

# **Scaling Up Primary Health Services in Rural India**

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## **Public Investment Requirements and Health Sector Reform**

### **Case Studies of Uttar Pradesh and Madhya Pradesh**

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#### **Abstract**

We attempt to address two key questions in this paper: 1) In terms of state-wide scaling up of rural services (in Uttar Pradesh, and Madhya Pradesh) in the area of primary health, what will it cost financially and in terms of human resources to scale-up these services in all the rural areas of these two states? And 2) what policy, institutional and governance reforms may be necessary so as to ensure proper service delivery? As is well known, merely setting up more health clinics, for instance, is not going to be enough; higher public investments in these areas needs to be accompanied by systemic reforms that will help overhaul the present service delivery system, including issues of control and oversight, for example.

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*During the week of November 14, 2005, Nirupam Bajpai submitted this paper to His Excellency, Dr. A P J Abdul Kalam, President of India and the Honorable Dr. Manmohan Singh, Prime Minister of India. Nirupam Bajpai also presented and discussed this paper with Dr. Montek Singh Ahluwalia, Deputy Chairman, Planning Commission, Digvijaya Singh, General Secretary, All India Congress Committee and former Chief Minister of Madhya Pradesh, Babulal Gaur, Chief Minister of Madhya Pradesh, Mulayam Singh Yadav, Chief Minister of Uttar Pradesh, Vijay Singh, Chief Secretary of Madhya Pradesh and R Ramani, Chief Secretary of Uttar Pradesh and several other senior civil servants in Delhi, Bhopal and Lucknow.*

## **Scaling up Primary Health Services in Rural India: Public Investment Requirements and Health Sector Reform**

### **Case Studies of Uttar Pradesh and Madhya Pradesh**

#### **Key Recommendations**

We recommend that the public health spending of the health departments of federal and state governments should rise from the 2004/05 level of 0.9 percent of GDP (federal government 0.29 percent and state governments 0.61 percent) to 3 percent by the year 2009. Per our estimates of the financial requirements of scaling up health services in rural Uttar Pradesh (UP) and Madhya Pradesh, (MP) additional public spending of Rs.288 per capita is needed for UP and Rs.262 per capita for MP. Thus, in UP, per capita health spending should rise to Rs.393 and in MP to Rs.390 thereby implying an increase of roughly 4-fold in UP and 3-fold in MP from their current levels.

On the national level, real public spending per capita, for 2004/05 was a mere Rs. 120, or \$15 on PPP terms, way below what the Commission on Macroeconomics and Health (\$36) recommended for an essential health package. This escalation in public spending is extremely critical in view of the fact that of the 0.9 percent of GDP spent by health departments of the central and state governments together in 2004/05, 0.63 percent was spent on wages and salaries leaving very meager resources for drugs, supplies, equipment, infrastructure and maintenance.

In terms of mobilizing additional funds for health, our research suggests these to mainly come from cutting unproductive government expenditures (both central and state governments) relative to GDP rather than by raising revenues relative to GDP. However, we do suggest levying a 2 percent Health Sector cess for the next 4 years.

In order to raise additional resources for the social sectors domestically, we recommend replacing the current subsidy regime with “life-line tariffs,” in which all of India’s below poverty line rural citizens would be ensured a fixed, but limited, amount of say water, electricity, and fertilizer at zero price, to ensure that every family can at least meet its basic needs. Above that fixed amount, families would be charged a proper tariff to cover the costs of supplying those services in amounts in excess of basic needs. This strategy – free access to meet basic needs, and an unsubsidized price for amounts above the basic needs would save vast sums of money for the budget, and yet still ensure that the poor have guaranteed free access to meet their essential needs. Savings from such a reform could be used for raising public health spending.

In order to raise additional funds externally, we suggest that the Ministry of Health put together a major project proposal to donors, such as the World Bank’s IDA, UK’s Department for International Development and the European Commission to seek funding for the National Rural Health Mission. Budgetary aid from external donors can be mobilized for high-priority, well-targeted, and mainly for raising rural health spending. This, in our view, will be a really good project and model of aid for India -- a national project on social priorities, and a few big donors that pool in their resources for it. This model should replace the current externally funded projects which are small and stand-alone in nature. Currently, India receives \$1.4 billion in the form of official development assistance. This amounts to approximately \$1.40 per capita per year and is far below what some other countries with India’s level of income receive.

