.0	69.8	260286	4533	1,341
Rajasthan	2.5	37.0	40.0	164.0	68.7	123343	3412	1,126
Odisha	1.9	40.0	44.0	150.0	69.3	109416	4059	1,108
Chattisgarh	2.4	41.0	45.0	159.0	65.2	108058	3648	1,237
Madhya Pradesh	2.7	48.0	56.0	173.0	66.5	99,025	2820	811
Uttar Pradesh	2.9	43.0	47.0	197.0	65.3	74,402	3469	772
Bihar	3	32.0	37.0	149.0	69.1	47,541	2358	504

TFR: Total Fertility Rate; **IMR:** Infant Mortality Rate; **U-5MR:** Under-Five Mortality Rate; **MMR:** Maternal Mortality Rate.

Note:
1. Selected states have been categoried into two groups based on their performance relative to India average. Within these two categories, the states have been arranged in descending order of their per capita GSDP (2018-19).
2. The states have been marked according to World Bank's classification of income levels and average value of each indicator.
3. Telangana's Infant Mortality Rate is closer to Middle Income group value (26.81) than the Low & Middle Income group value (30.61).
4. Kerala's Life Expectancy is closer to Upper Middle Income group value (75.53) than the Middle Income group value (72.05).

Source:
Total Fertility Rate
1. SRS Statistical Report, 2018, Office of the Registrar General & Census Commissioner, Government of India, pg. 78.
Infant Mortality Rate
2. SRS Statistical Report, 2018, Office of the Registrar General & Census Commissioner, Government of India, pg. 137
Under-Five Mortality Rate
3. SRS Statistical Report, 2018, Office of the Registrar General & Census Commissioner, Government of India, pg. 164
Maternal Mortality Rate
4. Special Bulletin on Maternal Mortality in India 2016-18, Sample Registration System, Office of the Registrar General, India, 2020, pg. 3
Life Expectancy
5. Rural vs Urban Expectations of Life at Birth, India, Office of the Registrar General, India, 2020, pg. 6.
Per Capita GSDP
6. State Finances: A Study of Budgets 2020-21, Reserve Bank of India, 2020, pg. 55
Per Capita Healthcare Expenditure
7. National Health Accounts Estimates for India 2016-17, Ministry of Health and Family Welfare, Government of India, 2019, pg. 45
Per Capita State Expenditure on Healthcare
8. National Health Accounts Estimates for India 2016-17, Ministry of Health and Family Welfare, Government of India, 2019, pg. 45

Annexure 4.3: Harnessing the Public Private Model for Free Diagnostics – Andhra Pradesh

Andhra Pradesh was the first state in the country to roll out a hybrid model for offering free diagnostics at all levels of government healthcare facilities under the Free Diagnostics Scheme of the National Health Mission. Beginning from 1st January 2015, the scheme was implemented in phases spanning 5 months, by the end of which all designated government facilities had been covered - 1125 Primary Health Centres (PHCs), 192 Community Health Centres (CHCs), 35 Area Hospitals (AHs) and 8 District Hospitals (Dhs).

A. Model –

There are two levels at which the diagnostic services are offered, namely:

1. In-house laboratories – some basic tests are carried out within the government facility and are mostly in the nature of rapid kit tests.

   The in-house laboratory tests available are enumerated below –

In-house Laboratory Tests		
S.No	**Test**	**Healthcare Facility Level (PHC, CHC, AH/DH)**
1	Haemoglobin	All
2	MP Slide Method/Malaria Rapid Test	All
3	ESR	All
4	Clotting time and bleeding time	All
5	Blood group	All
6	Blood sugar	All
7	HIV test	All
8	Sputum for AFB	All
9	Urine sugar and albumin	All
10	Urine pregnancy test	All
11	HBsAg	All
12	TLC	Not available in PHC
13	DLC	Not available in PHC
14	Urine microscopy	Not available in PHC
15	Peripheral blood film	Not available in PHC/CHC
16	RPR Rapid test	Not available in PHC/CHC

2. Andhra Pradesh Vaidya Pariksha Scheme (APVP) – complementary to the in-house laboratories, separate laboratories established outside the premises of the government facility offer some routine as well as more advanced tests.

The number of such tests available at each level of the healthcare facilities are given below –

Type of Facility	Number of tests available	
	Tests available in In-house Laboratories	Andhra Pradesh Vaidya Pariksha Scheme
PHC	11	7
CHC	14	19
AH/ DH	16	40

Laboratory services under the APVP scheme have been outsourced to a single service provider – **Medall Healthcare Pvt. Ltd**. The service provider was selected by the state government through a competitive bidding process. It is the responsibility of the private partner for building facilities, staffing, and providing services to all patients referred by doctors from the hospital.

