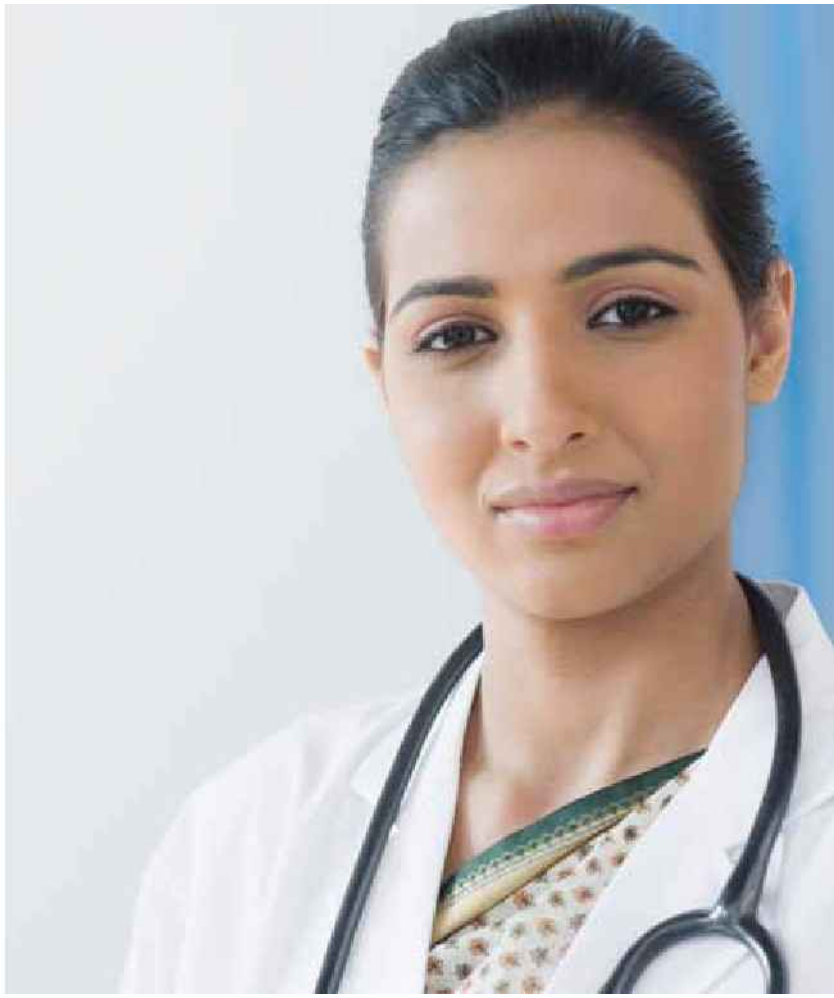
Confederation of Indian Industry

1 September 2012

Healthcare Vision 2018

A roadmap for Bihar



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Executive Summary

The state of Bihar is at the crossroads of an exciting and challenging period in its history. As multiple growth and development avenues emerge, the state is embarking on a vibrant journey to realise dreams of a better future. In order to achieve this goal, it should focus on making quality healthcare affordable and accessible to all. The challenge is immense, as nearly 90% of the state's population lives in rural areas. Thus, since it is the least urbanised state in India, the development in the healthcare sector is very low. According to the report of the Planning Commission task force for Bihar, the major health and demographic indicators of the like maternal mortality ratio (MMR) and total fertility rate (TFR) are much higher than the all-India level and reflect a poor state of health in the state.

The govt. has given a priority to healthcare and is making significant investments to improve the healthcare infrastructure in Bihar. Bihar is one of the 18 high focus States to be covered under NRHM (National Rural Health Mission). Before NRHM, Bihar was part of Empowered Action Group (EAG) States. Under NRHM, a manifold increase in the allocation for the health sector in Bihar has taken place. There is also a significant improvement in outpatient load in government facilities, sterilization cases, immunization and institutional delivery. The government has taken radical measures such as: improved staffing at block PHCs by relocating from lower level facilities and contracting of general doctors and specialists; improved attendance of doctors by installing telephones in PHCs and contracting a call centre to monitor their presence. Public Private Partnerships (PPPs) have been developed for laboratory diagnostics, radiology (X rays), mobile medical services and hospital maintenance.

In spite of the government initiatives under NRHM and external agencies like the Department for International Development (DFID), a lot needs to be done to improve the infrastructure, quality and accessibility of healthcare in Bihar. The public health facilities remain grossly inadequate compared to the norms laid down by the government of India (GoI). Furthermore, most of the existing facilities lack the basic minimum infrastructure needed for their optimal functioning. In addition to government hospitals, there are very few private hospitals in Bihar. Most of the organised private healthcare infrastructure is confined to the capital town, Patna. Patients have to come to Patna for secondary and tertiary care and those who have some means of financing healthcare move out of the state for treatment.

The state needs to not only improve significantly upon the available infrastructure but also bring new advanced models of delivery to cater to the growing unmet healthcare needs and penetrate into remote sections of the state. The objective of this vision document is to provide a roadmap for the state of Bihar in its quest for future achievements in the healthcare sector. The vision document has been formulated by performing a critical appraisal of the progress of the current initiatives within the state and by identifying incentives and initiatives provided by other states that have helped to yield success. The strategies and interventions have been outlined under three broad areas:

- Attract and incentivise private participation to set up healthcare infrastructure in partnership with government or otherwise.
- Increase penetration of healthcare delivery mechanisms in rural areas through the use of technology.
- Increase availability of trained manpower to work in the healthcare sector.

The roadmap for 2018 is divided into the following: (a) immediate short-term actions to be taken to achieve the benefits by 2014 and (b) long-term initiatives to realise benefits after 2014. The short-term actions should be aimed at expanding the existing infrastructure (hospitals, nursing homes, PHCs) and increasing the capacity of the existing colleges and training centres. This can be done by the state on it own or through PPP. In the short term, the state should also enact clear policies and guidelines on PPP in the healthcare sector, which will attract large private investments in the healthcare industry in the state. Having a clear PPP and health policy will also help the state in reaching long-term goals like attracting large private players to set up super-specialty hospitals, medi-cities (comprising research facilities, service apartments and multi-organ transplant institutes) as well as medical and nursing colleges. The govt needs to provide incentives for private participation in remote diagnostics and health services through telemedicine to increase penetration of quality healthcare in rural areas.

Introduction

Recognizing the need to progressively address the huge challenges Bihar faces in achieving sustainable healthcare reforms and accelerating human development, Health has been given priority attention by the State. Specific activities have been undertaken to improve the basic indicators of health. These include improvements in infrastructure and delivery system of health care, provision of manpower, equipments and drugs, improved inter-sectoral coordination, monitoring and evaluation, and other innovative approaches.

However an analysis of the current health profile of Bihar indicates the gaps and deficiencies in terms of healthcare service outreach, available resources, healthcare infrastructure and affordability, when compared to some of the other Indian states. The strategies and interventions outlined would focus on key areas affecting the important indicators of health hoping that success of these initiatives would have far reaching implications towards better health of common people across the State. The focus of the outcomes and the associated key processes for the achievement of these outcomes, would be at improving the health status in Bihar at a faster pace.

Vision Statement

Every citizen of the state will have access to affordable, quality health services and medicines with all major diseases being controlled.

Goals

Improve the healthcare infrastructure by increasing the number of beds per thousand population by 3 times in the next 5 years;

Increase the number of doctors graduating per year progressively through increase in the number of medical colleges by 4 times in the next 6 years;

Increase the number of trained and certified Medical staff (like paramedics, radiologists, lab technician, OT attendants, pharmacists, and ANM & GNM nurses) by 3 times in the next 3 years;

Set up at least 2 industrial hubs for manufacturing of medical devices in one or more of the 4 Regional Offices under Bihar Industrial Area Development Authority in the next 5 years;

Establish drug warehouses in all the districts with state-of-the-art inventory monitoring system and connectivity with healthcare facilities in the next 3 years;

Initiate health insurance to poorer communities through microfinance institutions (MFI) and NGOs to cover at least 40% of the rural population in the next 6 years; and

Open super specialty/multi-specialty hospitals under public private partnership at the 8 district headquarters in the next 5 years.

Approach and methodology

The vision document has been formulated by combining analytical research with deliberative democracy methods. Extensive interactions with stakeholders have been complimented with quantitative benchmarking metrics to identify key strategic interventions.

We first assessed the current healthcare state of Bihar, focusing on the key factors affecting healthcare, infrastructure deficiencies and the initiatives currently undertaken. Thereafter we benchmarked the Bihar against states that have a similar population, in terms of the initiatives undertaken as well as incentives provided by other states for attracting private investment in healthcare. This formed the basis for identifying the action areas for achieving the goals of the healthcare sector.

Health profile of Bihar

With a population of 104 million, Bihar is the second most populous state in India, next only to Uttar Pradesh. Nearly 90% of the state's population lives in rural areas, compared to 72% for the country as a whole. Being the least urbanised state, Bihar's pace of development especially in healthcare is very slow.

Despite the government's efforts in the last few decades to stabilise population growth, the state's population continues to grow at a much faster rate (25.07%) than the national population (17.6%) in terms of decennial growth. The state is densely populated with 880 persons per square kilometre as against the country average of 324. The sex ratio of the state at 916 females per 1,000 males is also less favourable than the national average of 940 females per 1000 males. The state has 38 districts divided into nine administrative divisions. In addition, the state has 101 sub-divisions, 534 community development blocks, nine urban agglomerations, 130 towns and 37,741 villages.

Only 35.7% of urban women and 14.5% of rural women in Bihar had three or more antenatal check-ups as per the National Family Health Survey (NFHS-3 2005-06).[1] This figure does not show any sign of improvement from the NFHS-2 (1998-99), when 36.3% of women in Bihar received at least one antenatal check-up. The institutional deliveries rose from 15% to 23% between NHFS-2 and NHFS-3. All key health indicators in Bihar are lower than the national average. Increasing fertility, lack of improvement in antenatal care and worsening of under-nourishment among children are the key areas of concern. In other areas there is improvement, albeit very minimal.

Table 1: Demographic, socio-economic and health profile of Bihar as compared to India

S. No.	Item	Bihar	India
1	Total population (Census 2011) (in million)	103.8	1210.19
2	Decadal growth (Census 2011) (%)	25.07	17.6
3	Crude birth rate (SRS 2010)	28.9	22.8
4	Crude death rate (SRS 2010)	7.3	7.4
5	Total fertility rate (SRS 2010)	3.7	2.6
6	Infant mortality rate (SRS 2010 & AHS 2010-11)	48	47
7	Maternal mortality ratio (SRS 2007 - 2009)	261	212
8	Population below poverty line (%)	42.60	26.10
9	Schedule caste population (in millions)	13.05	166.64
10	Schedule tribe population (in millions)	0.76	84.33
11	Female literacy rate (Census 2011) (%)	53.33	65.46

Source: Ministry of Health and Family Welfare : State Health profile Bihar 2011

1 http://www.rchiips.org/NFHS/NFHS-3%20Data/Bihar_report.pdf

The following figure shows the disease pattern in the state of Bihar:

Communicable Diseases

- Patna is home to many of the dreaded communicable diseases like,
- Malaria
- Jaundice
- Kalazar
- Tuberculosis

Lifestyle

- Lifestyle diseases like cancer, hypertension, diabetes are on the rise
- A survey among the urban high school students revealed that at least 46% of the students were taking tobacco which is one of the leading cause of cancer.
- Around 15% prevalence of Diabetes in Patna (as estimated by medical practitioners)

The incidence of communicable diseases has not decreased in Bihar as the living standards are still the worst in India

incidence of lifestyle diseases is increasing day by day in Bihar as it is in the whole of the country

Key factors affecting healthcare in Bihar

Healthcare is a complex sector with deep cross-linkages with other social sectors like nutrition, literacy, poverty, women and child development, panchayati raj, etc. Interventions under NRHM need to be catalysed by parallel actions in these sectors. According to the State Health Society's strategic roadmap for Bihar 2012-2013[2], despite the efforts of the government, following issues continue to cause concern in the healthcare sector in Bihar:

- **High MMR:** MMR continues to be high in many rural areas and especially among the poor. The chief cause for concern is that in the last few years, despite varied efforts there has been no appreciable decline in MMR in the state. The MMR in Bihar (261 per 100,000 live births) is the fourth highest in the country. The high level of MMR can be attributed to low level of institutional deliveries (23.2 percent compared to national figure of 47.7 percent as per AHS 2010-11) high level of anaemia among women (63.4% compared to national figure of 51.8%), low provision of iron and folic acid tablets to antenatal cases (8.1% compared to national figure of 20.4%), and low level of complete antenatal coverage (5.4% compared to national figure of 16.4%)[3].
- **High TFR:** The current population growth rate in Bihar is high compared to the national average though efforts have been made to stabilise it. However, the pace of population stabilisation needs to be enhanced.
- **Poor public health system:** The public health system over the years had suffered from weak governance, manpower shortages and ineffective service delivery. In order to rebuild the image and goodwill of the state it is necessary to ensure timely and good-quality services with commensurate manpower and suitable infrastructure.
- **Poor accountability:** Provision of health services by the public health system is not in sync with the needs of the people. One of the main reasons for this is the poor involvement of the community and the representatives of the Panchayati Raj Institute (PRI).
- **Delay in payment to beneficiaries:** Process for the approval and release of payments under various state and central government schemes like Janani avam Bal Suraksha Yojana (JBSY), Revised National TB Control Programme (RNTCP) and Muskaan to the concerned beneficiaries involves lot of documentation and paperwork and is not streamlined, leading to delay and dissatisfaction in various cases.
- **Poor infection management and environment protection:** The management of infectious and communicable diseases needs to be streamlined across the state through awareness among the people and preventive measures taken by the government or private entities. The level of hygiene within the healthcare premises is inadequate and the management of bio-medical waste is not effective.

Other factors impacting the healthcare delivery and quality of care in Bihar are listed below:

Substantial gaps in PHC infrastructure

In Bihar, there is an acute shortage of community health centres (CHCs)[4], primary health centres (PHCs), additional public health centres (APHCs), and sub-centres (SCs). The state has a shortage of 5,263 SCs, 626 PHCs and 552 CHCs. Besides, out of the existing PHCs, quite a few are either not well maintained thereby becoming non-functional or lack proper living infrastructure for resident doctors and nurses.

Shortage of manpower, drugs and equipments necessary for primary healthcare

There is a shortage of essential requirements such as manpower, equipment, drugs and consumables in the primary healthcare institutions. Moreover, there are no specialists at the CHCs. There is a shortage of 3,376 medical officers (MOs) and 19,945 ANMs. The percentage of PHCs having adequate equipment stands at only 6.2 percent as compared to the national figure of 41.3 percent. There is inadequate and erratic availability of essential drug supplies, ORS packets, weighing scales, etc. There is also a very acute shortage of gynaecologists and obstetricians to provide maternal health services in the peripheral areas of the state.

Lack of training facilities

The training facilities in the state (both in terms of infrastructure and human resources) remain vastly inadequate at all levels. Moreover the quality of training being imparted at some of the private institutions does not match the expected standards. This has resulted in supply of unskilled paramedics, technicians, attendants and pharmacists in many of the SCs, PHCs, CHCs, referral hospitals and district hospitals.