We suggest a health sector strategy for India that is Millennium Development Goals (MDG) based not only at the national level, but also more importantly at the state and district levels.

States and districts should strive hard to attain the MDGs, such as reducing infant mortality rate, under-5 mortality, maternal mortality rate, immunizations and access to safe drinking water and the like especially for the laggard states and districts, with particular focus on the 150 most backward districts of the country. Based on the MDGs, state governments should announce targets for health to be met at the state and district levels by the year 2015.

We suggest that the central government should plan to convene a meeting of Chief Ministers and Health Ministers of all Indian States in 2006 to discuss how the states will meet the health targets. This meeting will allow states to present their most successful initiatives, so that all states can adopt “best practices” in public health.

The increased public health spending should finance infrastructure improvements in the rural sub-centers, primary and community health centers and the district hospitals. Additionally, much higher levels of spending is needed for essential drugs and supplies, vaccines, medical equipments, laboratories, and the like. In terms of human resources in the health centers, state governments need to appoint more auxiliary nurse midwives (ANMs), trained birth attendants, technicians, pharmacists, doctors, and specialists. In the lagging states, governments need to provide cell phones to doctors and ANMs in rural PHCs and use Maruti Vans converted as village ambulance vehicles at least one in each of the 150 most backward districts of India. These measures will help increase the utilization of the public health centers in UP and MP and consequently bring down the rather high out-of-pocket expenses of their rural residents.

Increased supply of doctors, specialists, pharmacists, technicians, trained nurses and midwives, etc. has to be ensured for the success of the scaling up effort. This requires large scale training and specialized education by encouraging private sector institutions to operate and expand the number of seats in such professional courses. Such institutions need to be formally recognized and properly monitored and supervised to ensure quality of training and education imparted. Although all this can take 4 to 5 years before qualified doctors and specialists can emerge in adequate numbers, it can increase the supply of paramedics very quickly. If the expansion of facilities is properly planned and phased out, the problem can be solved to a considerable extent.

There is a major problem of ensuring that the medical and paramedical personnel reside in the village itself so as to be available all the time to the villagers. This can happen voluntarily only if the overall facilities like schools and infrastructure like electricity, sanitation, water supply, etc., in the villages improve considerably. We cannot expect such an overhaul of Indian villages in short time. As an alternative, government can consider two pronged strategy of encouraging and increasing the supply of alternative medicines like *Ayurveda*, *Unani*, homeopathy, naturopathy, etc., and simultaneously making it obligatory for all these as well as allopathic doctors to spend at least 2 to 3 years in villages before they are eligible to practice in an urban area.

Different districts and even *tehsils* within a district may have very different set of root causes for health problems of population. Systematic efforts are, therefore, necessary to address those problems directly. A very narrow and traditional administrative approach of considering public health issues as pertaining to only health department and health ministry cannot work. There has to be an overall coordinated action across relevant departments and ministries to solve some of these problems (e.g. water and air pollution due to industries, food habits due to culture, etc.).

There is an urgent need to introduce some administrative flexibility in the health delivery system at the district and lower levels. In the present system, approvals from higher authorities on practically every minor matter hamper the efficient delivery of the health services. The norms about administrative and financial powers and control to various officers and functionaries need

to be revised upwards since they are outdated considering the inflation and technology changes in the sector. This will introduce an element of discretion and accountability among the lower level functionaries to benefit the consumers.

Labor laws need to be revisited and revised to improve the efficiency and delivery of health services. Health services should be considered essential services and the leave rules should accordingly apply. Further, if the existing workers cannot be affected by the new labor regulations and laws, the new employees can be put on the new labor conditions. Such an incremental approach is perhaps the only solution to this thorny issue. Moreover, all those services that are not strictly health oriented, like laundry, cleaning, security, provision of food and beverages, etc. should be given out on contracts or privatized. This will improve the efficiency and quality of services.