The in-house laboratories are situated within the government facilities, whereas the service provider's laboratories under the APVP are established outside the premises. The sampling for tests to be carried out at the APVP laboratories is undertaken at the government facility at the sampling stations set-up by the service provider. The reports are emailed to the health facilities immediately following their generation. The transportation of the samples to the laboratories and of the printed reports back to the hospitals is the responsibility of the service provider.

There are currently 104 laboratories functioning across the state. These laboratories are categorised into three types – L1 (mother laboratories), L2 and L3.

Type	Number	Coverage
L3	97	All routine tests for all neighbouring PHCs and CHCs
L2		All routine tests for adjoining AHs/ DHs and for neighbouring PHCs and CHCs
L1	7	Advanced tests for AHs and DHs from multiple districts and all routine tests for neighbouring PHCs and CHCs

B. Costing and Budget –

The arrangement between the service provider and the state government is based on a **cost-per-patient model** in lieu of a cost-per-test model. The state government is spending Rs. 235 per patient towards services availed at the service provider's laboratories.

The budget allocated for the scheme in the years 2016-17 and 2017-18 remained the same at

Rs. 105.75 crores. The central government contributes to 60% of the budgetary allocation, whereas the state government provides for the rest.

The entire costs of in-house laboratories are borne by the state government.

C. Coverage –

The number of patients tested under the scheme from its inception i.e Jan 2016 till May 2021 is 2,32,17,817 patients. The number of tests conducted is 9,07,77,438. About 55-60 lakh patients avail the testing facilities under the APVP in a year. According to the World Health Organisation Evaluation Report of 2018, the highest proportion of patients tested was at the PHC level (52%), followed by CHCs (30%), AHs (12%) and DHs (6%). Further, the report stated that about 10% of total patients in the government facilities were required to be tested at these laboratories.

D. Outcomes –

1. **Improved patient care –** availability of better and larger number of diagnostic services in government facilities has led to better management of diseases and health conditions, increased patient load, and a reduction in proportion of patients availing private diagnostic services across the board.
2. **Lesser OOPE –** per capita OOPE on diagnostics across public and private sectors reduced by 55% – from Rs. 860.54 in 2015 to Rs. 388 in 2017. In the public sector alone, it decreased by 81% – from Rs. 32 in 2015 to Rs. 6 in 2017. Average OOPE per patient on diagnostics for chronic diseases in the public sector decreased by 40% in this period.
3. **Higher patient satisfaction with the services offered.**
4. **Doctor satisfaction –** Majority of the doctors rated the service to be highly satisfactory. However, the level of satisfaction was lower amongst the doctors in AHs and DHs. An overwhelming number of doctors were relatively more satisfied with in-house laboratory results.

Source:

1. *Evaluation of the Free Diagnostics Scheme in Andhra Pradesh, World Health Organization and Government of India, 2018.*
2. *Reports of the Department of Health, Medical and Family Welfare, Government of Andhra Pradesh, accessed on 4 June 2021.*

Annexure 4.4: Tamil Nadu's Pioneering Drug Procurement and Distribution Model

The method of drug procurement and distribution in the public health sector in Tamil Nadu underwent a pivotal change in 1994 with the incorporation of the Tamil Nadu Medical Services Corporation (TNMSC). With the aim of ensuring constant availability of essential medicines at all government healthcare facilities in the state, TNMSC, an autonomous body, sought to streamline the processes of procurement, storage and distribution of drugs. The TNMSC model has proven to be successful in not only achieving its stated objective but also in bringing down the cost of drug purchase for the government, among several other benefits (mentioned below). Heavy reliance on information technology for the purpose of enhancing efficiency, transparency, and accountability has been a critical element in producing the overall positive outcomes. Apart from drugs and medicines, the TNMSC also handles the procurement and distribution of certain surgical and suture items.

A. Drug Procurement Process

The procedure for procurement of drugs is delineated below:

1. Preparation of the Essential Drugs List (EDL) and Assessment of Quantity

Inputs regarding the requirement of drugs are taken from Government Medical Facilities across the state. The TNMSC Drug Committee finalises the EDL and quantity of drugs to be purchased based on such inputs in a Drug Committee Meeting convened in November every year.

The Drug Committee consists of the following members:

i. Director of Medical Education
ii. Director of Medical and Rural Health Services
iii. Director of Public Health and Preventative Medicine
iv. Director of Medical and Rural Health Services (ESI)
v. Director of Family Welfare
vi. Director of Drugs Control
vii. Chief Physician
viii. Specialists and Surgeons

The Drug Committee further evaluates the slow-moving, non-moving, and outdated items and suggests their removal from the EDL. Additions may be made to the EDL based on the requirements as identified by the healthcare facilities. The quantity of items to be purchased is arrived at by the Drug Committee based on preceding year's purchases and utilisation.