Under-nutrition among children and women

Bihar is a state with the lowest per capita income and a very high level of poverty. Diet surveys carried out by the Department of Women & Child Development indicate that the state ranks very low in terms of dietary intake (less than 2,000 calories). Under-nutrition is very high in the state, because of low dietary intake, high morbidity and closely spaced pregnancies

2 Bihar roadmap for health sector: http://planningcommission.nic.in/aboutus/taskforce/tsk_bhs.pdf
3 NRHM SPIP Bihar (2012-2013): http://www.statehealthsociety.bih.nic.in/districtpip12_13.html
4 Planning Commission PEO Report: http://planningcommission.nic.in/reports/peoreport/peo/peo_phc.pdf

Healthcare infrastructure deficiencies

Although the state has a fairly extensive network of public health facilities it remains grossly inadequate compared to the Government of India (GoI) norms. Furthermore, even the existing facilities lack the basic minimum infrastructure needed for their optimal functioning. The state has a shortage of 5,263 SCs, 626 PHCs, and 552 CHCs. Of 101 sub-divisional headquarters, only 23 have a sub-divisional hospital. The CHC/ Referral Hospital Network are virtually nonexistent with the state having only 101 CHCs/ Referral Hospitals (70 functional). A similar situation prevails with regard to facilities at the Health Sub-Centre level, where the state has 9,696 Health SCs i.e. an average of one Health SC for a population of 9,000 as against the norm of 5,000[5].

While the services provided by the block PHC and APHC are primary in nature and specialty services are required to be available through the CHC to a population of 100,000, these are not available at block level in Bihar.

As is shown below, Bihar's health infrastructure indicators are lower than not only many states but also the national average. Even to reach the national average of 0.7, the state requires ~40,000 beds.

Table 2: Health infrastructure of Bihar

Healthcare facility	Required	In position	Shortfall
Sub-centre	14,959	9,696	5,263
Primary health centre	2,489	1,863	626
Community health centre	622	70	552
Multipurpose worker (female)/ANM	10,499	9,127	1,372
Health worker (male) at sub-centres	8,858	1,074	7,784
Health assistant (female) at PHCs	1,641	479	1,162
Health assistant (male) at PHCs	1,641	634	1,007
Doctor at PHCs	1,641	1,565	76
Obstetricians and gynaecologists at CHCs	70	21	49
Physicians at CHCs	70	38	32
Paediatricians at CHCs	70	17	53
Total specialists at CHCs	280	104	176
Radiographers	70	15	55
Pharmacist	1,711	439	1,272
Laboratory technicians	1,711	135	1,576
Nurse/midwife	2,131	1,425	706

Source: Ministry of Health and Family Welfare : State Health profile Bihar 2011

Table 3: Other health institutes in Bihar

Health institution	Number
Medical colleges	9
District hospitals	36
Referral hospitals	70
Sub-divisional hospital	55
City family welfare centre	12
Rural dispensaries	366
Ayurvedic hospitals	11
Ayurvedic dispensaries	311
Unani hospitals	4
Unani dispensaries	144
Homeopathic hospitals	11
Homeopathic dispensary	179

Source: Ministry of Health and Family Welfare : State Health profile Bihar

5 Department of Health and Family Welfare, Bihar "State Programme Implementation Plan" http://www.ssvk.org/pdf_doc_files/rch2_health_family_welfare_bihar.pdf

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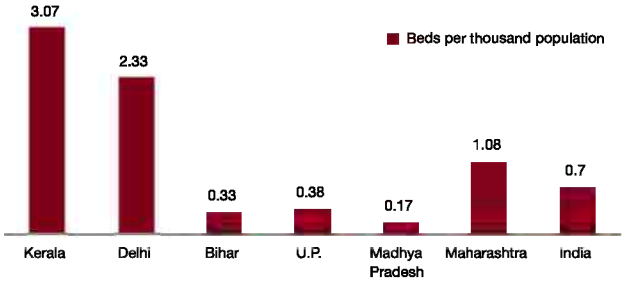

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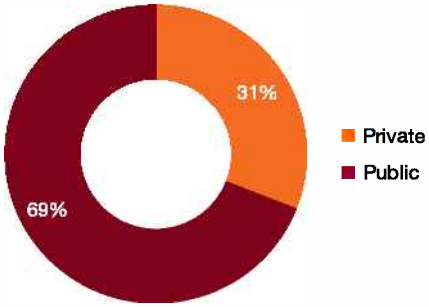
	India	Bihar	Best Performing State Kerala
Bed: Population Ratio per 1000 population	0.7	0.33	1.0
Doctor: Population Ratio	0.61	0.39	1.09
Nurse: Population Ratio	1.3	0.2	3.3
Medical Seats Per lakh Population	2.45	0.53	6.43

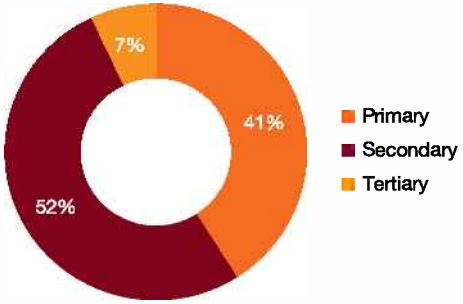
Source: National Health Profile, 2008

In Bihar, the primary care beds mostly represent the government-run PHCs and APHCs, since most of the nursing homes owned and run by surgeons have been included in secondary care. The present distribution of hospital beds in Bihar is shown in the diagram below:

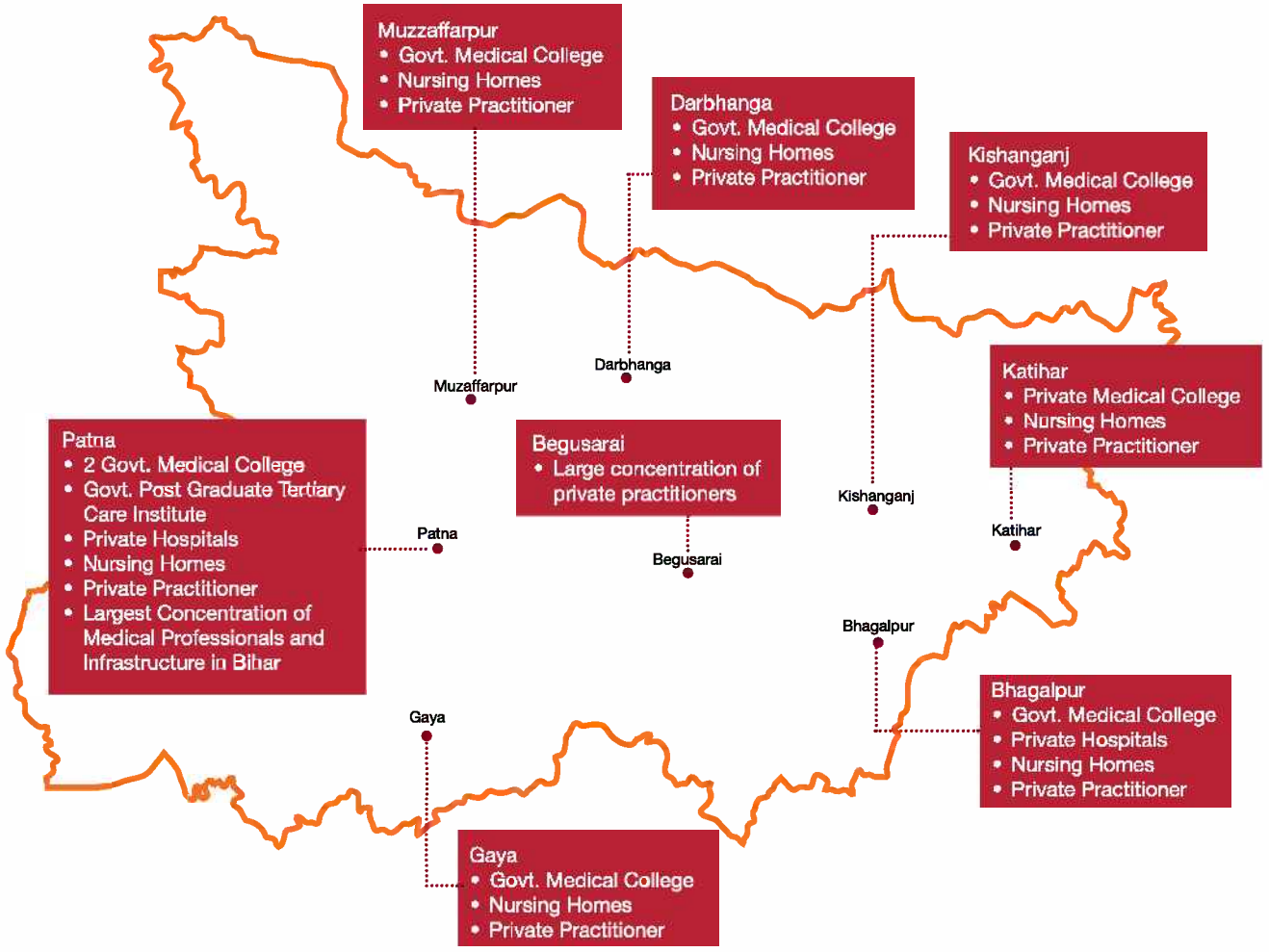
Provider



Level of care

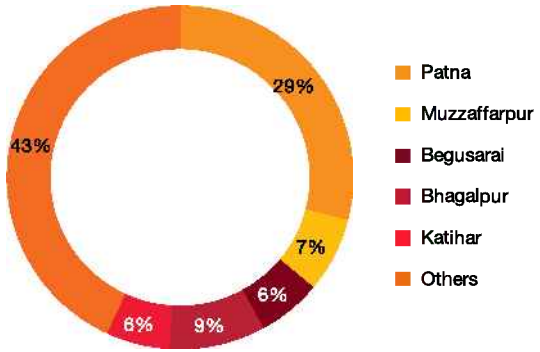


The concentration of private infrastructure in the state is depicted in the following diagram:



In terms of concentration of private infrastructure in the state, the distribution looks like the following:

Distribution of Private Beds



The above distribution diagram reveals the following facts:

- Private healthcare infrastructure is largely concentrated in Patna city, which accounts for almost 30% of the private beds available in the state.
- Most of the organised healthcare infrastructure is based in Patna, which is capital of the state. Hence, most of the tertiary care needs of the state are fulfilled from Patna.
- Most of the healthcare needs of the state are being provided by the nursing homes run mostly by individual private practitioners.
- Most of these nursing homes cater to the general needs of individuals and very few provide specialty services.
- Five towns contain half of the private beds in the state.

However, historical data of the performance outcome of the private health infrastructure shows the following:

- Most of the nursing homes do not have basic infection-control measures.
- They lack quality infrastructure in the form of medical equipment and human recourses.
- There are very few private hospitals and nursing homes in the state that employ qualified medical staff.

The government of Bihar has come up with a cumulative target for the next five years to improve their basic health infrastructure in accordance with the NRHM programme and IPHS norms.

The infrastructure and capital requirement for various formats of healthcare facilities are shown in the following table:

Format	Land (acre)	Building (Lakh Sq.ft.)	Capital (INR Crore)
100 Bedded	1-2	1-1.5	30-60
250 Bedded	4-5	2-3	75-150
500 Bedded	6-8	4.5-6	160- 300
Diagnostic Centre	0.5	0.25- 0.30	15-20
Diabetes Daycare Centre	~0.5	0.35-0.50	20-30
Eye Daycare Centre	<0.5	0.20-0.4	15-25

Table 4: State-specific target for the next five years

Infrastructure Indicators	Current Status	Cumulative Target for next 5 years				
		2012-13	2013-14	2014-15	2015-16	2016-17
Construction of Sub-Center buildings	2,359	1,541	3,541	6,541	8,541	10,280
Construction of PHC buildings	217	83	483	833	1,183	1,427
Construction of CHC buildings	399	11	50	100	130	135
Construction of District Hospital buildings	36	0	1	2	2	2
Construction of Other Hospital buildings	7	0	1	3	4	4

Source: NRHM SPIP Bihar (2012-2013)

State initiatives

The government has improved staffing at block PHCs by relocating from lower level facilities and contracted 800 general doctors and 400 specialists. It has improved attendance of doctors by installing telephones in the PHCs and contracting a call centre to monitor their presence. There is zero tolerance of absenteeism and doctors have been terminated from their service for non-attendance. The state government has also finalised the essential drug lists for each type of facility, and drug suppliers and rates have been agreed centrally with orders and payment being decentralised to district levels. There is close monitoring of stocks. As a result of the availability of both doctors and drugs at the facilities, out-patient attendance has shot up in the past year, from less than 30 to an estimated over 2000 per month. (Source: TOR_Bihar_DFID, 2008)

PPPs have been developed for laboratory diagnostics, radiology (X rays), mobile medical services and hospital maintenance. Some PHCs have also been contracted out to NGOs though this initiative has received 'mixed' responses. (Source: TOR_Bihar_DFID, 2008)

Under-nutrition in children below the age of three years has increased from 54% to 58% between NFHS 2 and NFHS 3. The Social Welfare Department (SWD) has responded to the Supreme Court order for universalisation of Integrated Child Development Scheme (ICDS) services and subsequently 8,000 anganwadi centres (AWCs) has been sanctioned. The selection of anganwadi workers (AWWs) has been decentralised to PRIs, and money for local procurement and distribution of food for the AWCs is now in the hands of the village mothers' committees. Some foods fortified with micronutrients have been made available. There is a huge challenge to universalise access to ICDS, and to ensure that the services reach children under the age of three years, who are at greatest risk of under-nutrition. (Source: TOR_Bihar_DFID, 2008)

- There are ambitious plans for an management information system (MIS) with a longitudinal system of recording every child's nutritional status on a monthly basis. There is a massive infrastructure shortfall, and the department has taken a loan from National Bank for Agriculture and Rural Development (NABARD) for this purpose. There is a huge need for training of AWWs. The Health and Social Welfare departments collaborate as part of the State Health Task Force chaired by the chief minister. (Source: TOR_Bihar_DFID, 2008)
- The Department of Public Health Engineering has embarked on an ambitious policy reform and operational plan to address access to water and sanitation. This includes the provision of toilets for all AWCs and total sanitation campaign across the state (funded by GoI). The department is also making efforts to mitigate the chemical contamination of well water (by arsenic, fluoride, iron) especially in eastern Bihar, and the exploration of the use of abundant river water to replace the contaminated well water. There is an understanding and commitment for convergence at the village level as well as between the Department of Health, Social Welfare and Public Health Engineering. (Source: TOR_Bihar_DFID, 2008)
- The state government has made substantial investments in the health sector in Bihar. Some of the investments carried on by the state government and other opportunities in the health sector are as follows:
- Mobile medical unit service in all the 38 districts;
- PHCs established in all 534 blocks;
- 'Muskan ek aviyaan' started for universal immunisation;
- Dial '1911' (toll free) for medical consultation and grievances re-addressable system established;
- "108" life support ambulance service;
- "102" ambulance service;
- Outsourcing of Hospital maintenance service on PPP mode;
- Bihar Rajya Jansankhya Parishad (BRJP) constituted under the chairmanship of Hon'ble Chief Minister to monitor the TFR indicator for the State across all the districts;
- Patient welfare committee & untied fund availability at all levels;
- Collaboration with Building construction department; and
- 3 New Medical colleges will be established by the Government - at Nalanda, Paschim Champaran and Madhepura (MCI Approved).
- Mobile medical unit service in all the 38 districts

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- Bihar Rajya Jansankhya Parishad (BRJP) constituted under the chairmanship of the chief minister to monitor the TFR indicator for the state across all districts
- Patient welfare committee and untied fund availability at all levels
- Collaboration with building construction department
- Three new medical colleges to be established by the government at Nalanda, Paschim Champaran and Madhepura (MCI Approved)

Some of the initiatives taken up by the state government to upgrade the healthcare infrastructure are listed below:

- Setting up of Bihar Medical Services and Infrastructure Corporation Ltd (BMSI) to act as a nodal agency under the Department of Health and Family Welfare (DoHFW) with the responsibility to procure and ensure provision of quality drugs, equipment, services and works in a timely manner at an optimal rate
- Sanctioning of 1,544 new six-bedded APHCs as per IPHS norms
- Identification of 10 APHCs to begin construction in 2012-13 with budget provision of 75.99 lakh INR per APHC (rate approved by state government)
- Provision of 1.2 crore INR to be made for 2012-13 to begin reconstruction of six 30-bedded referral hospitals, which are currently located in Dumaria (Gaya), Kurtha (Arwal), Taraiya (Saran), Islampur (Nalanda), Tariyani (Sheohar) and Tajpur (Samastipur)
- Provision for the construction of 10 quarters for doctors and staff in old APHCs at a cost of 40 lakh INR each in 2012-13
- Sanctioning of 7,765 new HSCs by the state government, out of which construction of 757 HSCs are already in progress while construction of additional 30 HSCs has been provisioned for 2012-13 at a cost of 15.57 lakh INR per HSC
- Renovation of two government dispensaries at Karah in Nalanda district and Parsauni in Paschim Champaran district for a sum of 2 lakh INR
- Renovation of seven sadar hospitals at Nalanda, Sarna, Sasaram, Arwal, Bhojpur, Muzaffarpur and Madhubani, with a total provision of 1.30 crore INR in 2012-13
- Major maintenance of five PHCs at Pipra (Supaul), Lady Algin Janana Hospital (Gaya), Thakurganj (Kishanganj), Bahadurpur (Darbhanga) and Suryagarha (Lakhisarai), which are working as 24x7 health facilities with a total provision of 75 lakh INR in 2012-13.