We focus especially on infant and child mortality in UP and MP as the state of infant and child mortality is perhaps the best way to assess the state of primary health care, quality and coverage of health delivery, general environment for health, crucial health determinants, such as nutrition, sanitation, and safe drinking water and the like. On the current trajectory, both UP and MP are unlikely to meet the MDGs relating to IMR, under-5 mortality, and maternal mortality unless public health spending in these states is raised substantially and there are major reforms in public health centers for much better control and oversight of the sub-centers, PHCs, CHCs and the district hospitals. MMR and IMR are shockingly high, particularly in UP.

We suggest putting together programs to increase public awareness and public measures to encourage institutional deliveries, ante-natal and post-natal care, and immunization. This is extremely significant to reduce India's high maternal mortality in general and UP's in particular.

In order to improve the delivery of health services in UP and MP, we suggest supporting community oversight of village-level health services, including panchayat responsibilities for oversight of sub-centers, and PHCs. While the 73rd and 74th Amendments to the Indian Constitution allow for a democratic system of governance in health to the multilayered local bodies, their implementation leaves much to be desired. Such devolution of authority has taken place only in Kerala, which invested time and resources in systematically building capacity for governance by local bodies. Both UP and MP need to strengthen their existing programs of capacity building in the Panchayati Raj Institutions (PRIs).

With regard to the PRIs and their ability to perform, the following questions need to be looked into: Has the power and authority that has been devolved to the PRIs on paper actually reached the people? Do they understand their duties/responsibilities on the one hand and their authority on the other? Do the PRIs have the capacity to manage health centers? Are there regular and comprehensive capacity building programs in place? And are any measures being undertaken to ensure that the caste and patriarchy do not prejudice effective management at the local level? and

We suggest that the UP and MP state governments utilize information technology - HMIS to improve the performance of their public health facilities. The primary objective of the HMIS will be to provide operational information for better service delivery, monitoring and policy formulation. It will also provide adequate feedback to the providers facilitating constant assessment of their performance and thereby providing opportunities for improving the same.

# **Scaling up Primary Health Services in Rural India: Public Investment Requirements and Health Sector Reform<sup>1</sup>**

## **Case Studies of Uttar Pradesh and Madhya Pradesh**

Nirupam Bajpai, Ravindra H. Dholakia and Jeffrey D. Sachs<sup>2</sup>

This report is based on the work undertaken during Year I of a two-year project on scaling up health services in rural India. The report focuses on two states: Uttar Pradesh and Madhya Pradesh. Unnao district in UP and Raisen district in MP were taken up for in-depth studies. Furthermore, detailed questionnaires were administered in five villages in each of the two districts that were distinct from each other and representative of the different conditions so that these could be reasonably extrapolated to the district.

We attempt to address two key questions in this report:

- 1) In terms of state-wide scaling up of rural services (in Uttar Pradesh, and Madhya Pradesh) in the area of primary health, what will it cost financially and in terms of human resources to scale-up these services in all the rural areas of these two states? And
- 2) What policy, institutional and governance reforms may be necessary so as to ensure proper service delivery? As is well known, merely setting up more health clinics, for instance, is not going to be enough; higher public investments in these areas needs to be accompanied by systemic reforms that will help overhaul the present service delivery system, including issues of control and oversight, for example.

The Indian Constitution defines the role of state and central government in terms of providing certain services to the subjects. Primary health care is an important service included in the list. Primary health consists of preventive health and curative health. In most cases, the preventive healthcare tends to be non-rival in consumption and difficult if not impossible for the principle of exclusion to apply. Thus, preventive healthcare is closely akin to a public good and hence often justified theoretically for public provision by the government. Curative healthcare, however, is often not considered a public good. Both the principles of rivalry in consumption and exclusion are applicable in most cases. Benefits of the service are also largely not subject to externality in the conventional sense. Curative healthcare in most cases may, therefore, fit the bill as a private good capable of being efficiently provided by the market. But considering its essentiality and role in determining the basic quality of life, for almost all societies, it becomes a merit good especially for those sections of the society who cannot afford it. It becomes a community want to protect life and provide a decent quality of survival to all members whether or

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<sup>1</sup> This report is based on the work undertaken for a project entitled 'Scaling up Services in Rural India' that is housed at the Center on Globalization and Sustainable Development (CGSD) of the Earth Institute at Columbia University. CGSD is grateful to The William and Flora Hewlett Foundation for providing financial support to this project and especially thanks Smita Singh, Program Director, Global Development, and Shweta Siraj-Mehta, Program Officer for discussions and their keen interest in this project.