2. Tendering Process

There is a **two-tiered** tendering process – a technical bid, followed by a price bid. The **technical bids** received are opened and preliminarily examined in the presence of the Tenderers/ their representatives mainly to ensure the submission of all relevant documents. Detailed scrutiny in respect of the specifications is undertaken at a later time in the Head Office.

The next stage is the **physical inspection** of the manufacturing premises of the tenderers, both first time participants and previously empanelled suppliers. They are evaluated on compliance with Good Manufacturing Practices (GMP) and their production capacity. The inspection team is constituted with officials drawn from the Drug Control Office and user departments such as Director of Medical Education and Direction of Medical and Rural Health Services.

Price bids are invited from tenderers shortlisted on the basis of the technical bid evaluation and recommendations of the inspection team. The different prices quoted by each participant are circulated amongst all tenderers. The lowest rates for all items are determined and published on the same day. The corresponding tenderers are called for price negotiations. Approval of the Board is the final requirement before awarding of contracts to the tenderers.

3. Procurement of Drugs

Purchase orders are placed monthly for essential drug items and surgicals, and once every two months for suture items. The policy is to have stock sufficient to last four months in the warehouses and stock worth two months in the pipeline. The focus is comparatively more on those classified as fast-moving items than the slow-moving ones.

The purchase order quantity for each drug is arrived at by taking the maximum of -

a. Average of previous 3 years (ED)/ 5 years (surgicals and sutures)

b. Immediate 365 days consumption

c. Stock available in warehouse

d. Pipeline from supplier

e. Inter warehouse transfer-in stocks

Under the terms of the tender, the supplier is bound to supply the items within a stipulated time failing which the supplier will lose the subsequent orders and will be liable for costs.

4. Quality Control

Random samples from each batch are sent on the very day of delivery by the supplier for testing at various empanelled laboratories. Clearing the quality test is a prerequisite for the supplied stock of items to be released for distribution to various healthcare facilities. In case a sample fails the test, the warehouses will be informed to freeze the relevant stock and segregate it from the rest of the stock until it is cleared by the Quality Control Department. Upon confirmation of quality test failure, the

stock is returned to the supplier. Depending on the nature of the failure, the supplier is blacklisted according to procedure.

Samples drawn by health inspectors from stocks at health facilities may also fail quality tests. In such a situation, the warehouses are instructed to stop the supply of the stock and to recall the drugs already supplied to the health facilities.

5. **Automated Payments to Suppliers**

All financial transactions occur at the state-level including payments to the suppliers. Financial management has been automated whereby electronic transfer of the amount is made by default upon receipt of the quality test clearance report.

B. Drug Distribution Process – the Passbook System

The TNMSC undertakes distribution of drugs till the PHC level. It follows a value-based Passbook System under which each healthcare facility is required to deposit 90% of their respective funds for drug procurement in a public account of the TNMSC. The remaining 10% is retained for decentralised drug procurement at the facility level for contingencies. Each such facility is given a passbook in return with an upper limit corresponding to the amount deposited. The facility is required to inform the nearest warehouse when the need arises for the supply of any item. The warehouse will fulfill the order and the delivery is recorded in the passbook (both name and value of the drug/ item). Financial transactions of any kind at the facility level are avoided. The passbook system further facilitates transparency and accountability in distribution of drugs and other items by effectively tracking both the requirements of the facilities and the corresponding supply.

C. Scientific Inventory Management

A computerised inventory management system keeps track of inventories in all warehouses in real-time. Scientific warehousing methods are utilised whereby 'further order quantity' forecasts are generated during the year via software tools.

The computerised management of inventory extends to the end-facilities as well where the first-in-first-out principle is used to exhaust the older stock on priority.

Inter-warehouse transfers are made to avoid wastage due to expiry of drugs. Drugs that are in excess supply in a particular warehouse are shifted to another warehouse where the stock can be utilised. Similarly, movements of short-expiry drugs are analysed every fortnight to enable efficient utilisation.

D. Outcomes

1. **Optimum availability of drugs -** scientific management of inventories and localised EDLs that are finalised based on utilisation patterns put an end to both excess and shortage of drugs at the facilities.