PPP initiatives in the state

Until the recent past, there were no formal channels for large scale tapping of the private sector potential through PPP in states like Bihar. With the advent of RCH and the NRHM, there has been change in the strategy. The NRHM strategy includes promotion of PPPs for gaining managerial efficiency and ensuring the achievement of public health goals.

Bihar was one of the earliest state governments to start a PPP in the healthcare sector since the NRHM. In some areas this was introduced to provide pathology and diagnostic services, operate ambulances services in the state, and run APHCs. Other areas where the private sector was engaged were outsourcing of hospital maintenance services, running of state and district data centres, contracting private specialists, sterilisation services, Emergency Medical Services (EMS), doctor-on-call services, preparation of district action plans and running of mobile medical units (MMUs)[6].

However, the available data on financial approval and actual expenses for PPP/NGO activity shows that most of the allocated fund had been remaining unutilised in Bihar.

Table 8: PPP Fund Allocation by Govt. of Bihar

Activity	Financial (in Rs. Lakhs)				
	2010-11		2011-12		2012-13
	Amount Approved	Actual Expenses	Amount Approved	Actual Expenses	Budgeted
PPP/NGO	50.00	0.95	1,880.72	588.43	3,025.72

The budget for 2012-13 has been provided for continuing PPPs in four areas: outsourcing of pathology and radiology services from PHCs to DHs, services of hospital waste treatment and disposal in all health facilities, ultra-modern diagnostic centres in regional diagnostic centres (RDCs) and medical college hospitals (MCHs), and outsourcing of HR consultancy services.

The government of Bihar has several models in place for PPP initiatives

Model No. 1 : Rates fixed by Govt.

- No Revenue Share
- Space given by Govt.

This model is for initiatives in:

- **Pathology -** Different pathological services are being made available at Govt. approved rates at all PHCs, FRUs and SDHs through setting up of sample collection centers at SDHs and testing centers at DHs by M/s Central Diagnostics, Patna and M/s Doyen Diagnostics, Kolkata.
- **Radiology (X-ray & Ultrasound) -** Radiology services are made available at Govt. approved rates by M/s IGI Medical System, Silbasa. Till now 303 X-ray centers and 40 Ultra Sound centers have been set up. With effect from 15th July 2009 this service has been made free to the people.
- **Bio-Waste Management facility -** The State Health Society has partnered with two agencies - M/s Synergy Waste Management Pvt. Ltd, New Delhi and M/s SembRamky, New Delhi to provide proper Hospital Waste Management and Disposal Services in all Health facilities, right from Medical Colleges to the PHCs. Three CBWTF facility have already started at IGIMS, Patna, and at JLNMCH, Bhagalpur and Muzaffarpur, while the fourth plant is coming up at ANNMCH, Gaya.

Model No. 2 : Revenue Share by PSP

- Space given by Govt for:
  - **Generic Drug Shop**
  - **Ultra Modern Diagnostic Centres -** These centers are being set up through revenue sharing PPP model in 9 Regional Diagnostic Centers (RDCs) at Divisional HQs and 6 Medical College Hospitals (MCHs) of Bihar. The project is for 10 years and depending upon performance, further extension will be considered.

6 Journal of Health studies: "Public-Private partnerships in Healthcare: Current Status, Future Outlook" http://www.jhs.co.in/download/downloadArticles.aspx?file=IF201243020251.pdf

Model No. 3 : Monthly Rental payable to PSP

- Space provided by Govt for:
  - **Blood Banks/Storage Units -** There are a total of 21 Blood Banks that operate in PPP (17 by Red Cross Society and 4 by others).
  - Doctor on Call : Dial 1911
  - **Emergency Medical Service -** The Bihar State Health Society is providing prompt quality pre hospital care to accident victims, fire victims, pregnant women, cardiac emergencies through Emergency Network services pilot under PPP. It was made operational in 2009-10 with 5 Advance Life Saving Ambulances (ALSA) and 5 Basic Life Saving Ambulances (BLSA). From 2010-11 onwards, the number of BLSA increased to 45 serving all the 38 districts in Bihar. In the last 3 years, number of emergencies being handled were 8,462, 23,935 and 22,787 respectively.
  - **Dial 102**
  - **Dialysis Units**
  - **Urban Health Centers** - The Govt. of Bihar will establish 33 more Urban Health Centers on a rental basis in this financial year prioritizing districts with DHs having heavy patient load.
  - **Telemedicine Services**

Model No. 4 : Outsourcing of Services

- Services outsourced by the Govt for:
  - **Urban Health Centres -** In the 4 cities of Patna, Aurangabad, Muzaffarpur and Bhojpur there are 12 existing Urban Health Centers that are non-functional. The Govt. will identify health service providers of private sectors and plan delivery of RCH services through them using the District Magistrate and District Quality Assurance Committee.
  - **Emergency Medical Services**
  - **Sterilisation Services**

The table in the following page gives details of some the PPP initiatives started by the state government. Most of the PPP initiatives listed in the Table make an attempt to serve the BPL patients. The services of pathology and radiology, when referred by the government doctor are free. There is no user fee for APHC or UHC services. Sterilization services are free of cost and the beneficiary is paid the compensation as per the GoI norms. The generic drug store has to sell the 188 drugs (as per list given by GoB) at 50 per cent of the MRP printed on the generic drugs. The advanced diagnostic centers and the dental clinics charge rates which are below the existing market rates.

Name of PPP	Year of initiation	Objective and status of the partnerships
Mobile Medical Units (MMU)	Scheme of 1 MMU per district was launched on 13th July 2009	A total of 38 MMUs are functional in Bihar. A total of 477804 patients have been treated through the MMU from July 2009-Jan 2011.
Dial 108-Emergency Referral Service	03 June 2009	Under this scheme the total number of functional units across the State are 50. This facility is being provided by Mumbai based agency M/s Zikitsha Health Private Ltd. under PPP.
Dial 102 Services-	Ongoing	6 emergency control rooms have been set up in 6 divisional head quarters i.e. Patna, Gaya, Saran, Bhagalpur, Muzaffarpur and Purnia.
Dial 1911 Services- Patient Complain Redresal Service-	This facility was launched on 03-08-2008.	Under this facility any individual can register his complain against the availability of Medical Officers/ Para Medical / Sanitation/ Electricity/ Medicines etc in the hospitals on 24 x
Diagnostic Services :	Ongoing	Free Diagnostic (Pathology and Radiology) Services to all Government Patients is being provided to the people of Bihar right from PHC to District Hospital
Basic Pathology Services	Ongoing	A total of 116 collection centres are functional across 19 districts of the State.
Basic Radiology Facilities	It is being implemented in the state since 15 July' 2009	38 districts have been given to one agency to operate, maintain and generate X-ray films and Ultrasound facilities. 175 x-ray units are functional. For ultrasound (14 centres are functional), a central reporting system (CRS) has been placed at IGIMS where Radiologists shall report on USG films.
Ultra-Modern Diagnostic facility	Ongoing	9 Regional Diagnostic centres have been established in the 9 divisional head quarter districts where facilities of pathology, Radiology, Biochemistry, CT Scan, M.R.I., E.C.G. etc is to be provided on 24x7 basis. 6 Ultra Modern Diagnostic centre have been set up in some of the Medical College and Hospitals, where facilities of Patholgy, Radiology, CT Scan, MRI, Mammography etc are/is being made available 24 x 7
Urban Health Centres	The total number of patients seen in these Urban Health Centres is 27101 (Nov'08-Nov.'10).	6 Urban Health Centres have been started in following districts- Bhojpur, Aurangabad, Patna, Muzaffarpur.
Cleanliness Programme	15 August' 2008.	the Govt. has initiated seven coloured bed sheet programme on 15 August' 2008. This programme is being implemented by the department of the Health, Govt. of Bihar. Under the programme every day a different colour bed sheets are provided on the beds
Generic Drug Shop	Since 2007	During 2007-08, Generic Drug Shops at 21 locations and during 2008-09, Generic Drug Shops at 14 locations were set up.
School Health Programme	Ongoing	About 2131139 children have under gone health check up through 23744 health camps till Nov' 2011.

Few key PPP initiatives in the state[7]

Arogya Rath: Mobile Medical Units in Bihar

Public Partner: Government of Bihar/ State Health Society of Bihar

Private Partner(s): Jaagran Solutions, Jain Videos

Target Population: General Population

Target Geography: Rural

Mobile Medical Units (MMUs), named Arogya Rath, were launched on July 13, 2009 in Bihar. The initiative was launched with the objective of providing primary health facilities to people living in remote areas of the state. These MMUs provide the same facilities as those provided by a basic hospital and it is planned to have one MMU per district Given the acute shortage of manpower in government hospitals, finding requisite skilled manpower to operate the MMUs posed a challenge. Therefore the Government of Bihar decided that the best approach towards operating these MMUs was through a Public Private Partnership. A budget of Rs.16.56crores for the year 2009-10 was allocated to the "Arogya Rath" program under the National Rural Health Mission. A fixed budget of Rs.468, 000 was allocated to be paid to each MMU.

Private providers interested in providing MMU services as per the prescribed norms were invited to apply for the project. Finally, three organizations were selected to undertake the project: Spake Systems (14 MMUs), Jaagran Solutions (12 MMUs) and Jain Studios (12 MMUs). Currently, 16 MMUs are run by Jaagran Solutions, covering 200 villages and over 13000 patients.

The responsibilities of the private partners are as follows:

- Provide the requisite vehicle, equipment and software;
- Install, operate and maintain appropriate GPS facility;
- Technical manpower to run the MMU and provide medical services;
- Technical back up for maintenance of the system; and
- Provide detailed reports and maintain database of MMU services as per the proforma provided at the time of signing of the contract, or as issued by the SHSB from time to time.

The following services are provided in the MMUs:

- Referral of complicated cases;
- Early detection of tuberculosis, malaria, leprosy, kala-azar and other locally endemic communicable diseases as well as non-communicable diseases such as hypertension, diabetes and cataract cases;
- Minor surgical procedures and suturing;
- Anti-natal check up and related services;
- Promotion of institutional deliveries;
- Immunization clinics;
- Treatment of common paediatric illnesses, diarrhoea, pneumonia, respiratory tract infections, sexually transmitted diseases;
- Family planning services - counselling for spacing and permanent methods, distribution of contraceptives; and
- Investigations like haemoglobin, urine examination for sugar and albumin, clinical detection of tuberculosis.

Ambulance Call Centre

Public Partner: Government of Bihar/ State Health Society of Bihar

Private Partner: Jai Prabha Janani Shishu Aarogya Express

Target Population: General Population

Target Geography: Rural

State health Society Bihar (SHSB) is providing prompt quality pre hospital care to pregnant women, new born babies, trauma victims, senior citizens, BPL patients, Kala-azar & other patients for the purpose of which Emergency Network service is being piloted under PPP in all the 38 districts of Bihar. The objective is to save lives of emergency cases. Accordingly, the State Health Society, Bihar has launched medium sized Basic Life Support ambulances in 345 PHCs, 10 DHS & 149 FRUs spread in all districts of state. Every ambulance is manned by a Driver & an Emergency Medical Technician on eight hour rotational basis and will be operational 24 hours. These ambulances are being managed by one state headquarter control room with toll free three digit code '102'.

This service is free for :-

- Pregnant women (home to hospital & drop back home facility).

7 PPP for Health: Case Studies: Bihar http://pphealth.org/index.php?option=com_content&view=article&id=83&Itemid=481

- Sick neonates (upto 30 days) children with drop back home
- Senior citizens (above 60 years of age).
- Accident cases (first transportation only).
- BPL patients (yellow & red card only).
- Kala-Azar patients.

For all others the service is available @ 9/- per km.

Fund requirement

a. Capital Cost (CAPEX) -

i. 144 x 703,575 = Rs. 101,314,800.00 (For TATA made Dual AC Winger Big Ambulance with registration, insurance & G.P.S. fitting)

ii. 144 x 846,932 = Rs. 121,958,208.00 (For TATA made 2 Stretcher Ambulance on TATA SFC 410/27 with registration, insurance & G.P.S. fitting)

iii. 144 x 952,232 = Rs. 137,121,408.00 (For Force made AC Traveller Big Ambulance)

iv. 340 x 556,076 = Rs. 189,065,840.00 (For TATA made AC Sumo Medium Ambulance with registration, insurance & G.P.S. fitting)

b. Operational Cost (OPEX) - (No. of ambulances x No. of months x Operational cost per month)

i. For big ambulances (For Big ambulance) - 149 x 6 x 130,000 = Rs. 116,220,000.00 (As per fund released this functional year for already functional ambulances)

ii. For medium ambulances (TATA Sumo) - 355 x 6 x 73,000 = Rs. 155,490,000.00

Operational cost per ambulance per month for small ambulance (TATA Sumo)

#	Operational Heads	Cost
1	Staff (2 Drivers + 2 EMTs + 1 Back up staff)	35,000.00
2	Fuel	15,000.00
3	Management & CDC Staff	5,000.00
4	Medicine / Consumables	10,000.00
5	Others (Marketing, HO Expense, Telephone, Conveyance, Mobile expenditures in ambulances, Staff OT etc.)	8,000.00
Total	73,000.00	

Hence, total fund required (A + B)