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not they are able to afford the treatment. Thus, the Constitution recognizes it as a duty of the government to provide primary healthcare particularly to the poor and economically vulnerable sections of the society. We need to consider the question of adequacy of the existing primary healthcare services in the rural areas of Uttar Pradesh (henceforth UP) and Madhya Pradesh (henceforth MP) from this perspective.

India's achievements in the field of health leave much to be desired and the burden of disease among the Indian population remains high. Infant and child mortality and morbidity and maternal mortality and morbidity affect millions of children and women. Infectious diseases such as malaria and especially TB are reemerging as epidemics, and there is the growing specter of HIV/AIDS. Many of these illnesses and deaths can be prevented and/or treated cost-effectively with primary health care services provided by the public health system. An extensive primary healthcare infrastructure provided by the government exists in India. Yet, it is inadequate in terms of coverage of the population, especially in rural areas, and grossly underutilized because of the dismal quality of healthcare being provided. In most public health centers which provide primary healthcare services, drugs and equipments are missing or in short supply, there is shortage of staff and the system is characterized by endemic absenteeism on the part of medical personnel due to lack of oversight and control.

As a result, most people in India, even the poor, choose expensive healthcare services provided by the largely unregulated private sector. Not only do the poor face the double burden of poverty and ill-health, the financial burden of ill health can push even the non-poor into poverty. On the other hand, a healthy population is instrumental both for poverty reduction and for economic growth, two important developmental goals. In India, public spending on health is less than one percent of its GDP, (*Table 1*) which is grossly inadequate. Public investment in health, and in particular in primary healthcare needs to be much higher to achieve health targets, to reduce poverty and to raise the rate of economic growth. Moreover, the health system needs to be reformed to ensure efficient and effective delivery of good quality health services.

The average figures for India hide a great deal of variation in the performance of different states, which are on different points along the health transition path. Health transition has three components: demographic, which involves lowering of mortality and fertility rates and an aging population; epidemiological wherein the pattern of diseases prevalent in the population changes from communicable diseases to non-communicable diseases such as the chronic diseases of adulthood; and social whereby people develop better ability to self-manage their health and have better knowledge and expectations from the health system. While Kerala, Maharashtra and Tamil Nadu are much further along in the health transition trajectory, the densely populated states of Orissa, West Bengal, Bihar, Rajasthan, Madhya Pradesh and Uttar Pradesh are still in the early part, with the other states falling in between. For instance, while in Kerala, life expectancy at birth is 72; in Madhya Pradesh it is merely 56. A few states and about a quarter of the districts account for 40 percent of the poor and over half of the malnourished, nearly two thirds of malaria and kala-azar<sup>3</sup>, leprosy, infant and maternal mortality – diseases that can be easily averted with access to low cost public health interventions such as universal immunization services and timely treatment.

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<sup>3</sup> Also known as Black fever is an acute tick-borne illness caused by the bacteria *Rickettsia rickettsii*. The disease is characterized by sudden onset of headache, chills, and fever which can persist for 2-3 weeks. A characteristic rash appears on the extremities and trunk around the 4th day of illness. India accounts for half of the 600,000 infections that are annually recorded worldwide. Most of the cases in India come from the states of Bihar, Uttar Pradesh, West Bengal and Orissa, with Bihar alone accounting for ninety percent of all India's black fever victims.

Apart from variations due to income and education, health status in India varies systematically between rural-urban location, membership of scheduled caste and tribe, and by age and gender. All health indicators for rural areas compare unfavorably with those for urban areas; people belonging to scheduled castes and tribes have much poorer health compared to those who belong to the upper castes; and children and women in India suffer grossly from the burden of disease and ill-health. Morbidity among women and children is endemic in India.