2. **Competitiveness -** transparent tendering process inspires confidence of the applicants which in turn increases the competitiveness of the price bids.
3. **Cost control in procurement -** several factors in the TNMSC model have led to cost-effectiveness such as highly competitive bidding process, centralised rate-contracting as well as payments system, localised EDL (avoiding unnecessary procurement). Singh PV. et al showed that the prices of drugs were the lowest in Tamil Nadu in 17 out of 32 randomly selected drugs, compared across 5 states.
4. **Reduced OOPE on drugs -**

   Tamil Nadu saw a sharp decline in impoverishment due to OOPE on drugs from 1993-94 to 2004-05 (a 60% decrease from 4.2% to 1.7% as opposed to a 20% decrease in the national average, from 3.6% to 2.9%) (Selvaraj et al., 2017).

   Furthermore, the share of medicines in OOPE (2011-12) was lower for Tamil Nadu vis-a-vis other states with comparable Monthly Per Capita Consumption Expenditure. In fact, it was the lowest for Tamil Nadu amongst all major states barring Delhi (Selvaraj et al., 2017).

   The low share of drugs in the cost of hospitalised care in public facilities is another indication of the efficiency of the TNMSC model. For instance, the cost of medicines in public facilities per hospitalisation case was Rs 100-140 in 2004-05, which was one-eighth of the national average (Rs. 880-1000) (Selvaraj et al., 2017).

E. Key Takeaways

- **Autonomous drug procurement body -** *to ensure transparency, independent decision making and faster payment processes*
- **Centralised** *procurement and delivery*
- **Clear-cut rules and regulations -** *facilitating transparency and accountability by promoting competition and enforcing quality*
- **Localised EDL** - *for optimal use of limited financial resources*
- **Political/ legislative support** - *in the form of* ***adequate budgetary allocation*** *for both the initial capital expenditure and operating costs.*
- **Multi-stakeholder engagement** - *to enhance transparency of the system and thereby the confidence of the bidders.*
- **Use of Information Technology -** *for scientific inventory management, payment, and tracking of stocks.*
- **Quality testing** - *by a third party*
- **Transparency** - *via lead time payments, quality control and usage of IT systems.*

Source:

1. *Drug Procurement Policy, Tamil Nadu Medical Services Corporation Limited Website, available at: tnmsc.tn.gov.in, accessed on 15th June 2021.*
2. *"Tamil Nadu Medical Services Corporation: A Success Story", Forbes India, 27 July 2010.*
3. *Singh PV et al., "Understanding public drug procurement in India: a comparative qualitative study of five Indian states", BMJ Open 2013.*
4. *Chokshi M. et al, "A cross-sectional survey of the models in Bihar and Tamil Nadu, India for pooled procurement of medicines", WHO South-East Asia J Public Health 2015.*
5. *Dr. S. Barik et al, "Study on Drugs Availability and Diagnostic Services in Tamil Nadu & Kerala", Ministry of Health and Family Welfare, Government of India, 2011.*
6. *Sakthivel Selvaraj et al., "Free Medicines in Tamil Nadu: sustainable reforms and effective financial protection", 3rd International Conference on Public Policy (ICPP3), Singapore, 2017 (Selvaraj et al., 2017)*

Annexure 5.1: Aarogyasri Program in Erstwhile Andhra Pradesh prior to Bifurcation

Aarogyasri programme is a flagship community health insurance initiative of the Andhra Pradesh (combined) government that was launched in 2007. It began as the Aarogyasri Community Health Insurance with the aim to achieve "Health for all," by providing universal health coverage for the poor in three backward districts of Mahboobnagar, Anantapur and Srikakulam on pilot basis. Subsequently, the programme was extended to the entire Andhra Pradesh state in a phased manner to cover 1.92 Crore BPL families (more than 80% of the population) in 23 districts from July 17, 2008. It continues to run successfully in Andhra Pradesh and Telangana, after the division of the erstwhile Andhra Pradesh state.

The programme offers social protection by improving access of Below Poverty Line (BPL) families to quality medical care for treatment of identified diseases involving hospitalization, surgeries and therapies, through a unique PPP model in health insurance. Free, quality hospital care and equity of access are provided to the urban and rural poor at identified networks of health care providers, public and private, through a state-funded reimbursement mechanism, serviced by the Aarogyasri Health Care Trust. In addition to providing financial security for the poor against catastrophic health expenditure, the programme sought to strengthen the government hospitals through demand side financing.