TATA Winger Dual AC : (101,314,800 + 116,220,000) = Rs. 21,75,34,800 only

TATA SFC 410/27 : (121,958,208 + 116,220,000) = Rs. 23,81,78,208 only

Force Traveller Ambulance : (137,121,408 + 116,220,000) = Rs. 25,33,41,408 only

TATA Sumo AC Ambulance : (189,065,840 + 155,490,000) = Rs. 34,45,55,840 only

Fund available under NRHM

Under CAPEX Head - Rs. 7,00,00,000

Under OPEX Head - Rs. 2,64,00,000

Total - Rs. 9,64,00,000

Dial 1911: Chikitsa Paramarsh Evam Rogi Shikayat Samadan Seva

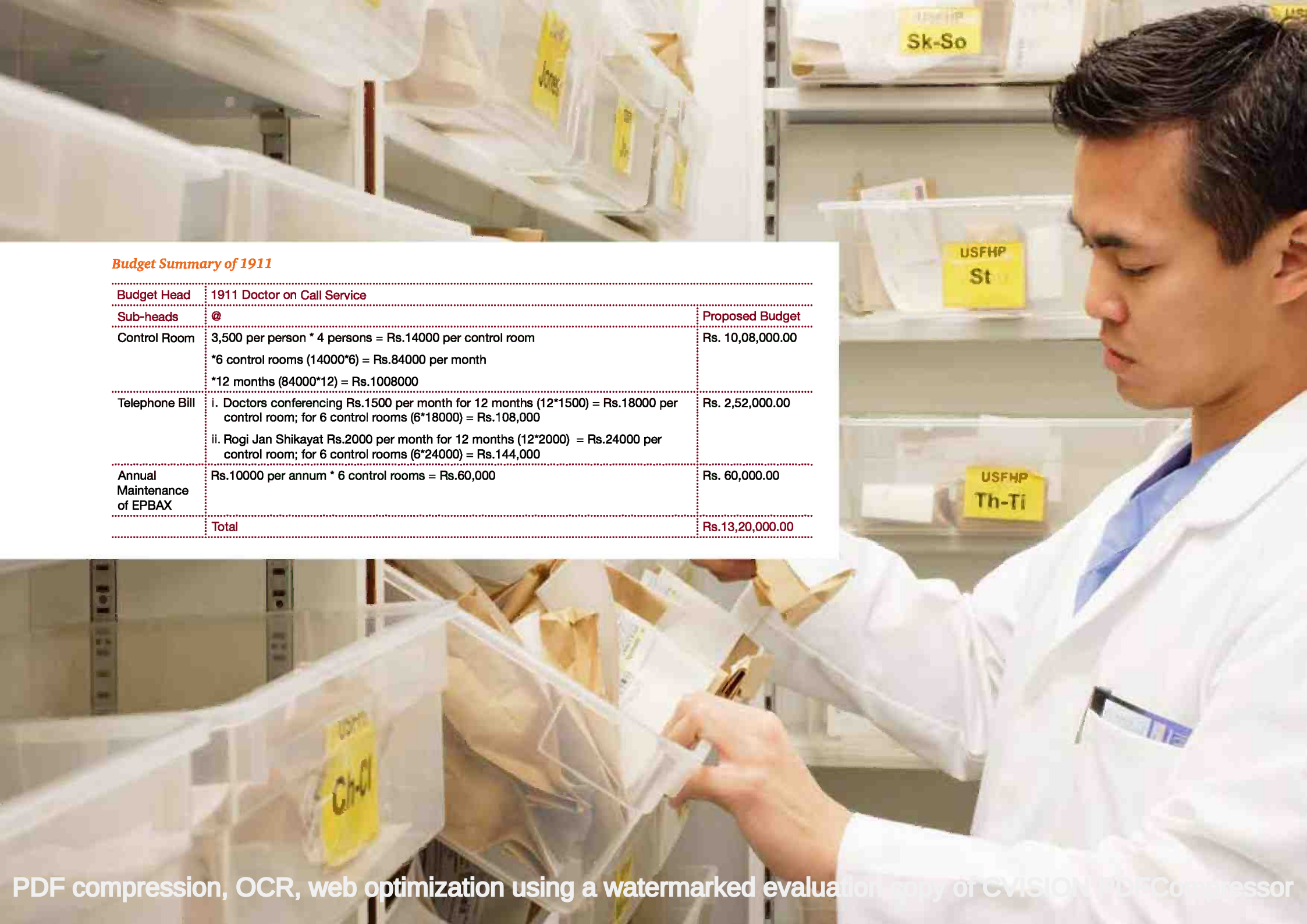
Public Partner: Government of Bihar/ State Health Society of Bihar

Private Partner: Aryabhatt Computers

The Chikitsa Paramarsh Evam Rogi Shikayat Samadan Seva was launched on 1st March 2008 by the Government of Bihar in partnership with Aryabhatt Computers. The service was launched in six divisions: Patna, Gaya, Bhagalpur, Muzaffarpur, Purnia and Saran. The objective of the scheme is to provide preliminary medical assistance to patients at any time and at any place.

This service enables individuals seeking health advice or those wishing to make health related complaints to call the toll-free helpline 1911; the call center operator then connects to an appropriate doctor who will address their concerns.

Pathology labs have also been attached to the scheme with the purpose of collecting samples for tests from the patients' home. The service is operated through the call center infrastructure created for the 102 ambulance call center in Bihar. As of 2009, this service has benefited about 17,750 callers.



Budget Summary of 1911

Budget Head	1911 Doctor on Call Service	
Sub-heads	@	Proposed Budget
Control Room	3,500 per person * 4 persons = Rs.14000 per control room *6 control rooms (14000*6) = Rs.84000 per month *12 months (84000*12) = Rs.1008000	Rs. 10,08,000.00
Telephone Bill	i. Doctors conferencing Rs.1500 per month for 12 months (12*1500) = Rs.18000 per control room; for 6 control rooms (6*18000) = Rs.108,000 ii. Rogi Jan Shikayat Rs.2000 per month for 12 months (12*2000) = Rs.24000 per control room; for 6 control rooms (6*24000) = Rs.144,000	Rs. 2,52,000.00
Annual Maintenance of EPBAX	Rs.10000 per annum * 6 control rooms = Rs.60,000	Rs. 60,000.00
	Total	Rs.13,20,000.00

Contracting Clinical Lab Services

Public Partner: Government of Bihar/ State Health Society Bihar

Private Partner: Central Diagnostics; Sen Labs (discontinued)

Target Population: General Population

Target Geography: Urban, Rural

Shortage of lab technicians and irregular supply of reagents required for pathological tests has led to a situation wherein government hospitals are unable to provide efficient pathology services to patients. Given these circumstances, the Government of Bihar decided to outsource pathological services to private labs in order to improve the provision of such services in government hospitals.

An Expression of Interest (EoI) was invited from private providers operating similar services. Two agencies were selected post a technical evaluation process – Central Diagnostics (http://www.cdpatna.in/) and Sen Labs*, each serving 19 districts. Rates for the tests were fixed. Initially, the charges for the tests were paid by the patients themselves. However, after a period of time, a decision was taken to provide free testing services to patients in government hospitals. Following this, rates for testing were fixed by the State Health Society Bihar (SHSB) – the private providers would conduct the tests at no charge to the patients and would later be reimbursed by SHSB.

Clinical lab services including pathology, biochemistry, microbiology lab services are provided. Central Diagnostics and Sen Labs set up labs in the District Hospitals and collection centers in health facilities below district level. They developed infrastructure using advanced equipment at central locations; logistics are managed in such a way that samples from all the collection centers could reach the central locations within a few hours. At the central locations, the samples are processed using advanced equipment and reports are dispatched electronically to the respective health centers to ensure that they are delivered within 24 hours.

The coverage under this partnership has extended to 25 District Hospitals, 23 Sub-Divisional Hospitals, 76 Referral Hospitals and 398 PHCs across Bihar. The private providers pay a nominal rent for space in the District Hospitals and the Sub-Divisional Hospitals. About 558,000 tests have been conducted between March 2006 and April 2009.

*Sen Labs discontinued services from 2010

Contracting of Radiology services

Public Partner: Government of Bihar/ Indira Gandhi Institute of Medical Science

Private Partner: Multiple

Target Population: General Population

Target Geography: Urban, Rural

The paucity of radiology facilities in government hospitals, especially those in rural areas, is a critical problem in Bihar. In order to address this issue, the Government of Bihar has decided to outsource the radiology services in all government health facilities. Based on this decision, the Indira Gandhi Institute of Medical Science (IGIMS) in Patna is responsible for contracting with private service providers to provide radiology services in government health facilities in the state, from the Primary Health Centre (PHC) level to up to the District Hospital.

IGIMS developed an innovative franchising model wherein local entrepreneurs are encouraged to operate with technical support from IGIMS. Apart from providing radiology services at an economical cost, this model also creates employment. The high volumes enable negotiations with vendors for best prices on raw materials, leading to economies of scale and resulting in very low costs.

The private providers are to set up and operate the necessary infrastructure in the space allocated to them within the government health center. SHSB is responsible for providing a radiologist (preferably a retired person), a telephone line with broad band

connection, and necessary electricity connections; all other costs for setting up the centre and providing the services are borne by the private player.

About 170 radiology centers have been operational thus far. These centers have provided X-ray services to around 353,000 patients over a two year period. Ultrasound facilities are also provided in the District Hospitals and Sub-divisional Hospitals. The rates for these facilities are fixed; the private agency provides these facilities free of charge to the patients and is reimbursed under the Rogi Kalyan Samithi (RKS). The private provider is paid Rs.50 for a small X-ray plate and Rs. 75 for a big X-ray plate. The monitoring of services and payment of fees is handled by the district health societies.

In the next phase, a Central Reporting System is being established in Patna; this will be connected to all the ultrasound and X-ray centers in government hospitals. Using tele-radiology, reporting will be done from a central location in Patna by a radiologist appointed by the government. The agency is responsible for ensuring all the necessary hardware, software and manpower required for establishing a network between IGIMS and each of its radiology units.

Issues faced by private service providers in the existing PPP initiatives

In spite of the various PPP initiatives by the State Govt. to promote the healthcare sector in Bihar, there had been some growing concerns from the private investors in terms of sustainability of some of these initiatives. Some of the key issues/suggestions voiced out by the private service providers are:

- Govt. has to play a greater role in facilitating the whole program, thereby giving more confidence in the investor's mind.
- In case of diagnostic services at the primary care level, current model involves lot of paperwork by the doctors and the corresponding payment approval process is not streamlined and prone to delays and excessive turnaround time.
- There is a huge shortage of skilled/certified OT Attendants, Lab Technicians and Imaging Technicians and the quality of training provided in the existing institutes remains short of expectation.
- Proper licensing procedure should be there for new hospitals or medical centers; e.g. If a hospital has a Operation theatre, ICU should also be there, if not, license should not be given.

Currently there are only 6 Government Medical Colleges and 3 Private Medical Colleges in Bihar, with a total seat capacity of 700. The seats are so less that it does not even fulfill the requirement of the Government hospitals. By some estimate of the private service providers, there is a shortage of 5 lakh doctors in Bihar.In order to address the lack of organizational capacity and to provide regulation particularly for infrastructure the state has enacted Bihar State Infrastructure Development Enabling Act, 2006 and the Infrastructure Development Authority (financial, service and technical) regulations 2007. The government declared Infrastructure Development Authority (IDA) to be the nodal agency for all PPP activities. (The Economic Times, 2009) Roles envisaged for IDA are that of a consultant to a department and advisory body for departments on PPP or other projects (GoB, 2007). However infrastructure related PPPs are structurally and functionally different as infrastructure has physical output while those in service related health sector are intangible in nature. IDA framework cannot suit the Health PPPs. Detailed policy guidelines and regulations needs to be made to cater to the peculiarities of PPP in health sector.
The state should have a Strategy Development Unit within State Health Society with qualified and experienced personnel to plan, and study feasibility of PPP as suggested by the Task Force on PPP for NRHM set up by GoI in 2008. The report has suggested prioritizing of districts so that districts with higher needs could be taken up first. Piloting of a new project to know the practical problems should always be done before scaling it up in all the districts. Monitoring and periodic evaluations of projects should be clearly spelt out during the planning phase. Capacity building of personnel looking after PPP in government needs to be taken up as a priority. The state should also provide required training to the staff employed by the PSP as they too are part of the health service delivery system.

Health Reforms in states with similar population

The present inefficiencies and inequities in the public healthcare system in India have pushed forward the need for creative thinking and innovative solutions. Crippling health problems have provided apparent calls for change in the existing structure of the health service provision and risk pooling, involving both the public and private sectors. On the national government level, there have been several efforts to reform the health system to improve access to quality services for the poor.

The government of India sets and monitors standards for health and education. States deliver most services. At the same time, the central government funds key programmes for implementation in states. As in any federal system, relationships between the central government and the administrations in the states vary. Annual budgeting processes for national education and health programmes require states to account to the government of India for expenditure and past performance. National ministries actively monitor states' performance.

In this realm, the NRHM was launched to carry out necessary architectural correction in the basic healthcare delivery system and has been an important initiative towards supporting health sector reforms, both at the national and state levels. The progress and success rate of NRHM initiatives are one of the major indicators of the healthcare status of a state. A critical appraisal of the NRHM's initiatives across a few states with similar population and social structure like Bihar will help delineate the gaps and opportunities for development[8].

The expected impact on health indicators are formulated according to targets of the NRHM for the focus states, e.g. reduced IMR reduced MMR, reduced TFR, and reduced incidence of tuberculosis, leprosy and malaria. Decreased malnutrition levels, with special attention to child malnutrition, reduced financial burden for the poor with regard to healthcare and positive impact on the present levels of poverty, are all among the expected outcomes of the implemented programmes.

The Department For International Development (DFID) has chosen to fund both national and state-level activities in health and education. The DFID thus works simultaneously with partners at both levels of the government. The DFID's current operational plan (2011-15) expects the UK to contribute 173 million GBP on education in India over the period. The total expenditure on health-related activities is 248 million GBP.

The key elements of the DFID's support for Bihar in healthcare and education through national and state programmes are as follows[9]:

- **Sarva Shiksha Abhiyan (SSA),** a programme which seeks to enable universal access to primary education across the country, including Bihar
- **Reproductive and Child Health Programme (RCH),** a component of the NRHM. This programme works nationwide, with an emphasis on 18 poorer states, including Bihar
- **Sector Wide Approach to Strengthening Health (SWASTH),** which aims to increase the use of quality, essential health, nutrition, water and sanitation services, especially by poor people and excluded groups, in Bihar
- **Gyan Shala** programme, which seeks to provide affordable, quality primary education to children of the poorest urban communities in Patna and Bihar Sharif

8 Andhra Pradesh Health Sector Reforms A Narrative Case Study www.accessh.org
9 Evaluation of DFID's Support to Health and Education in India www.oecd.org

NRHM Initiatives

Andhra Pradesh

Current initiatives

The reforms in Andhra Pradesh have brought about innovative approaches including large-scale private sector involvement through which new technologies, use of IT, service delivery and financial mechanisms for healthcare have evolved.

According to NRHM, Andhra Pradesh is steadily progressing towards attaining the goals and objectives shared under NRHM, the National Population Policy (NPP) and the Millennium Development Goals (MDG). The activities under NRHM are transforming the healthcare delivery for the rural populace with increasing access to quality services and the opportunity to participate actively in managing these services as well. The state has increased coverage under JSY, in terms of improvement in infrastructure and availability of paramedical and medical personnel.

The total fertility rate of the state is 1.8. The infant mortality rate is 49 and the maternal mortality ratio is 134 (SRS 2007-09) which is lower than the national average. The sex ratio in the state is 992 (as compared to 940 for the country). Comparative figures of major health and demographic indicators are as follows:

Table I: Demographic, socio-economic and health profile of Andhra Pradesh as compared to India figures

S. No.	Item	Andhra Pradesh	India
1	Total population (Census 2011) (in millions)	84.67	1210.19
2	Decadal growth (Census 2011) (%)	11.10	17.64
3	Crude birth rate (CBR) (SRS 2010)	17.9	22.1
4	Crude death rate (CDR) (SRS 2010)	7.6	7.2
5	Total fertility rate (TFR) (SRS 2010)	1.8	2.6
6	Infant mortality rate (IMR) (SRS 2010)	49	47
7	Maternal mortality ratio (MMR) (SRS 2007 - 2009)	134	212
8	Sex ratio (Census 2011)	992	940
9	Population below poverty line (%)	15.77	26.10
10	Schedule caste population (in millions)	12.34	166.64
11	Schedule tribe population (in millions)	5.02	84.33
12	Female literacy rate (Census 2011) (%)	59.74	65.46

Source: Ministry of Health and Family Welfare : State Health profile Andhra Pradesh 2011

Table II: Health Infrastructure of Andhra Pradesh

Particulars	Required	In position	shortfall
Sub-centres	11699	12522	-
Primary health centres	1924	1624	300
Community health centres	481	281	200
Multipurpose workers (female)/ANM at sub- centres and PHCs	14092	22140	-
Health workers (male) MPW(M) at sub-centres	12522	6127	6395
Health assistants (female)/LHV at PHCs	1570	1564	6
Health assistants (male) at PHCs	1570	1920	-
Doctor at PHCs	1570	2214	-
Obstetricians and Gynaecologists at CHCs	167	260	-
Physicians at CHCs	167	20	147
Paediatricians at CHCs	167	90	77
Surgeons at CHCs	167	110	57
Total specialists at CHCs	668	480	188
Radiographers	167	65	102
Pharmacists	1737	1614	123
Laboratory technicians	7583	6250	1333
Paramedics	3991	3303	688
Nurses/midwives	2739	4056	-

Source: Ministry of Health and Family Welfare : State Health profile Andhra Pradesh 2011

Some key improvements in the state of healthcare in the last 5 years can be summarized as follows

Infrastructure Improvements

A total of 690 PHC have been strengthened with three Staff Nurses each to make them functional 24x7. A total of 58 SDH, 120 CHC including facilities below district level and 16 District Hospitals are functioning as FRUs. About 17 districts have functional Mobile Medical Unit (MMU).