**Table 1. Trends in Public Health Expenditure in India**

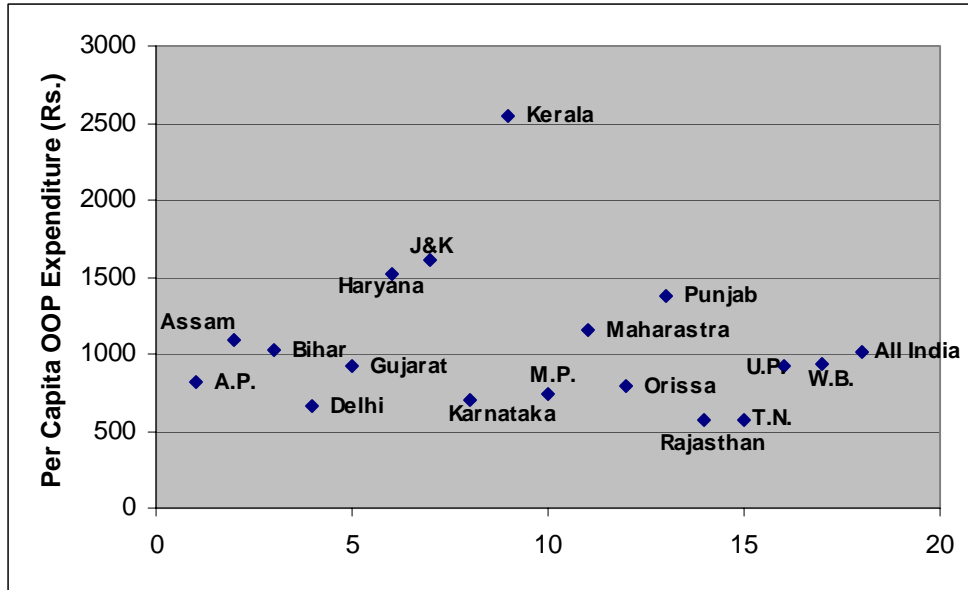
Year	Health Expenditure as % of the GDP			Per-Capita Public Expenditure on Health (Rs).
	Revenue	Capital	Aggregate	
1950-51	0.22	NA	0.22	0.61
1955-56	0.49	NA	0.49	1.36
1960-61	0.63	NA	0.63	2.48
1965-66	0.61	NA	0.61	3.47
1970-71	0.74	NA	0.74	6.22
1975-76	0.73	0.08	0.81	11.15
1980-81	0.83	0.09	0.92	19.37
1985-86	0.96	0.09	1.05	38.63
1990-91	0.89	0.06	0.95	64.83
1995-96	0.82	0.06	0.88	112.21
2000-01	0.86	0.04	0.90	184.56
2001-02	0.79	0.04	0.83	183.56
2002-03	0.82	0.04	0.86	202.22
2003-04	0.85	0.06	0.91	214.62

*Note:* GDP is at market price, with 1993-94 as the base year

*Sources:* *Report on currency and finance*, RBI, various issues; *Statistical abstract of India*, Government of India, various issues; *Handbook of statistics of India*, RBI, various issues

India is one of the five countries in the world where public spending is less than 0.9 percent of GDP and one of the fifteen where households (out-of-pocket) account for more than 80 percent of total health spending. Also, there are large inter-state disparities in household spending. Kerala, which is a leading state in terms of health indicators, accounts for the highest household spending in India, with a little over Rs 2,548 per annum (2004-05 current prices). In Uttar Pradesh, Madhya Pradesh and Orissa, both public expenditures and household expenditures are low (*Fig. 1*).