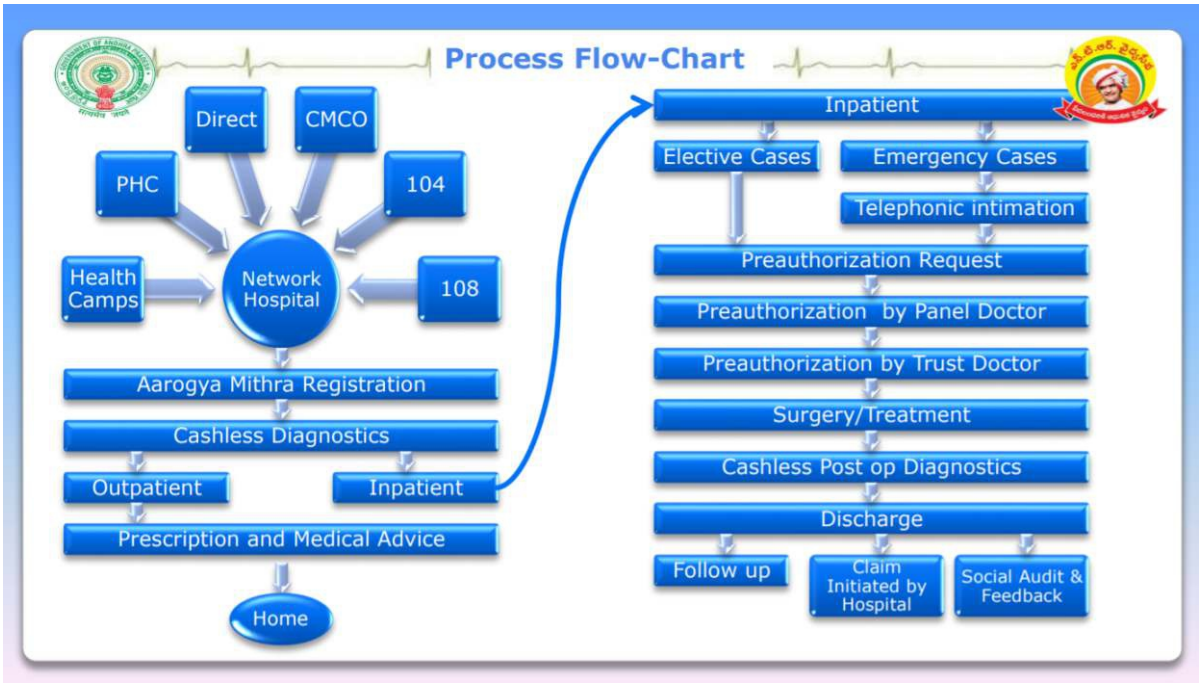
As Andhra Pradesh is predominantly an agrarian state, financing a universal health coverage for persons living below poverty line (BPL), especially for the treatment of serious ailments such as cancer, kidney failure, heart diseases, is one of the key determinants that affect the poverty levels in the state. The beneficiaries for this programme are identified through the white ration cards provided for families living below the poverty line. It was estimated that about 86% of the families of the state are BPL ration card holders and eligible to utilize the benefits provided by the programme.

Primary screening of beneficiaries is done free of charge through a) the Vaidya Mitra at the PHC, b) a system of health camps conducted at the PHC level by the network hospitals and c) free OP screening done by the network hospitals as part of programme services. During the health camps, patients are screened and treated for common primary care ailments and referred to the network hospitals for secondary and tertiary level interventions. The choice of hospital for treatment lies with the patient. Activities such as exhibits on hygiene, general health, prevention of communicable diseases, and early detection and prevention of chronic diseases are also conducted during the health camps. Between 2008 and 2012, over 30,000 health camps were conducted across the then Andhra Pradesh state, where 52.3 lakh patients were screened for common ailments and 2.4 lakh were referred to the network hospitals. The health camps also helped in promoting general health awareness and popularizing the programme.

The process across all interventions such as the health camps, OP screening, testing, treatment, follow-up and claim payment is transparent and web-based, in order to prevent any misuse or fraud.

The programme compliments the services rendered by government hospitals outside the programme and attempts to fully meet the hospital needs of the poor.

Functioning of Aarogyasri Programme: An Overview



The table below shows the progress of the programme over 5 years since its inception in 2007. The programme began with a budget of about Rs.160 Crores in 2007-08, and has progressively increased to more than Rs.1800 Crore in 2011-12. The programme which was initiated with a coverage for 163 identified treatments in 6 specialities was gradually extended to 942 procedures in 31 specialities. In 2011-12, 942 therapies in 29 specialties such as cancer, cardiology etc, were provided in 380 network hospitals. Initially, each BPL family was provided with a financial coverage of Rs. 2 lakhs per year on floater basis, the coverage has subsequently been increased in both Andhra Pradesh and Telangana.