Human Resources

A total of 70,700 ASHAs have been selected & 68,500 are trained in 1st Module. About 51,201 ASHAs have been provided with drug kits. 10322 Sub-centers are functional with an ANM. 9505 SCs are strengthened with 2nd ANM. As far as manpower expansion is concerned, 121 Staff Nurse, 9505 ANM have been recruited on contractual basis.

Services

Institutional deliveries increased from 12.78 lakh (06-07) to 13.30 lakh (07-08). During the year 2008-09 the state had 14.20 lakh Institutional deliveries. JSY beneficiaries increased significantly from zero (06-07) to 4.35 lakh (07-08). A total of 4.50 lakh deliveries were recorded under JSY during the year 08-09. Female sterilizations have increased from 3.18 lakh (06- 07) to 6.97 lakh (07-08) and male sterilisation has increased from 7666 (06-07) to 28505 (07-08). During the year 2008-09, over 6, 70,510 female & 29,763 male sterilization were done. 2 districts are implementing IMNCI & 1555 people trained so far. About 20.20 lakh VHND held since the launch of NRHM.

The primary care delivery model developed by the Health Management and Research Institute (HMRI) in India, integrates innovative technical solutions and process-oriented operations for the provision of healthcare services, while supporting the public health system. Through a PPP with the state government of Andhra Pradesh, HMRI has a unique base to pilot large scale health interventions. The HMRI Model includes components such as a medical helpline, rural outreach health services, a disease surveillance programme, a blood bank application, and telemedicine projects. Both clinical and non-clinical procedures are strengthened by technology that enables research, tailored and evidence-based interventions, as well as improves efficiency and the quality of healthcare delivery. Health management and decision-making are assisted by the organization's large database of electronic medical records.

NRHM in West Bengal

West Bengal has implemented the activities of the National Rural Health Mission efficiently and effectively for attaining the goals and objectives of NPP and MDG. NRHM has transformed public health service delivery in the state. The decentralisation, responsiveness to local needs, paradigm shift in health system management and availability of untied funds has improved the facilities and their credibility among members of the public. The performance of JSY, community mobilisation by ASHAs, increased number of deliveries and drug procurement have significantly improved and a larger number of societies are reaping benefits under the mission. Some information on progress vis-a-vis issues have been highlighted here:

Infrastructure improvements

A total of 168 PHCs have been strengthened with three staff nurses to make them functional for 24x7 work. The state has 346 CHCs functioning on a 24X7 basis and facility surveys have been completed in 163 (including other health institutions below district level). A total of 39 SDHs, 15 district hospitals, 7 CHCs and others equal to and below district level are functioning as FRUs. There is no mobile medical unit (MMU) in the state.

Human resources

A total of 12,765 ASHAs have been selected and are trained up to the first module. The state needs to initiate the process of providing drug kits to the trained ASHAs. A total of 9,900 sub-centres are functional with an ANM. The state should accelerate the process of appointment for the second ANM in the sub centres. As far as manpower augmentation is concerned, 29 specialists and 31 doctors are recruited on a contractual basis.

Services

Institutional deliveries improved from 7.31 lakh (2006-07) to 8.33 lakh (2007-08) and a further 8.85 lakh institutional deliveries in the state during the year 2008-09. JSY beneficiaries have increased from 2.25 lakh (2006-07) to 5.73 lakh (07-08). The numbers of JSY beneficiaries was 3.17 lakh during the year 2008-09. Female sterilisations have increased from 1.35 lakh (2006-07) to 2.70 lakh (2007-08) and male sterilisations has increased from 1,828 (2006-07) to 20,718 (2007-08). During the year 2008-09, 83,945 female and 16,941 male sterilisations have been reported. Six districts are implementing IMNCI and there are no trained personnel so far. 74,845 VHND have been held since the launch of NRHM.

NRHM in Bihar

Bihar is a high focus state for NRHM initiatives. Progress of their initiatives till date has been good but there is still much to be achieved.

Infrastructure

In total, 480 PHCs have been strengthened with three staff nurses each to make them functional for 24x7 work, Seventy CHCs, 46 SDHs and 36 DHs are functioning on a 24X7 basis and facility surveys have been completed in 66 CHCs. These include other facilities below district level. A total of 149 health facilities that includes DHs, SDHs and CHCs have been designated as FRUs with 55 fully operational as per IPHS norms. There is a total of 27 AYUSH hospitals being setup in the campuses of existing hospitals.

Taking into consideration the acute shortage of hospital beds in the state, the government has approved the capacity expansion of district hospitals based on an assessment under the DFID. Moreover, to increase the accessibility of care in remote areas for the rural population, the government has partnered with private players to introduce mobile medical units (MMUs) across all the districts. However, currently the MMU initiative has many constraints and limitations and is functioning inconsistently in the districts. The government needs to step in to resolve the issue and make the MMU programme successful.

Table 7: Bed capacity expansion and MMU status in Bihar

Sr. No.	District Name	District Hospital	No. of Beds	MMUs
01	Purbi Champaran	1	500	1
02	Gopalganj	1	500	1
03	Madhubani	1	500	1
04	Samastipur	1	500	1
05	Saran (Chhapra)	1	500	1
06	Siwan	1	500	1
07	Vaishali	1	500	1
08	Paschim Champaran	1	500	1
09	Sitamarhi	1	500	1
10	Aurangabad	1	300	1
11	Araria	1	300	1
12	Bhojpur	1	300	1
13	Jehanabad	1	300	1
14	Katihar	1	300	1
15	Khagaria	1	300	1
16	Madhepura	1	300	1
17	Banka	1	300	1
18	Nalanda	1	300	1
19	Nawada	1	300	1
20	Purnea	1	500	1
21	Rohtas	1	300	1
22	Saharsa	1	300	1
23	Buxar	1	300	1
24	Jamui	1	300	1
25	Kaimur	1	300	1
26	Kishanganj	1	300	1
27	Lakhisarai	1	300	1
28	Arwal	1	100	1
29	Sheikhpura	1	200	1
30	Sheohar	1	100	1
31	Supaul	1	300	1
32	Darbhanga	1	100	1
33	Muzaffarpur	1	100	1
34	Bhagalpur	1	100	1
35	Gaya	1	100	1
36	Patna	1	100	1
37	Begusarai	1	300	1
38	Munger	1	300	1

Human Resources:

A total of 82,522 ASHAs have been selected and 57,362 are trained for first module. All of them have been provided with drug kits. A total of 7,672 SCs are functional with an ANM and 5,880 SCs have been strengthened with second ANM. There are no appointments of contractual AYUSH Doctors in the State. As far as manpower augmentation is concerned 381 specialists, 1,763 MBBS Doctors, 2,906 Staff Nurse and 5,896 ANMs have been appointed under NRHM on contractual basis.

Services:

Institutional deliveries in the State have improved from 1.24 lakhs in 2006-07 to 8.38 lakhs in 2007-08 and further 10.51 lakhs institutional deliveries have been reported during the year 2008-09. The "SRS 2006-2011" report shows that the Private Institutional Deliveries have improved from 11% in 2008 to 12.9% in 2011 while the Government Institutional Deliveries have improved from 24% in 2007 to 50% in 2011.

The JSY beneficiaries significantly increased from 1.14 lakhs in 2006-07 to 8.38 lakhs in 2007-08. During the year 2008-09, the numbers of JSY beneficiaries was 11.00 lakh. Female sterilizations have increased from 1.62 lakh in 2006-07 to 3.00 lakh in 2007-08 and male sterilisation has decreased from 428 in 2006-07 to 400 in 2007-08. During the year 2008-09, 35,8576 female and 1,427 male sterilisation have been reported. A total of 23 districts are implementing IMNCI and 7,496 people are trained so far. There are 741,168 VHND held in the State since the launch of NRHM.

Table: Summary of NRHM initiatives across selected Low focus and High focus states

Infrastructure Improvements	Andhra Pradesh	West Bengal	Bihar
CHCs strengthened	120	348	70
Facilities serving as FRU:			
SDH	58	39	
CHC	120	7	A total of 149
District hospitals	16	15	

Human Resources	Andhra Pradesh	West Bengal	Bihar
ASHAs selected	70,700		82,522
ASHAS trained for first module	68,500	12,765 in total	57,362
SCs functional with ANMs	10,322	9,900	7,672
Specialists recruited	480	29	381
Doctors recruited	2,214	31	1,763

Compared to NRHM's low focus states like Andhra Pradesh where the augmentation of healthcare facilities are in an advanced status, the implementation of NRHM initiatives in Bihar are progressing satisfactorily to be at par with the national average. However considerable shortfalls exist in the recruitment and training of essential skilled manpower and Health workers. Healthcare infrastructure seems to vary across districts in Bihar where development of Primary health care facilities remains a key concern.

DFID initiatives

Bihar

Educational and health indicators in Bihar are improving. DFID's assistance is contributing to these improvements, although the degree to which we can attribute positive change to DFID varies between programmes. DFID has a clear idea of how it will make a difference, including being aligned with Indian national and state-level initiatives. There is scope for DFID to shift its assistance even further towards those areas where it has most impact, such as the transfer of knowledge and skills. This could improve the value for money of UK involvement.

Objectives

DFID has clear and relevant objectives for its health and education activities in Bihar that support the work of government and of other aid providers. In Bihar, DFID is 'going with the grain', aligning behind initiatives that have strong backing at the highest level whilst also being consistent with DFID's corporate and country priorities. This enables it to support improvements in both management and service delivery. DFID also has appropriate targets that it could emphasise further in its public reporting. These primarily relate to the improvements in the quality of the services it is seeking to support. They also relate to the influence that DFID has on its partners and peer organisations.

Impact

Bihar has seen considerable improvements in health indicators in recent years. Many more births are taking place in health facilities and the infant mortality rate is reducing. More children are in school and learning achievements have seen modest improvements. It is not, however, always easy to attribute impacts specifically to DFID where funding is pooled. Gains under the Sector Wide Approach to Strengthening Health (SWASTH) are more readily identified.

Summary of assistance for health and education provided to Bihar

	Sarva Shiksha Abhiyan (Basic Education for All) 15	Reproductive and Child Health Programme II 16	Sector Wide Approach to Strengthening Health, in Bihar	Gyan Shala (low-fee private schools) 17
Scale	All States and Union Territories	Nationwide, with 18 priority states including Bihar	Bihar only	Bihar only
Purpose	'Increase the number of 6-14 year-old children, especially from special focus groups, enrolled, regularly attending and completing elementary education and demonstrating basic learning levels.'	'Expand the use of essential reproductive and child health services of adequate quality and reduce geographical disparities in access to health.'	'Increase use of quality, essential health, nutrition, water and sanitation services, especially by poor people and excluded groups.'	'Provide affordable, quality primary education to children of the poorest urban communities in Patna and Bihar Sharif.'
Details	• Programme for Universal Primary Education, running since 2000. DFID focus on upper primary (11-14); • Third phase of DFID support; • Since 2009, seen as key vehicle to implement the Right of Children to Free and Compulsory Education Act (in force since 2010); • Targets 193 million children in 1.35 million schools; • Oversight by Ministry of Human Resource Development but implemented at state level; • DFID funds financial aid and technical support (primarily for National Council for Educational Research and Training (NCERT);15 • Financial aid provided on reimbursement basis against audited approved expenditure; • World Bank is lead donor partner, monitoring and managing the programme; and • Joint monitoring on six-monthly basis.	• Part of the larger national Rural Health Mission (NRHM);19 • Follows on from RCH I; • Works across the Empowered Action Group (EAG) states where infant mortality is highest;20 • Financial aid provided on a reimbursement basis against audited approved expenditure; • Technical assistance provided at the national level, including monitoring state performance; • Overseen by national Ministry of Health and Family Welfare; • Funds disbursed against previous year's financial management reports; and • Joint monitoring (donors and government) on a six-monthly basis includes visits.	• Sector support programme targeted at the Departments of Health, Social Welfare and Public Health Engineering plus the Women's Development Corporation; • Financial aid and technical assistance; • Financial aid includes £15 million for self-help groups to address gender issues and hold service providers to account; • Funding channelled through national government to state Finance Department then to state-level sociities21 for each department; • Funds are additional to state's budget and used for purposes agreed with DFID only; and • DFID oversight by health team in Delhi and state programme manager	• Focus on providing quality primary education to 13,250 children in Bihar; • Seen as a pilot for testing how to provide low-cost education that is equitable, financially sustainable and can be replicated (which will be assessed under DFID's South Asia Research Hub); and • Funded through an accountable grant.
Timing	Current DFID funding March 2008-March 2013	December 2006 – March 2012	April 2010 – March 2016	October 2011 – March 2013
DFID Budget	£299 million	£252 million	£145 million	£881,627
Financial Assistance	£285 million	£242 million	£120 million	£881,627
Technical Assistance	£14 million	£9.5 million	£25 million	Nil
DFID Contribution	10% donor financed DFID 3% of total SSA (World Bank 6%, European Union 1%) (Government of India 90%)	35% donor financed DFID 18% of RCH (World Bank 15%, United Nations Population Fund 2%) (Government of India 65%)	DFID 100% of funds	DFID 78% of total (22% Bihar state and parental contributions)
Spent Nationally by DFID	£219 million	£161.75 million financial aid £6.5 million technical assistance	Nil	Nil
Spent in Bihar by DFID	£15 million financial aid; technical assistance provided at national level	£4.12 million financial aid; Technical assistance provided at national level	£30 million financial aid, £5.7 million technical assistance £5.7 million technical assistance	To date £134,000. DFID makes quarterly payments against detailed forecasts for the quarter and the full utilisation of the previous disbursement

Source: Independent Comission for Aid Impact UK: (2012) Evaluation for DFID's support for Health And Education in India

Andhra Pradesh

The Andhra Pradesh government has successfully implemented the US$59.68 million health management project funded by the Department for International Development (DFID) of UK. It is evident that innovative steps have been taken to shape the future health status of the population in Andhra Pradesh. In the last couple of years, the state government has taken several new approaches to improve the access to quality healthcare. International organisations like the World Bank, European Commission and the Department for International Development (DFID) have a history of supporting reform initiatives within the health sector in Andhra Pradesh.

The Andhra Pradesh Health Sector Reform Programme was launched to strengthen governance and management in the health sector, improving community participation and systems for accountability, and also strengthening the financial management. A new unit, the Strategic Planning and Innovation Unit (SPIU), was created to coordinate and ensure implementation of the reform work.

DFID has been involved with the government of Andhra Pradesh for more than a decade and decided to support the Health Sector Reform in Andhra Pradesh. This led to technical assistance of SPIU for three years, ending in 2010. The objectives of the support to the unit were to develop the plans, strategies and action points.