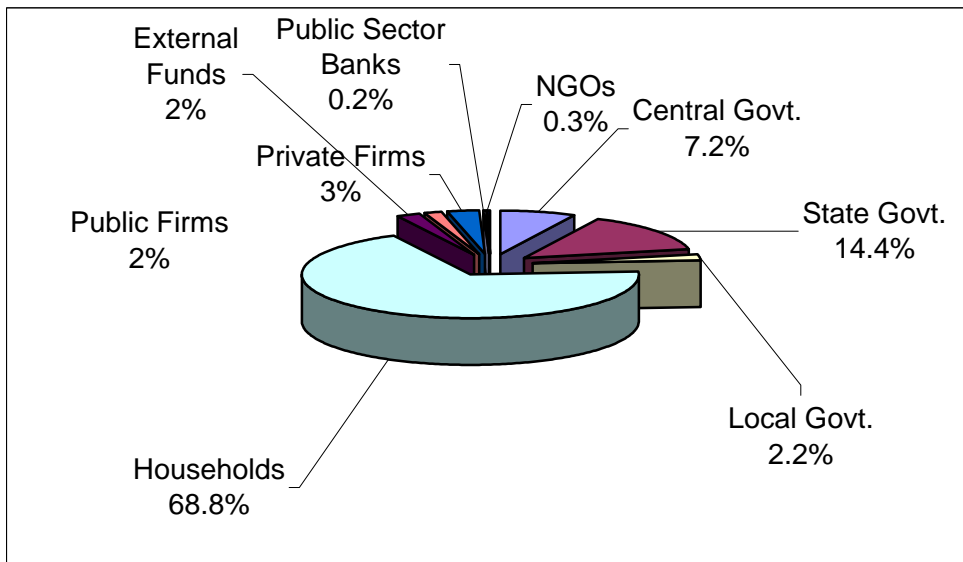




**Fig. 1.** Households' out-of-pocket spending on health in Indian States  
 Source : Based on NHA, 2001-02 and extrapolated for 2004-05.

Estimates using the National Health Account framework suggest that the health expenditure in India during 2001-02 was approximately Rs 10.8 million, accounting for 4.8 percent of the GDP at the current market price. Figure 2 shows the share of different entities in total health spending during 2001-02.

Out of this, public spending is estimated to be 1.2 percent as a proportion of GDP. This figure includes the expenditures incurred on health by all central government departments (health, defense, labor etc.), all state departments, local bodies, public enterprises including banks, and external funding for health. Spending by the health departments at the Central and State levels only comes to about 0.9 percent of GDP.



### *Dysfunctional Sub-centers and Primary Health Centers*

The rural primary healthcare system in northern and central India is, for the most part, dysfunctional. While extensive, it is wasteful, inefficient and delivers very low quality health services, so much so that the private sector has become the de facto provider of health services in India. The geographical and quantitative availability of primary healthcare facilities, though extensive, is far less than the guidelines laid down by the government.

Access is important but people's experiences of what the facility has to offer in terms of medical care and whether it is worth their while to use it are equally important in terms of their incentives to utilize healthcare facilities. People's perceptions of 'free' care is that of it being of low quality, and therefore, even the available infrastructure is grossly underutilized, i.e. the public healthcare system in India suffers from gross supply side distortions that go beyond physical availability. This affects the delivery of basic services to its large population of poor whose quality of life depends in crucial ways on public goods. The simple availability of a building designated as a public health facility is no guarantee that it is functional, and if functional, accessible to groups of people who may be restricted in their use of public healthcare services on account of their caste, religion and gender. Even setting aside socio-economic barriers to access and assuming the presence of a public health facility close at hand, the delivery of quality healthcare services is not guaranteed. The infrastructure is of poor quality and there is severe lack of even basic drugs and equipment. This is especially true for rural areas, and with regard to women's and children's health. Maternal, infant and child morbidity and mortality rates are intolerably high in India. Not only social justice but economic efficiency is being compromised as India does little to protect the health and well-being of its future generations.

Like the public education system in India, the large publicly provided health system is also marred by endemic absenteeism and neglect on the part of healthcare providers. The structure of incentives whereby public employees are guaranteed a salary and there is little or non-existent monitoring and accountability removes any punitive pressure that can act as a corrective on negligent behavior by public healthcare personnel. Even the private sector, which provides most of the health services in India, is largely unregulated and there is no gate-keeping on the standards of clinical practices adopted. Healthcare requires not only physical infrastructure and equipment, but also skilled and specialized human capital in the form of medical training and qualifications. Given the asymmetry of information between a doctor and his/her patient, low quality of medical consultancy not only lowers the efficacy of the health system, but can endanger people's health. The problem of unavailability of healthcare personnel is two-fold, especially in rural and remote areas: in many cases, rural health posts remain vacant because of unwillingness on the part of qualified doctors and other health care workers to accept the placement; and secondly, due to lack of effective monitoring and weak or non-existent accountability, even when a post is filled, the healthcare provider may simply be absent. While in both cases, public health care services fail to get delivered, absenteeism is costlier because it has an associated salary burden (Chaudhury et al, 2003).