Table: Aarogyasri Cost and Utilization in Combined Andhra Pradesh						
Item		**2007-08**	**2008-09**	**2009-10**	**2010-11**	**2011-12**
Amount Spent (Rs. Crore)		159.65	663.74	1320.61	1589.97	1867.1
Treatments Covered			932	942	942	942
Health Camps	**Camps Conducted**	-	6761	8263	8348	7483
	Patients Screened	-	1176558	1390543	1337928	1328474
	Patients Referred	-	101687	64782	43694	29546
Hospitals Empanelled	**Government Hospitals**	13	82	2	0	1
	Private Hospitals	71	207	17	18	43
	Total	**84**	**298**	**19**	**18**	**44**
Therapies Done	**Government Hospitals**		36645	65936	101289	127490
	Private Hospitals		180736	260279	631761	348216
	Total	**16624**	**217381**	**326215**	**733050**	**475706**

Source: YSR Aarogyasri Annual Report 2008-09, 2009-10, 2010-11, 2011-12.

Table prepared by Foundation for Democratic Reforms.

Source:

1. *Andhra Pradesh YSR Aarogyasri Programme Annual Reports 2008-09, 2009-10, 2010-11, 2011-12.*
2. *Presentation on Dr. NTR Vaidya Seva, Andhra Pradesh Human Resource Development Institute, available at: aphrdi.ap.gov.in.pdf*

REFERENCES

1. Johns Hopkins University Coronavirus Resource Center, 6th May 2021.
2. National Health Profile 2020 (NHP), Ministry of Health and Family Welfare, Government of India, 2020, pg. XXI, 268, 385.
3. Annual Report 2019-20, Indian Nursing Council, pg. 47.
4. "National Health Accounts Estimates for India 2016-17", Ministry of Health and Family Welfare, Government of India, 2019, pg. 5-6, 10, 11, (NHA 2016-17).
5. Sakthivel Selvaraj, et al., *"Quantifying the financial burden of households' out-of-pocket payments on medicines in India: a repeated crosssectional analysis of National Sample Survey data 1994–2014"*, BMJ Open 2018, pg. 5.
6. Shaza E. Fadel, et al. *"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, pg. 1119.
7. AIIMS at a Glance, 64th Annual Report 2019-20, All-India Institute of Medical Sciences.
8. "India: Health of the Nation's States - The India State-Level Disease Burden Initiative", ICMR, PHFI, IHME & Dept. of Health Research, Ministry of Health and Family Welfare, Government of India, 2017, pg. 34.
9. "Maternal Mortality Ratio", Release ID: 1697441, Press Information Bureau (PIB), Ministry of Health and Family Welfare, Government of India, 2021, available at: https://www.pib.gov.in/PressReleasePage.aspx?PRID=1697441, accessed on 25 June 2021.
10. Official Website of Ayushman Bharat, available at: https://pmjay.gov.in/, accessed on 25 June 2021.
11. "Mission Indradhanush 3.0 to focus on children, pregnant women who missed vaccination during COVID-19", The Economic Times, 19 Feb 2021.
12. Official Website of National Health Mission, available at: http://www.nhm.gov.in/index1.php?lang=1&level=2&sublinkid=824&lid=220, accessed on 25 June 2021.
13. "National Health Policy 2017", Ministry of Health and Family Welfare, Government of India.
14. "Compendium of India's Fertility and Mortality Indicators, 1971 - 2013", Office of the Registrar General & Census Commissioner, Government of India, available at: https://censusindia.gov.in/vital_statistics/Compendium/Srs_data.html.
15. "SRS Statistical Report 2018", Office of the Registrar General & Census Commissioner, Government of India, pg. 78, 137.

16. "Rural vs Urban Expectations of Life at Birth, India", Office of the Registrar General, India, 2020, pg. 6.

17. Geetanjali Kapoor, et al., *"State-wise estimates of current hospital beds, intensive care unit (ICU) beds and ventilators"*, Center for Disease Dynamics, Economics & Policy and Princeton University, 20 April 2020, (Kapoor, et al, 2020).

18. "Health in India, NSS 71st Round, January - June 2014", Ministry of Statistics and Programme Implementation, Government of India, pg. 32, 33, S-5, S-6, S-7.

19. "Health at a Glance: Asia/Pacific 2016, Measuring Progress Towards Universal Health Coverage", OECD/WHO, 2016, pg. 65.

20. Jishnu Das, et al., *"Two Indias: The Structure of Primary Health Care Markets in Rural Indian Villages with Implications for Policy"*, Social Science & Medicine, 2020, pg. 2, 5.

21. Renu Shahrawat, et al., *"Insured Yet Vulnerable: Out-of-Pocket Payments and India's Poor"*, Health Policy and Planning, 2012, pg. 217, 219.

22. "Why PM-JAY: Background", Pradhan Mantri Jan Arogya Yojana Official Website, available at: https://pmjay.gov.in/about/pmjay, accessed on 25th June 2021.