In this context, DFID has aimed at fiscal stabilisation and empowerment of women and disadvantaged groups. DFID is furthermore supporting a three year phase of the Andhra Pradesh Public Management and Service Delivery Programme that gives priority to health sector service delivery for improvement in health (PricewaterhouseCoopers, 2008b).

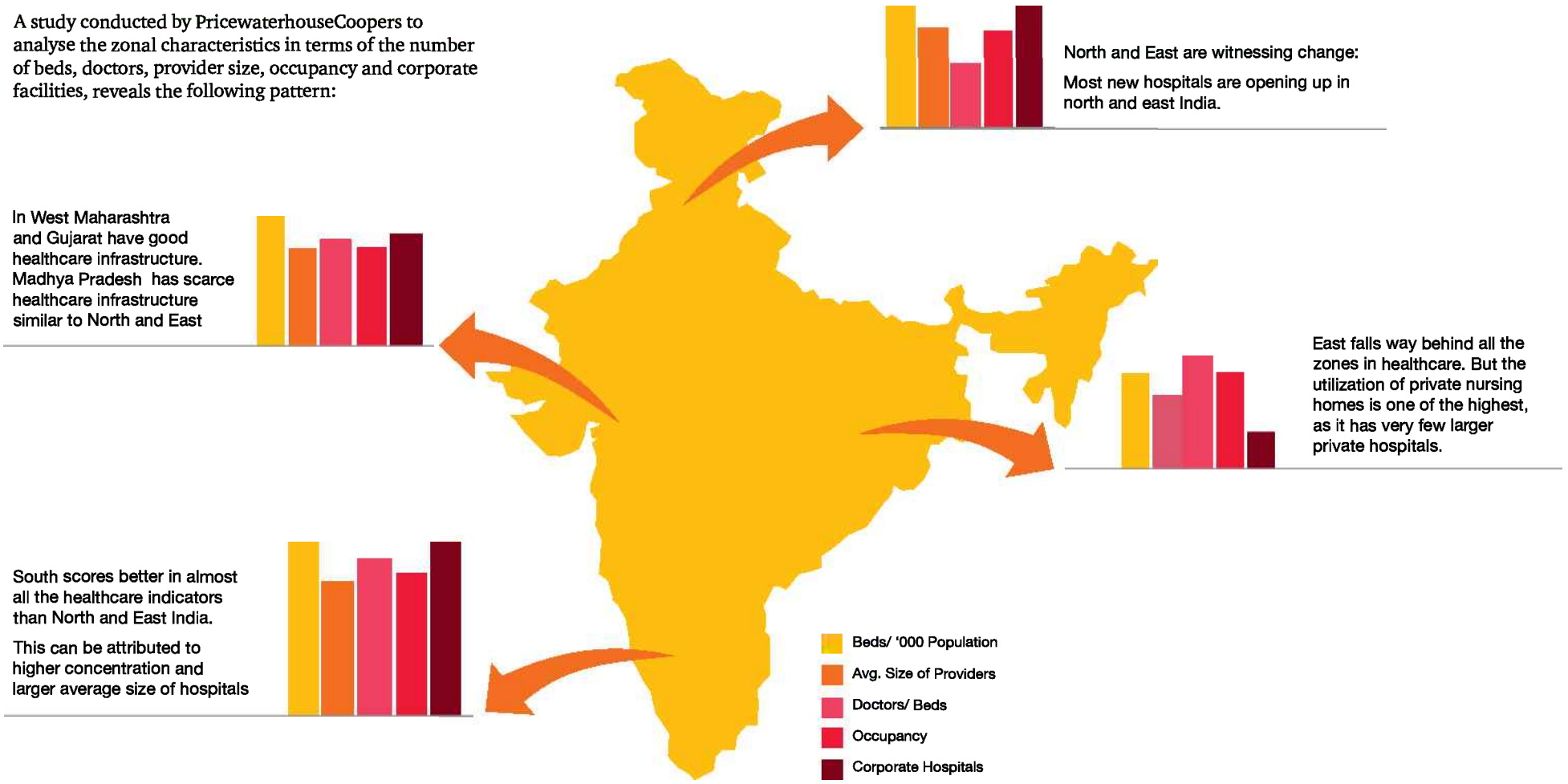
The healthcare expenditure of the government of Andhra Pradesh has been low and from the year 2000 until 2005 at approximately US$260 million or US$3.4 per capita. The ambitious target was to more than double the public healthcare expenditure from US$4 per capita to US$9 per capita between 2006 and 2011. The budget for 2008 2009 gave almost US$8 per capita hence close to the target. The national government through the NRHM has contributed with approximately 4.5 percent of the expenditure in the last two years and DFID has contributed with 3.9 percent which has been important support but insignificant in comparison to the increased allocation of the state government. The funding from DFID has not been as important as the technical support. The challenges faced by the Department of Health, Medicine and Family Welfare are not as much associated with access to funding for the health sector reforms as efficient utilisation of the resources and monitoring. The government of Andhra Pradesh has embarked on the Andhra Pradesh Health Sector Reform Programme (APHSRP), which is partly funded by DFID.

The APHSRP went into effect with the aim to strengthen the management of the DoHMFW, including the financial discipline. DFID provided a loan for technical assistance to this initiative for three years and the programme has resulted in capacity building, human resource strategies and initiatives to improve community participation and accountability.

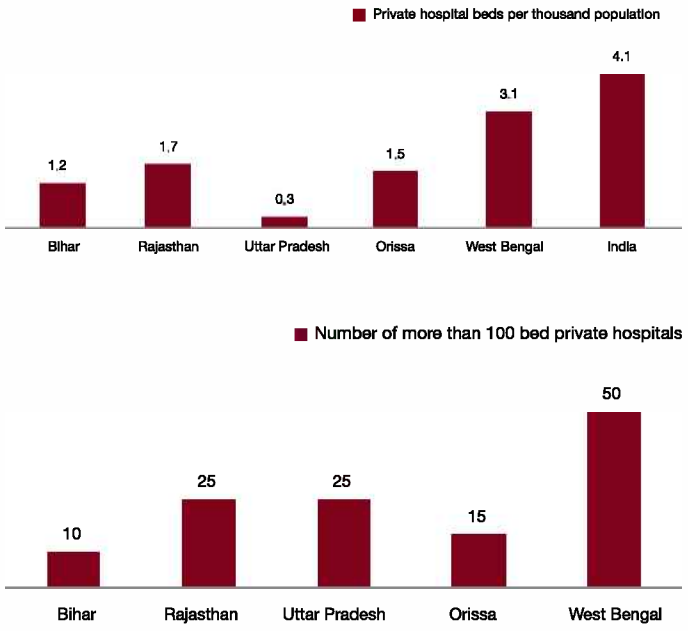
DFID committed 40 million pounds (approximately US$59.4 million) worth of financial resources to the state health department, for a period of three years, starting from 2007 and ending in 2010. This support aims to strengthen health sector management, capacity building, and monitoring and accountability systems within the health department, with the aim to improve the delivery of basic health services to the poor.

Comparative study of private sector in healthcare

A study conducted by PricewaterhouseCoopers to analyse the zonal characteristics in terms of the number of beds, doctors, provider size, occupancy and corporate facilities, reveals the following pattern:



It has also been observed that depending on the number of Tier I and Tier II cities in the different Indian states, there is a variation on the number of 100+ bed private hospitals in those states. The following 2 graphs show the bed capacities across some comparable Indian states, including Bihar:



Sources: PwC Analysis, Health Information of India, CBHI, GoI, respective years; Census of India, Population Profiles (India, States and Union Territories), Office of the RGI 2004

The above graph explains that on the indicator of "Beds/'000 Population", though Bihar is much better than Uttar Pradesh, yet it is lying far behind compared to the national average and states like West Bengal and Rajasthan. For the indicator on "Number of 100+ Bed Private Hospitals", Bihar is much behind Rajasthan, UP, Odisha and West Bengal.

The key concerns expressed by the private healthcare providers for not making Bihar as their preferred destination for setting up healthcare facilities are:

- Non-availability of medical, nursing and paramedical staff
  - Scarcity of Nursing Schools and paramedical colleges
  - Reluctance of qualified professionals to settle in Bihar
- Apprehensions about affordability of population for secondary and tertiary care
- Continued perception of negative business environment in the state
- Lack of urban amenities required to attract qualified staffs like malls, multiplexes etc.
- Difficulty in getting land at appropriate locations or locations of choice
- Some of the incentives provided by the different State Governments to promote private participation in the healthcare sector are:

Land (Odisha)

- Earmarking lands for hospitals in town planning. Blocking lands for hospital use keeps the prices low and ensures availability as and when an organized hospital plans to enter state/ city. Could be at real market rates.
- Providing land at concessional prices to private hospital/s

Large Special Economic Zones (Odisha)

- Larger SEZs are required to have land allocated for Healthcare purposes. For example as per norms for an SEZ of 35 acres the developer has to set up a healthcare facility on at least half acre (Larger healthcare facility for bigger SEZ). Therefore allocation of SEZs will ensure that developers bring some quality hospital infrastructure in State.

Government Facilitations and Removal of red tape-ism (AP, Tamil Nadu, Karnataka)

- It is difficult getting all the licenses and approvals required to open organized hospital. States like AP, Tamil Nadu have developed a single window system making it easier for private service providers to get those approvals.
- For opening of nursing, paramedical or any medical colleges , NOC clearance from state is needed while applying to MCI. States like Kerala, Karnataka makes the process of obtaining NOC easy and transparent and does it on priority basis. This has helped large number of private service providers opening healthcare specific training centres and colleges in those states.

Private hospital chains operating in rural and semi-urban areas

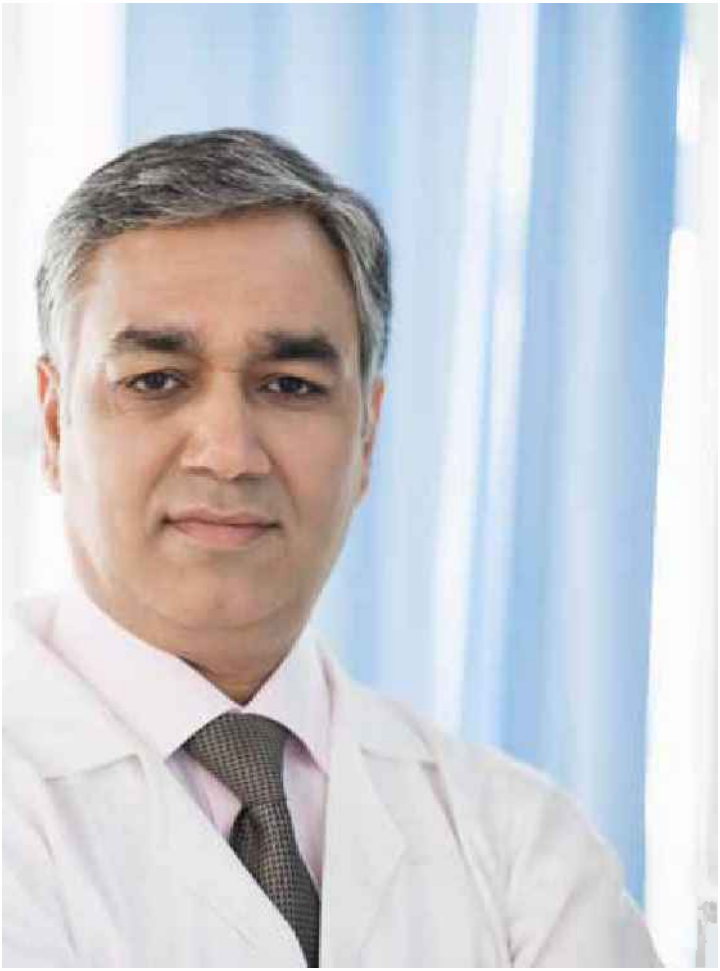
While 70% of India's population lives in semi-urban and rural areas, most of the hospital networks are in urban/ metro areas. Few hospital chains have come up in the last few years that are focusing exclusively on the rural and semi-urban population.

Glocal Healthcare, a rural hospital chain currently operating in West Bengal has set up six state-of- the-art hospitals at the sub-district level in Sonamukhi, Khargram, Katoya, Bolpur, Baharampur, Dubrajpur . Under the leadership of Dr Sabahat Azim, Glocal aims to create the largest rural healthcare delivery system in India. It is an ambitious venture to bring quality healthcare to rural population in India through an integrated model of block level comprehensive primary and secondary care hospitals, health insurance, skill development and technology. According to Dr Azim, "It is possible to develop a sustainable and a viable rural healthcare delivery model by standardisation of processes, following a protocol driven rather than doctor-driven approach and developing a complete ecosystem by integrating with the rural community. We estimate our investment, which covers the land, building and medical infrastructure and other variables, will not exceed 2.5 crore INR (per hospital) once the expanded phases of the project is started." Glocal has plans to spread across to establish a rural chain in Bihar, AP, Punjab, UP. Dr Azim's requirement from the government is that the process to get the required licenses for opening hospitals should be transparent, easy and fast. A single window to get the clearances will be welcome.

LifeSpring Hospital Chain will provide high quality maternal care to low income mothers by setting up no frills, small hospital beds across Andhra Pradesh. According to its website, LifeSpring's model uses a market-based approach to achieve sustainability and scale. The first LifeSpring hospital opened in 2005 on the outskirts of Hyderabad in Moula Ali. It broke even and became profitable in less than two years of operation. Through its process-driven model, each LifeSpring hospital is easily replicable in other locations, ensuring scalability and supporting rapid expansion.

Vaatsalya is another hospital network focused on tier II and tier III towns bringing affordable healthcare in semi-urban and rural areas. Vaatsalya currently has seventeen hospitals across Karnataka and Andhra Pradesh. Vaatsalya hospitals are 50-70 beds in size, with neonatal intensive care facilities, operation theatres, maternity room, intensive care facilities, a mix of general rooms (dormitory style), and private/semi-private rooms.

With 90% of Bihar's population in rural areas, it is important for the state to address the concerns of these hospital networks so that they can set up such chains in rural and semi-urban Bihar.

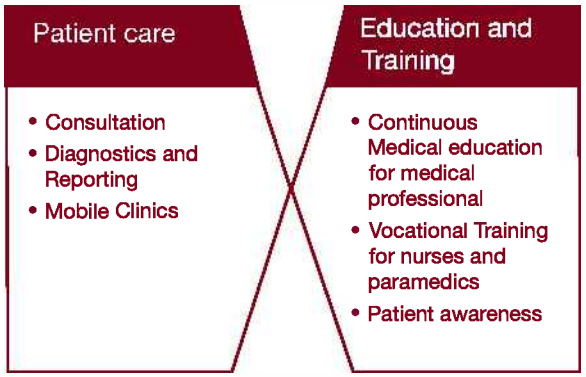


Penetrating rural market through telemedicine

The advances in Medical Science and bio-medical engineering on one hand and Telecommunication and Information Technology on the other are offering wide opportunities for improved health care in India. With its high rural population and low per capita income, the factors that are likely to drive the growth of telemedicine in Bihar are the following:

- Inaccessibility of care for majority of the population; over 50% of the patients from rural areas travel over 100 kms to seek medical care
- A severe shortage of skilled and qualified doctors in the rural areas; large proportion of medical care in rural areas is provided by Quacks (estimated to be around 1 million currently in India);
- High cost of health care, particularly for secondary and tertiary care;
- Very high patient volume in the rural areas compared to the number of doctors, hospital beds and trained medical staff;
- Problem of retaining doctors in rural areas where they are required to serve and propagate widespread health awareness;
- Specialist doctors cannot be retained at rural areas as they will be professionally isolated and become obsolete and even monetary incentives cannot prevent it;
- Widespread availability of mobile network; and
- Rapid growth in the availability of low power, hand held medical monitoring devices.