One government failure in the health sector is the lack of any systematic efforts to track the health system and health facilities. There is no system in place to collect data on a regular and standard basis from service providers; nor is there any periodic evaluation of health personnel on their technical competence and ability to provide medical care. While, on paper, inspection and supervision and visits to healthcare facilities are provided for, there is little implementation. Without a reliable surveillance system and systematic data collection, the prevalence, magnitude, distribution and modes of transmission of diseases cannot be judged and no rational basis exists

for the formulation of appropriate policies. An integrated health management system with the use of information technology, as discussed later in the paper, could greatly assist in this task.

The rural healthcare structure is extremely rigid making it unable to respond effectively to local realities and needs. For instance, the number of auxiliary nurse midwives<sup>4</sup> (ANMs) per primary healthcare center (PHC) is the same throughout the country despite the fact that some states have twice the fertility level of others. Moreover, political interference in the location of health facilities often results in an irrational distribution of PHCs and sub-centers. Government health departments are focused on implementing government norms, paying salaries, ensuring the minimum facilities are available rather than measuring health system performance or health outcomes. Further, the public health system is managed and overseen by District Health Officers. Although they are qualified doctors, they have barely any training in public health management. Strengthening the capacity for public health management at the district and taluk level is crucial to improving public sector performance. Also, there is lack of accountability, which stems from the fact that there is no formal feedback mechanism. How can the management capacity be strengthened and a feedback mechanism established? We examine some of these issues later in the paper.

The highest priority for scaling up health services in the rural areas of UP and MP is at the community level, (sub-centers, PHCs and CHCs) where actual health services are delivered. Scaling up at this level would involve a basic strengthening of the staffing, an adequate supply of drugs and vaccines, and at least a minimal capacity of transport. It also involves both the hard infrastructure of the health sector (physical plant, diagnostic equipment, telephone and possibly e-mail connectivity of these centers) and the soft infrastructure, implying better systems of management and supervision, and better accountability to the users through local oversight of these centers. We believe that without strong community involvement and trust in these centers, the expanded and effective coverage of the rural poor is unlikely to be achieved. How can this be done? We will discuss some ideas towards the end of this paper.

In the subsequent sections of this paper, we examine the coverage and extent of primary health facilities available in the rural areas of the two largest states of UP and MP in India. UP with 16 percent of India's population is the most populated state in the country<sup>5</sup>, and MP is geographically the second biggest state with 9.4 percent of the area. Moreover, both these states are economically backward and belong to the category of BIMARU states. They have the largest number of people living below the poverty line in the rural areas of the country. Thus, the case of these two states provides a good test about the adequacy of primary healthcare services in the nation. If these services need to be increased for meeting the constitutional obligation and

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<sup>4</sup> The Auxiliary Nurse Midwife (ANM) is a frontline health worker. The ANM deals with all aspects of health and family welfare. Her domain usually consists of half a dozen villages, one of which is a Sub-Center village. At one level she operates from the sub-center where clients come for services. At another level she visits villages and homes for contacting women, children and men for providing services, giving medicines, tendering advice etc (Nagdeve ,2002).

<sup>5</sup> Interestingly, if UP were to be a separate country, it would be the sixth most populous country in the world after China, India, United States, Indonesia and Brazil. Given the size of its population, the lower house of the Indian Parliament (Lok Sabha) has a representation of 80 Members of Parliament from UP, out of a total of 543 Parliamentary Constituencies in the country. Furthermore, given this large political representation that UP has on an all-India scale, it is not surprising therefore that of the 14 Prime Ministers' that India has had since independence, eight of them have come from UP, but more importantly, these eight have collectively governed the country for as many as 48 of the 58 years of post independent India. However, despite such a large all-India political power base in UP, it does not seem to have benefited the state in any meaningful way.

meeting the millennium development goals (MDGs), the estimate of the required extent of scaling up would be relatively on the upper side. However, the measures and policy changes needed to make the services more effective and efficient would remain more or less the same across the country.