23. Indrani Gupta and Samik Chowdhury, *"Financing for Health Coverage in India: Issues and Concerns"*, IEG Working Paper No. 346, Institute for Economic Growth, Delhi, 2015, pg. 5-9, (Gupta et al., 2015).

24. Anamika Pandey, et al., *"Variations in Catastrophic Health Expenditure Across the States of India: 2004 to 2014"*, PLoS ONE 13(10), 2018, pg. 4-5, 9.

25. "Funding Indian Healthcare: Catalysing the next wave of growth", PricewaterhouseCoopers and NATHEALTH, 2017, pg. 3, 8.

26. "India: Building Best Practices in Healthcare Services Globally", Federation of Indian Chambers of Commerce and India (FICCI), 2019, pg. 15.

27. "Indian Pharmaceuticals - A Formula for Success", National Investment Promotion and Facilitation Agency, available at: https://www.investindia.gov.in/sector/pharmaceuticals, accessed on 25 June 2021.

28. "Pharmaceuticals, Indian Brand Equity Foundation (IBEF)", November 2016, available at: https://www.ibef.org/download/Pharmaceutical-November-2016.pdf, accessed on 25 June 2021.

29. "Investment Opportunities in India's Healthcare Sector", NITI Aayog, 2021, pg. 15-16.

30. Mauricio Bras Zanolli, et al., *"Differences in clerkship development between public and private Brazilian medical schools: an overview"*, BMC Med Educ 20, 316 (2020), (Zanolli et al., 2020).

REFERENCES

31. Perry G Rigby and Ramnarayan P Gururaja, *"World medical schools: The sum also rises"*, Journal of the Royal Society of Medicine Open, 2017, (Rigby et al., 2017).
32. "These are the world's healthiest nations", Bloombergquint, 24 Feb 2019.
33. Jeffrey S. Hammer, *"Economic Analysis for Health Projects"*, The World Bank Research Observer, vol. 12, no. 1, Feb 1997, pg. 48.
34. "Investing in Health: World Development Indicators", World Development Report, World Bank, 1993, pg. nos. x, 54-56.
35. Tonmoy Islam, et al., *"International Comparisons of Poverty in South Asia"*, Asian Development Review, vol. 38, no. 1, 2021, pg. 143.
36. "The roles of the government and the market in health", World Bank, pg. 56.
37. Roger Feldman, *"Health Insurance in the United States: Is Market Failure Avoidable?"* The Journal of Risk and Insurance 54, no. 2, 1987, pg. 304.
38. Roosa Tikkanen, Melinda K. Abrams, *"US Healthcare from a Global Perspective: Higher Spending, Worse Outcomes?"*, The Commonwealth Fund, 30 Jan 2020.
39. N. Gregory Mankiw, *"The Economics of Healthcare"*, Harvard University Publication, 2017, pg. 5.
40. David U. Himmelstein, et al., *"Health Care Administrative Costs in the United States and Canada, 2017"*, Ann Intern Med, Jan 2020.
41. Official website of Centers for Medicare & Medicaid Services (CMS.gov), available at: https://www.cms.gov/Research-Statistics-Data-and-Systems/Statistics-Trends-and-Reports/NationalHealthExpendData/NHE-Fact-Sheet, accessed on: 25 June 2021.
42. Keisler-Starkey, et al., *"Health Insurance Coverage in the United States: 2019"*, U.S. census bureau, U.S. Department of Commerce, 2020, pg. 4.
43. Munira Z. Gunja, Sara R. Collins, *"Who are the remaining uninsured and why do they lack coverage?"*, The Commonwealth Fund, 28 Aug 2019.
44. Paul Krugman, Robin Wells, *"The Health Care crisis and what to do about it?"*, The New York Review of Books, vol. 53, no. 5, 23 March 2006.
45. K. Suphanchaimat, R. et al., *"Financial risk protection of Thailand's universal health coverage: results from series of national household surveys between 1996 and 2015"*, Int J Equity Health 19, 2020, pg. 6.
46. Development Co-operation Report 2002, Development Assistance Committee, OECD, 2003, pg. 166.
47. Official website of Center for Disease Control and Prevention (CDC), available at: https://www.cdc.gov/nchs/fastats/access-to-health-care.htm, accessed on: 25 June 2021.

48. "Health at a Glance 2019: OECD Indicators", OECD, 2019, pg. 24-31.

49. Amanda Borsky et al., *"Few Americans Receive All High-Priority, Appropriate Clinical Preventive Services",* Health Affairs, vol. 37, no. 6, 2018.