The services that can be provided through Telemedicine are shown below:



Some of the major service providers in telemedicine in India are Narayana Hrudayalaya, Apollo Telemedicine Enterprises, Asia Heart Foundation, Escorts Heart Institute and Aravind Eye Care.

Existing Initiative in Bihar

World Health Partners (WHP), a U.S. headquartered international non-profit, has set up 104 telemedicine centers in 13 districts of the state of Bihar. Plans are on to expand the network to 400 centers in 25 districts, covering a population of 70 million, in the short term and eventually to 1,250 centers over a period of 3 years. The centers provide basic health care and reproductive health services by harnessing local market forces to work for the poor. The centers use remote diagnostic devices for measurement of basic parameters like blood pressure, heart rate, electrical activity of the heart and pulse rate, while the patients are connected to doctors at WHP's central medical facility in New Delhi via computers and webcam. Gradually these centers will focus on detection and treatment of tuberculosis, visceral leishmaniasis, childhood pneumonia and diarrhoea.

The Bihar Govt. needs to draw experience from the success of this program as well as the other successful telemedicine programs currently in place for other states of India and go more aggressively in the telemedicine space for a better penetration and coverage of its vast rural population with quality medical consultations and diagnostic services within a short timeframe.

Successful programmes in other Indian states

The Narayana Hrudayalaya is the earliest and largest telemedicine programme in India. The telemedicine network, managed through satellite connectivity provided free of cost by the Indian Space Research Organisation, is connected with about 100 telemedicine centres across India. Till date, it has conducted around 53,000 tele-consultations in the areas of cardiology, neurology, urology and cancer. It also has an electrocardiogram (ECG) network wherein general practitioners in remote locations are given a trans-telephonic ECG machine that helps transmit ECGs.

Some of the other successful programmes across different states of India are as follows:

- Airtel has tied up with Healthforce and Fortis Healthcare as the knowledge partner to offer Mediphone services on non-emergency health problems to its customers around-the-clock at less than 50 INR for each consultation.
- Aircel and Idea have collaborated with HealthNet Global to provide services to subscribers through paramedics, who come with a laptop and medical diagnostic equipment and conduct consultations via video conferencing, in Chennai, Mumbai, Delhi and Hyderabad.
- Apollo Telemedicine Networking Foundation (ATNF), a not-for-profit organisation has set up a rural telemedicine network of 150 centres for providing medical consultation to rural population on primary, secondary and tertiary care, with Apollo Hospitals providing the medical support by rendering quality healthcare through its key hospitals.
- CARE Rural Health Mission is a not-for-profit organisation specialising in telemedicine solutions to link rural health workers in Maharashtra and Andhra Pradesh with doctors at district level hub and till date has served 1.1 million patients across 250 villages.
- DISHA is a telemedicine initiative by Apollo, Phillips, ISRO and Dhan Foundation that provides long distance healthcare to the underserved population through a mobile tele-clinical van, which offers super specialty and specialty tele-consultation, lab facilities, onsite consultation, and secondary and tertiary care. It has targeted to cover a population of 275 million.
- OTTET's Telemedicine network is an integrated health care service delivery model that has been established as a need based community-centric approach to promote and provide preventive health care and disease management services at the door steps of people living in over 51,000 villages of Odisha state. It is done through a PPP mode with the partners being MoHFW-Odisha state government, SGPGIMS Lucknow and various technical partners.

Challenges and Government Intervention

In spite of the significant developments in India on innovations in telemedicine programs, there are challenges with respect to its adoption and coverage. According to Devi Shetty: "The greatest challenge is getting enough medical specialists to see patients in remote locations and also to get the patients to trust the opinion by the doctors, virtually." Dr. Rana Mehta, HealthCare Leader of PricewaterhouseCoopers, looks at the challenge from a different perspective: "Ten years ago, there was the technological barrier, that has gone away. However the economic barrier stays. The ecosystem, in terms of the incentives for the hospitals, the broadband service providers and the patients, needs to be defined."

Strategic interventions

Bridging the skill gap

According to the information received from the Department of Healthcare (Government of Bihar), currently there is a need for 6000 doctors across all the medical colleges and district hospitals while only 700 doctors are graduating every year from the 6 Govt. and 3 Private Medical Colleges.

Resources	Required	In Position	Shortfall
Lab Technicians	1,711	135	1,576
Radiologists	70	15	55
Pharmacists	1,711	439	1,272

Source: Ministry of Health and Family Welfare: State Health profile Bihar 2011

Government						Private		
PMCH	NMCH	DMCH	Gaya	Bhagalpur	Muzaffarpur	Kishangunj	Katihar	Saharsa
100	100	90	50	50	50	60	100	100

Source: Department of Health, Government of Bihar

The government is in the process of setting up three new medical colleges in Nalanda, Bettiah (Paschim Champaran) and Madhepura with a total seat capacity of 300, which is still not sufficient to bridge the supply-demand gap.

A similar situation prevails for nursing staff. In the government sector alone, around 46,000 ANM nurses are required to fulfill the NHRM programme criteria in PMCs and health sub-centres. However, there are currently 45 nursing schools functioning in Bihar with another 24 being approved by the Indian Nursing Council. These will produce between 3500 and 4000 skilled nurses annually, still way short of the requirement. Moreover, there were some concerns in the department of health over the quality of certified nurses from some of the private nursing schools.

The availability of skilled resources for other ancillary health services like paramedics, OT attendants, lab technicians, imaging technicians, etc, is also far behind the current demand in the Bihar healthcare sector.

Table above showing shortage of lab technician, radiologist, pharmacists is only for government setup. The problem is even bigger for the private hospitals. Most of the private hospitals are operating with unqualified staff. So overall requirement for these in the state would be several multiples of the above numbers in the table.

The supply of skilled resources must be increased to meet the demand of the healthcare sector. This can be achieved in one or more of the following ways:

- **Increase capacity in existing institutes/colleges** - Conduct a study of the existing institutes and/or colleges to identify any scope for capacity enhancement and then plan accordingly. The actual increase in capacity will be the responsibility of the respective owners though the Department of Health will need to drive the process through completion.
- **Set up new institutes through PPP mode** - Enhance the contribution of the private sector in providing health education/training through partnership with the government. Here the government must take the initiative to come up with a PPP framework to set up new training institutes by partnering with qualified institutions. The Government currently has a proposal for 19 new Medical Institutes with a proposed investment of 2,088.91 crores[10], which should be taken up on priority basis for speedy approval.
- **Invite renowned private institutes to open branches in Bihar** - Invite & incentivize pure private model to provide health education/training for ancillary health services by drawing experiences from the existing private medical colleges and nursing schools. There is a huge shortfall of skilled resources in the healthcare ancillary services in PMCs, RHs, CMCs, District Hospitals, Private Medical Centers and Diagnostic Centers. The private sector must take this opportunity to enter this market that currently does not have much competition and deliver best-of-class training while the Government needs to monitor the quality of training and education being imparted against a pre-defined standard.

The department of health is interested in making the six districts of Darbhanga, Gaya, Begusarai, Muzaffarpur, Purnia and Shahabad the hubs of medical care in Bihar. Private investors and institutes must therefore actively pursue with the government in order to identify suitable places in those districts where they can set up new training schools.

10 Bihar: the Destination NEXT - A Presentation by Department of Industries, Government of Bihar (2011)

Forging partnerships with the private sector

For healthcare infrastructure

As per the IPHS norms, there are gaps in the current healthcare infrastructure in Bihar across most districts, both rural and urban. This necessitates the need for immediate attention due to increasing population pressure and the disease profile of the state. A huge investment is required to be made in the development and upgrade of this healthcare infrastructure, in order to improve access and quality. The private sector must consider this business and opportunity to enter the healthcare delivery market in Bihar by partnering with the government in one or more of the following areas:

Rural

- **Upgrade and manage existing PHCs:** The government can invite private players such as large NGOs in the social sectors (like healthcare) to enter into a PPP contract for the upgrade and management of an identified set of PHCs. This will help establish the framework and standards. The model can then be replicated for other PHCs as well. Eventually, the government can take the route of for-profit PPP to attract more private investment in the primary care space. The government in addition, must have a monitoring mechanism in place for the level of penetration and quality of care in order to ensure the success of this programme.

  States like Odisha and Andhra Pradesh have encouraged private participation for better management and improved quality of care in the primary care space and have implemented successful PPP models in PHCs. For eg. in Andhra Pradesh, the Health Management and Research Institute (HMRI) has set up a PPP model of private stewardship for public service in primary healthcare. HMRI is a not-for-profit organisation that is bridging the gaps in healthcare delivery in terms of access, affordability and quality, with the use of modern management practices and IT.

  In Odisha, the government contracted out around 50 PHCs to NGOs or corporate agencies for management and operation. One of them, NYSASDRI successfully managed three PHCs for three years with the help of funding from Interact World Wide, UK. One corporate agency, Nayagarh Sugar Complex Ltd, had also been contracted out to a PHC as its corporate social responsibility (CSR) and has been a success.

  The Bihar government can also consider complementing its existing PHCs by drawing reference from Arogya Ghar, Rajasthan's primary care delivery model (kiosk based clinics) aimed at reducing the incidence of common ailments and preventable diseases through affordable healthcare. The programme is funded by the World Bank and is partnered by the Indian Institute of Health Management and Research. It is targeted to benefit 40,000 villages with a vulnerable population exceeding 27 million inhabitants.

Urban and semi-urban

- **Expand within existing infrastructure:** The government must ensure that the land allotted for any hospital or medical centre is being utilised appropriately. It can study the utilisation of land by various government and private hospitals and medical centres in the state in order to explore the provision for expansion, either in terms of existing bed capacity or opening super-speciality units. Based on the outcome, it can then invite private investors or partner with private service providers to work on the desired expansion.
- **Acquire family owned nursing homes and private medical centres:** There are several large private nursing homes and medical centres in Bihar, operated and managed as family businesses. The government can identify the ones losing out to competition or going down on business volume due to lack of focus or finance and partner with private investors to acquire and grow them. An advantage in this initiative is the availability of existing infrastructure in working condition as well as ready resources and skill sets to run the business from day one. The government has to conduct a pilot of this PPP model for a couple of facilities before the framework is established.
- **Consolidate fragmented care delivery set-up:** Private doctors across districts in Bihar have set up their own clinics based on their area of specialisation.
- These clinics cater to a significant section of the population. They however lack the ability to diagnose and treat patients in multiple areas of specialisation, if the need arises. These isolated private care delivery set-ups, which can be consolidated, need to be identified and brought under one roof for better coordination and integration in the care delivery process. The government has to play the role of a facilitator as well as a driver in this consolidation process, by convincing individual small private entities to work together for a common cause. The overall business model need to be discussed and agreed upon by the involved private entities.

- **Set up new super-specialty and multi-speciality facilities:** In the 2011 Industrial Policy report of the government of Bihar, the setting-up of super-speciality hospitals has been identified as one of the nine thrust areas for the future industrial growth of Bihar. However, the government is yet to release any policy for private investors in this focus area. Historical data on the inflow of patients from Bihar to large multi-speciality hospitals like AIIMS, Safdarjung, SSKM, CMC Ludhiana and Vellore, Tata Memorial, Apollo and Fortis in adjoining states clearly shows that there is a demand for similar hospitals in Bihar. This must be considered as an opportunity to attract private investment in setting up new multi-speciality and super-speciality units in the major cities of Bihar.

  The state needs good tertiary care hospitals. These hospitals can be located in the most prosperous districts of Patna, Bhagalpur, Darbhanga, Begusarai and Muzaffarpur. The government can consider a hub-and-spoke model in order to prevent patients from moving out of the state. In this model, tertiary care hospitals can have around 250 beds in four to five locations across the state while there can be 100-bed secondary care hospitals spread across other 1o to 15 districts and also acting as feeder hospitals for the tertiary care hospitals.

  The government can start looking at healthcare facilities within the context of a social sector as opposed to industrial entities. This can help it to come up with incentives to promote private participation, particularly around offering subsidies on bank loan interest during a gestation period of three to four years and tax rebates for hospital building and equipment. Moreover, there needs to be a review of the current licensing procedure for hospitals to bring in more rigour and standardisation in order to improve the overall quality of care. For eg. the current procedure does not require the existence of an ICU if an operation theatre is in place, although it is known that often, the patient is required to be in an ICU as part of post-operation monitoring and recovery. Also the government has to facilitate private investors in the land acquisition process, in their location of interest.

For manufacturing units

According to the latest data from Department of Industrial Policy and Promotion (DIPP), FDI inflow in India in the medical appliances and surgical devices stood at US $521.6 million between April 2000 and March 2012. In Bihar as well, there is a good market for quality low cost surgical devices, hospital supplies and medical equipments to be utilized by the PHCs, RHs, CHCs, District and Private Hospitals and Medical Centers. If these can be procured and maintained through local manufacturing units, the operational cost of running those healthcare facilities can be reduced. The Government of Bihar can look at getting a pie of that foreign investment to set up large manufacturing bases for medical devices.

The Government of India currently has the following policies and incentives for the healthcare sector:

- Infrastructure status conferred on healthcare industry;
- 40 per cent depreciation limits on medical equipment imports;
- Reduced duties (between 5-8 per cent) on certain medical equipment and devices; and
- Income tax exemption for the first 5 years, to 100 bed hospitals set up in the rural areas.

To add to the above, the Bihar Government has the following incentives as part of their industrial policy:

- Stamp duty and registration fee waiver in lease/sale/transfer of land for setting up Units;
- VAT reimbursements @ 80% of deposited amount for 10 years (max. 300% of capital investment);
- Reimbursement of 50% capital investment on plant and machinery for captive power generation/Diesel generating set with no upper limit; and
- 25% VAT reimbursement for existing industries for 5 years.

The Bihar Industrial Development Authority (BIADA) has already identified 50 Industrial Areas that come under 4 Regional Offices and acquired a total of 5,085 acres of land for industrial development across the different districts of Bihar. As per the 2011 report from the Industries Department, there is still 1,081 acres of vacant land. Out of them around 385 acres of land is available in Patna Regional Office, 255 acres of land is available in Bhagalpur Regional Office, and 72 acres of land is available in Darbhanga Regional Office. Availability of ready land with basic facilities makes it a better option for the private investors to enter the Bihar

Healthcare Sector. The private manufacturers can work with the Government for land allotment and jointly come up with policy terms that leverages both the State and Central incentive policy and helps to build a viable business model for them.

The Government can encourage the private manufacturers to either partner with the Government in PPP mode or go for pure private model for setting up units here, and must appoint a nodal agency to monitor the quality standards of the manufactured products.