50. Robin Osborn et al., *"In New Survey of Eleven Countries, US Adults Still Struggle With Access to and Affordability of Health Care",* Health Affairs, vol. 35, no. 12, 2016.

51. Institute of Health Metrics and Evaluation (IHME) - Global Health Data Exchange, University of Washington, Seattle, available at: https://vizhub.healthdata.org/gbd-compare/, accessed on: 25 June 2021.

52. Jishnu Das, Jeffrey Hammer, *"Quality of Primary Care in Low-Income Countries: Facts and Economics",* Annu. Rev. Econ. 2014, pg. 539, 542.

53. Ajay Mahal, et al., *"The Poor and Health Service Use in India",* HNP Discussion Paper, Human Development Network (World Bank), 2001, pg. 3 (Mahal et al., 2001).

54. David H. Peters, et al., *"Better Health Systems for India's Poor",* Health, Nutrition, and Population Series, Human Development Network (World Bank), 2002, pg. 14.

55. "e-Pharmacies – Bridging the gap in Indian healthcare", Invest India, National Investment Promotion & Facilitation Agency, 22 June 2021, available at: https://www.investindia.gov.in/team-india-blogs/e-pharmacies-bridging-gap-indian-healthcare, accessed on 25 June 2021.

56. Rural Health Statistics 2019-20, Ministry of Health and Family Welfare, Government of India, pg. 135, 136, 180.

57. Ayushman Bharat Pradhan Mantri Jan Arogya Yojana (AB-PMJAY) Annual Report 2019-20, National Health Authority, Government of India, pg. 2, 6-8, 13, 18-20, 27, 54.

58. Socio-Economic Survey 2019-20, Planning Department, Government of Andhra Pradesh, pg. 185.

59. Andhra Pradesh YSR Aarogyasri Programme Annual Report 2008-09, pg. 7.

60. Official Website of Telangana Aarogyasri Health Care Trust, available at https://aarogyasri.telangana.gov.in/ASRI2.0/, accessed on 5 June 2021.

61. Telangana Socio-Economic Outlook 2021, Planning Department, Government of Telangana, pg. 115.

62. Budget Speech 2019-20, Finance Department, Government of Andhra Pradesh, pg. 17.

63. G. O. Rt. No. 685, Health, Medical & Family Welfare Department, Government of Andhra Pradesh, 31 Dec 2019, available at https://www.ysraarogyasri.ap.gov.in/documents/10181/0/GO+1000+RS+Procedures/f391c745-1650-4d65-ac33-b71a63753b29.

64. Official Website of Andhra Pradesh Aarogyasri Health Care Trust, available at https://www.ysraarogyasri.ap.gov.in/, accessed on 7 June 2021.
65. Socio-Economic Survey 2020-21, Planning Department, Government of Andhra Pradesh, pg. 357.
66. Foundation for Democratic Reforms interactions with Andhra Pradesh Aarogyasri Health Care Trust.
67. Employees' State Insurance Corporation Annual Report 19-20, Ministry of Labour & Employment, Government of India, pg. 5, 10.
68. Official Website of GVK Emergency Management and Research Institute, available at http://www.emri.in/our-presence/, accessed on 10 June 2021.
69. EMRI E-Magazine "EM CARE", March, April & May 2020, Vol - 08 Issue 03, 04 & 05, pg. 6.
70. Foundation for Democratic Reforms interactions with a medical expert from Telangana.
71. Foundation for Democratic Reforms Field Study of Public Teaching Hospitals in Andhra Pradesh.
72. The Economic Survey 2020-21, Ministry of Finance, Government of India, Volume I, pg. 160.
73. State Finances: A Study of Budgets 2020-21, Reserve Bank of India, 2020, pg. 50.

General Secretary, Foundation for Democratic Reforms

Dr. Jayaprakash Narayan

Core Research and Editorial Team, Foundation for Democratic Reforms

V. Keshav Reddy

Shweta Chandar

Snigdha Nagabhyrava

Sruti Paturi

Sumedha Kuraparthy

Vriti Bansal

Other Researchers

Aishwarya Rao Katakam

Chaitanya VNSS Lekharaju

Sai Naga Raghuram Nanduri

Sai Srujana Illa

FOUNDATION FOR DEMOCRATIC REFORMS

#6-3-1187, FLAT NO. 801 & 806, 8TH FLOOR, SRINIVASA TOWERS,
BESIDE ITC KAKATIYA HOTEL, BEGUMPET, HYDERABAD – 500016

91-40-2341 9949

COMMUNICATIONS@FDRINDIA.ORG
JP@FDRINDIA.ORG

91-40-2341 9948

FDRINDIA.ORG