Building functional efficiencies

Currently, diagnostic services are inadequate both at the block as well as district levels. This makes the process of conducting lab tests for common or prevalent diseases time-consuming and inefficient. Moreover, the maintenance of test lab equipment has to be regular and consistent, without which results may be erroneous leading to incorrect treatment. The department of health can improve the functional efficiency of the clinical diagnosis process, specifically at the PHCs and RHs, by considering the following initiatives:

- **Redesign the PPP model to improve diagnostic services at PHCs:** The government has already experimented with a PPP model in order to provide diagnostic services at the PHCs through a couple of large private diagnostic labs, based out of Bihar and West Bengal. Though the model started off well and was running successfully, it could not be sustained in some cases and failed eventually. The government needs to redesign the PPP model after identifying bottlenecks and then restart this much-needed initiative..
- **Leverage technology to streamline healthcare delivery process -**
  - Increase adoption and coverage of telemedicine programs.
  - In order to make the above PPP model successful and sustainable, the documentation and paperwork involved in the approval and release of payment have to be optimized so that the turnaround time can be reduced. Technology must be leveraged to move towards paperless delivery of reports in the hospitals and sharing of reports across the different healthcare facilities. The Department of Health has to take the initiative of implementing this through private participation.
- **Increase the effectiveness of mobile medical units (MMU)** - The State Government is already running MMUs in all the districts through Private Service Providers (PSP) under the "Arogya Rath" program. However due to some recent changes in the Government Policy on fund allocation for operating the MMUs, the PSPs are not keen to renew their contracts and continue the service. Moreover the unavailability of doctors and medical staff on a long-term basis and the insufficient number of MMUs that are required to serve the entire State have made this model unsustainable. To increase the coverage and frequency of visits for the MMUs, the Government can operate the MMUs at block level (only for the identified and underserved blocks) instead of district level by bringing in some more private participation. This has been the case for a similar program in Madhya Pradesh called "Deen Dayal Chalit Aspatal". Moreover the Government can make the MMU service more effective by optimizing the services being provided, thereby reducing the overall cost of running the units. For e.g. Madhya Pradesh (MP) MMUs provide a subset of the services as compared to Bihar MMUs at a much reduced cost per month (Rs. 175,000/- per month per unit in MP vs. Rs. 468,000/- per month per unit in Bihar).
- **Partner with private players with reach:** Use existing companies that have infrastructure to reach the remotest corners of the state for healthcare delivery. For eg. SREI Sahaj e-Village Ltd, a subsidiary of SREI Infrastructure Finance Limited, in collaboration with the government of India, is bringing e-governance through its CSCs to the furthest parts of the state. They have the geographical reach, connectivity and an established e-commerce platform. The state can partner with such agencies for online continuing medical education in order to increase the adoption of telemedicine programmes as well as the distribution of preventive medicine and medical insurance.

Improving the affordability of healthcare

The disparities in healthcare services across regions and communities must be reduced by making them more affordable. Both, the government as well as the private sector need to play active roles to achieve this. The following can be considered as the three primary areas to begin with:

- **Monitor the effectiveness of the Rastriya Swasth Bima Yojona:** The Rastriya Swasth Bima Yojona is a health insurance scheme promoted by the government of India for the BPL community, whereby a maximum of 30,000 INR will be reimbursed annually for medical treatment. The central government will bear 75% of the expenses while the state government has to take care of the remaining 25. Under this scheme, two smart cards are being given to each BPL family, one for the head of the family and another for the rest of the family members. The government of Bihar has already implemented this scheme but a monitoring mechanism needs to be put in place in order to ensure utilisation and track denials and disputes.
- **Promote private participation in the community health insurance space:** In addition to the central government's health insurance scheme, there is a definite need for private participation in order to increase the affordability of healthcare in rural areas. The government has to design and develop a community health insurance scheme and invite private insurance companies, licensed and registered with the IRDA, to implement it. This will complement the central government scheme and provide financial protection to BPL families for the treatment of major ailments that may require admission in private hospitals.

  The government of Andhra Pradesh has successfully piloted Arogyasri, a similar scheme, in three districts and has subsequently rolled it out to other districts. In Karnataka, the Arogya Raksha Yojona (ARY) Micro Health Finance Scheme is a comprehensive health insurance plan that offers lower and lower middle-class people affordable access to high-quality healthcare through a network of identified hospitals and leading doctors and surgeons. The scheme works as a private not-for-profit model and is jointly implemented by Biocon Foundation, the funder, Narayana Hrudayalaya and the New India Assurance Co Ltd.
- **Reserve medical care for economically backward communities:** A fixed percentage of beds has to be reserved in all private hospitals and medical centres for the treatment of economically backward communities either free-of-cost or at minimal cost, depending on the nature of ailment. A tracking mechanism needs to be implemented by the government in order to ensure implementation. The private healthcare facility will also need to collaborate by agreeing with the government on the review process and providing the government agency with correct and complete data, as and when required.

Strengthening the drug distribution system

The government of Bihar provides medicines free-of-cost for most common ailments to all outdoor and indoor patients in all government hospitals and health centres. The list of free drugs has been expanded to incorporate 33 OPD and 37 IPD medicines in hospitals. Doctors have been instructed to prescribe only generic drugs to patients. However, the distribution of drugs to the stores in the districts as well as hospital outlets and the monitoring of inventory has scope for improvement, in order to ensure the continuous availability of both generic drugs as well as those for chronic diseases. There have been instances of drugs for common diseases like kala-azar, going out of stock in district hospitals.

- **Improve distribution network with inventory monitoring mechanism:** According to NRHM SPIP 2012-13 for Bihar, one of the targets for 2012-13 is 'all districts with drug warehouse (own or rented) with computerised inventory'. However, the budget allocation for a regional drug warehouse is zero. This clearly indicates that the government will need private investment in this area in order to meet its target. It has to invite private service providers to implement a procurement and distribution model relevant for Bihar that involves building drug warehouses across districts. The warehouses must have active participation in the planning of drug supplies to each facility with adequate manpower with the required competencies. The warehouses must cater to all levels of care (primary, secondary and tertiary) in the state starting from PHCs and SCs up to the district hospitals and super-speciality facilities.
- **Promote pharmacy chains of major national brands at the district level:** The State Health Society Bihar has set up three generic drug shops in each of the six medical college hospitals, two in each of the 38 district hospitals and two in other hospitals in order to make drugs available at comparatively cheap rates. However, a majority of the people in Bihar depend on private clinics for their clinical diagnosis and treatment. They usually purchase medicines from the stores instead of hospitals. The government must conduct an assessment of the demand-supply gap for this drug market and promote national level private pharmacy chains like Apollo and Frank Ross to fill this gap across districts. This will not only help improve access to drugs for secondary and tertiary care but also assist big players get a feel of the business environment and the possibility of making bigger investments in the state.

Roadmap for 2018

Based on strategic interventions, budget allocation and target areas, as specified in SPIP 2012-13, the following can be recommended as short-term action items and long-term initiatives for the healthcare sector in Bihar.

Short term action items (2012-2014)

Forge partnerships with private investors

Create a clear, transparent process and policy so that the turnaround time for obtaining licences for setting up organised hospitals is low. Encourage hospital networks willing to open in rural and semi-urban areas.

- Prioritise upgradation needs at primary healthcare centres and bring in private participation to upgrade and manage them going forward, while the government acts as facilitator to monitor quality.
- Assess the capacity expansion possibility on existing healthcare infrastructure (hospitals, nursing homes, medical centres) and accordingly partner with private service providers through PPP mode
- Leverage technology in supply chain management process, inventory monitoring and quality control of the distributed drugs.

Bridge the skill gap

- Assess and implement a capacity expansion plan within existing training institutes for increasing the supply of quality paramedic staff, lab technicians, radiologists and pharmacists
- Increase the quality and availability of online Continuing Medical Education to increase adoption of telemedicine programs through partnership with private service providers who have reach in the remotest corner in the state

Build functional efficiencies

- Detailed policy guidelines and regulations needs to be made to cater to the unique characterestics of PPP in health sector
- Identity all the underserved, inaccessible and disease prone blocks across all districts and bring in additional private service providers to operate MMUs in each of them by providing a custom set of services. This would definitely increase the effectiveness of these Units
- Leverage technology to streamline the payment approval and release process, bring in more transparency and accountability and reduce the turnaround time for any dispute settlement, related to the ongoing PPP initiatives.

Long term initiatives (2014-2018)

Forge partnerships with private investors

- Assess the demand and identify the locations for any new multi specialty healthcare facilities across the State and invite appropriate private investors or healthcare providers to set up units there either as a pure private model or in PPP mode
- Identify any large family owned nursing homes or private medical centres, that are fully functional but lacks commitment, funding and growth prospects from the current owners and then acquire them through large private investors or at least facilitate negotiations between the local party and the large player for a bigger cause of helping them expand and grow
- Showcase the land bank along with ready infrastructure availability and encourage private manufacturers (both national and international) to set up units in BIADA plots close to existing healthcare facilities for hospital supplies, surgical devices and medical equipments.
- Consolidate fragmented care delivery set up in the districts by identifying isolated specialized private clinics and connecting them through technology under an integrated delivery model. This will not only help in building multi-specialty facilities by leveraging the existing set up but also improve the quality of care for the citizens who currently rely on those private clinics for their medical needs.
- Provide additional tax incentives over and above the 5 year tax holiday the GoI gives for setting up hospitals in rural area. None of the states have started any initiative in this area, Bihar can be first to provide such initiative.

Bridge the skill gap

- Apply for approval to the Medical Council of India (MCI) and the Indian Nursing Council (INC) respectively to set up new medical colleges and nursing schools and select private players to build and manage them in PPP mode.
- Invite renowned private institutes for healthcare services training to open up branches in Bihar and facilitate the land identification and allotment/ procurement process, and this would help in narrowing the quality skill supply gap in the healthcare facilities

Improve the affordability of healthcare

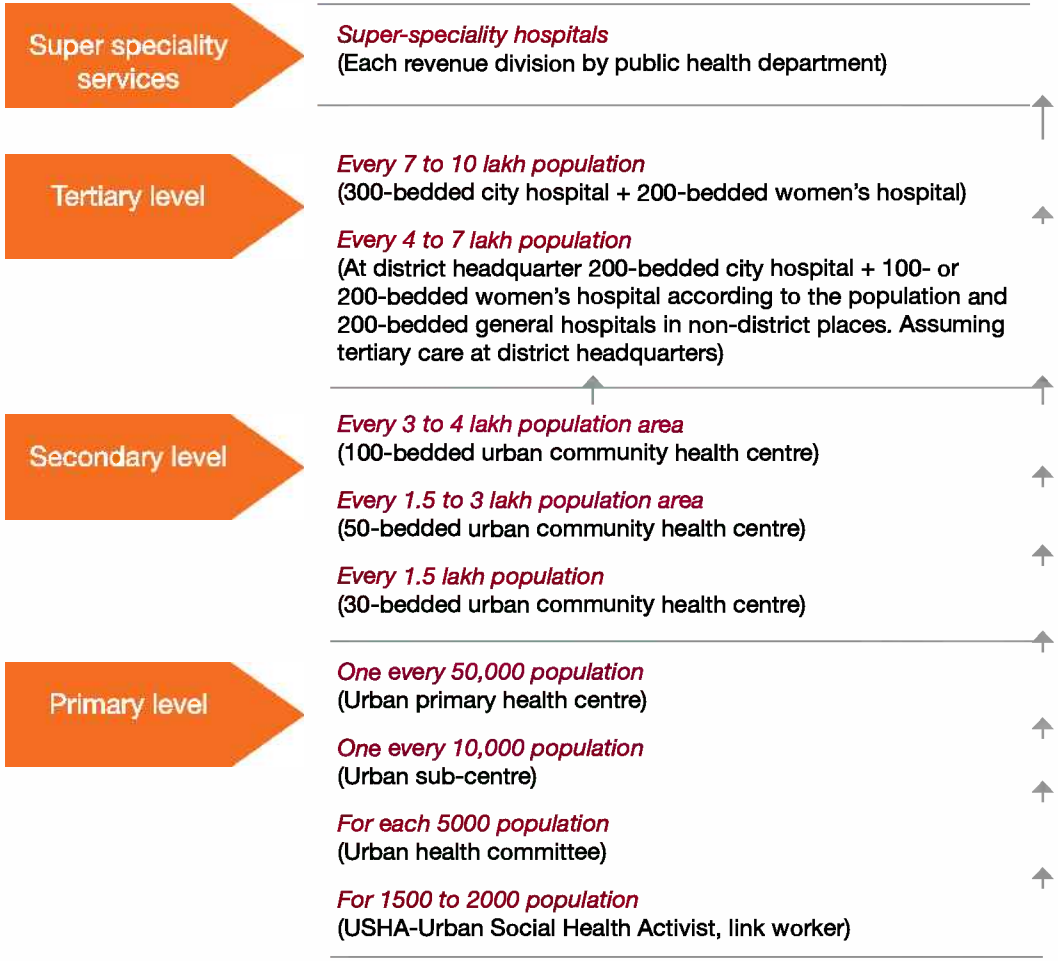
- Promote private participation in community health insurance space like "Arogyasri" in Andhra Pradesh and "Arogya Raksha Yojona (ARY) Micro Health Finance Scheme" in Karnataka as this would largely help in making the healthcare services more affordable to rural population
- Assess the gaps or bottlenecks in the Rastriya Swasth Bima Yojona program to make it more attractive to private sector and implement a monitoring mechanism that would help to avoid corruption and increase utilization, thereby making the program highly effective

Strengthen the drug distribution system

- Promote pharmacy chains of major national brands like Apollo and Frank Ross at the district level to cater to the demand of the large section of State population who relies on private clinics for their diagnosis and treatment

Probable healthcare PPP model in urban areas

The new structure for service delivery in urban areas of Bihar can be envisaged as:



Conclusion

Health being a complex sector with deep cross linkages across other social sectors like nutrition, literacy, poverty, women and child health etc. makes it imperative to design holistic interventions for developing a sustainable healthcare system . Bihar, one of India's most populous states has made several efforts in the last couple of years to stabilize basic indicators of health and build infrastructure, manpower support and delivery systems around them. However despite these, initiatives analysis of the current health profile of the state points out to several deficiencies. Innovation, healthcare infrastructure, insurance coverage, disease prevalence, and patient population are the key fundamentals driving the healthcare industry into the future. In Bihar economic progress and infrastructure improvements would create new opportunities. This would open up the market for private hospital chains which could expand both geographically especially in the rural areas and also in terms of capacity in the urban zones. There is ample scope for the development of private specialty hospitals and private hospitals to drive adoption of treatment standards. Formal channels for large scale tapping of the private sector potential through PPP in states like Bihar have been absent until recent past. Government initiatives like the NRHM and international support in the form of DFID initiatives have brought about a change in the strategy. The private sector must consider this as business opportunity to enter the healthcare delivery market in Bihar by partnering with the Govt. The govt. at the same time needs to understand the issues faced by private sector currently working independently or in the existing PPP programs and take measures to improve the investment climate in Bihar. The state will need to put in place clear policies & guidelines in the healthcare sector which will enable to attract large private investment in the health care industry in the state. Introduction of incentive schemes and a framework to attract and support private participation to set up healthcare infrastructure in partnership with government or otherwise will accelerate the rate of success of these initiatives.

Appendix A - List of Abbreviations

PPP	Public Private Partnership
GDP	Gross domestic product
DIPP	Department of Industrial Policy & Promotion
IMR,	Infant mortality rate
MMR	Maternal mortality ratio
TFR	Total fertility rate
GoI	Government of India
GoB	Government of Bihar
NRHM	National Rural Health Mission
MFI	Microfinance institutions
NFHS	National Family Health Survey
PRI	Panchayati Raj Institute
JBSY	Janani avam Bal Suraksha Yojana
RNTCP	Revised National TB Control Programme
CHC	Community Health Centres
SC	Sub Centres
PHC	Primary Health Centre
MO)	Medical Officers
ANM	Auxiliary Nurses Midwives
SWD	Social Welfare Department
AWC	Anganwadi Centres
ICDS	Indian Child Development Scheme

MIS	Management Information System
NABARD	National Bank for Agriculture and Rural Development
BRJP	Bihar Rajya Jansankhya Parishad
BMSI	Bihar Medical Services & Infrastructure Corporation Ltd
DoHFW	Department of Health & Family Welfare
MMU	Mobile Medical Units
RDC	Regional Diagnostic Centers
MCHs	Medical College Hospitals
ALSA	Advance Life Saving Ambulances
BLSA	Basic Life Saving Ambulances
IDA	Infrastructure Development Authority
IGIMS	Indira Gandhi Institute of Medical Science
RKS	Rogi Kalyan Samithi
ICU	Intensive care Unit
DFID	Department For International Development
SSA	Sarva Shiksha Abhiyan
RCH	Reproductive and Child Health Programme
SWASTH	Sector Wide Approach to Strengthening Health
MDG)	Millennium Development Goals
HMRI	Health Management and research Institute
CSCs	Common Service Centres

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Notes

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