In the next section, we briefly describe the methodology followed to assess the existing situation and estimate the gap in the availability of services in the two states. We have surveyed one district in each of the two states by selecting five villages from each district and about 20 health facilities in the districts. Thereafter, we outline the existing public healthcare delivery system in the two states. Nature and quality of physical infrastructure in the healthcare sector existing in the two selected districts are examined next. The private healthcare facilities are also briefly reviewed. Disease pattern among overall population, children and mothers along with causes of the health problem in the two districts are also discussed. Estimation of the gap in provision of healthcare services and required human resources for the two states is attempted subsequently.

### *Methodology and the Sample*

In order to examine the gap in the existing rural health services in UP and MP particularly to address the needs of the poor and economically backward segments of the population, it was necessary to get a clear idea about the difficulties and problems in the delivery of the services on the one hand, and the issues in extending the coverage of the target population on the other. This required familiarity with the ground conditions in the villages and an idea about the perception and utilization of the available services by the target population. Since conditions across the state in the rural areas are almost the same, Unnao district from UP and Raisen district from MP were selected in consultation with the state governments of UP and MP for further investigation. Considering the cost in terms of time and effort, it was decided to select five villages from each district and survey selected households belonging to the economically backward segment in these villages to get their perception and service – use characteristics. Simultaneously, it was decided to conduct a separate survey of the health facilities existing in the same and surrounding villages to get an idea about utilization, availability of manpower, medicines, and the health personnels perception of the problems.

Selection of villages for the sample survey was critical because it had to reflect the socioeconomic milieu in rural areas of the district and the state. We considered the Census information on all the villages in the district pertaining to size of the village in terms of number of households, literacy rate, female literacy, work participation rate, proportion of scheduled castes (SC) and scheduled tribe (ST) population, and geographical location of the village. Based on correlations of these characteristics, we finally decided to select the villages on the basis of the following three criteria: (i) proportion of SC/ST population; (ii) size of the village; and (iii) geographical spread. *Table 2* presents the selected villages and some of their basic characteristics.

The next step was to draw the sample of the households to be surveyed with a formal questionnaire. The household questionnaire is provided in *Appendix 1*. In order to select the households on a random basis, we required a complete list of households. Such a list was available readily for most of the selected villages for the families living below poverty line<sup>6</sup>. Proportional sample of households was randomly drawn from each village. *Table 3* provides the

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<sup>6</sup> These lists are prepared by the district administration for implementing various government schemes with the help of local staff.

broad characteristics of the selected sample in each district particularly classified by occupational categories like agricultural laborers, marginal farmers, small farmers, and other labor households.

*Table 3* confirms the general impression that among the poor, the agricultural labor households are the poorest. However, compared to the land owning poor, *viz.* marginal and small farmers, the non-agricultural labor households are relatively better off. This is because the proportion of earning members in the household is maximum among the non-agricultural laborers. It is interesting to note that a large proportion of the poor households owned cattle, and that the average cattle holding per household was around 3 in MP and 2 in UP. Similarly, almost half of the poor households owned some means of transport like a bicycle or a scooter in both the states. It is surprising to find that proportion of cement houses was substantially higher in UP than in MP, but the proportion of households having electricity was significantly lower in UP than MP. Rural electrification in MP has certainly been more effective with greater coverage among the target population than in UP. The average family income in both the districts is considerably lower in our sample confirming that our sample essentially captures the condition of the economically most backward segments of the population in the two states. Health related information from the sample household survey is provided at appropriate places in the following sections.

Finally, a specially designed questionnaire was administered personally to about 20 selected rural health facilities in and around the selected villages in each district<sup>7</sup>. This questionnaire is given in *Appendix 2*. It attempts to solicit information on the disease pattern, nature and duration of healthcare services provided to population, its utilization, working environment and incentives given to the health personnel and the like.

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<sup>7</sup> During the course of this study, we traveled extensively in and around the selected villages from the two districts of Unnao (UP) and Raisen (MP). We had detailed interactions with the District Collectors of Unnao and Raisen, and several Medical Officers and Block Development Officers of the two districts. We met doctors, paramedical staff, ANMs and Anganwadi workers who were present in the CHCs, PHCs, and the sub-centers during our unannounced visits. Discussions were also held with Sarpanchs and other members of the panchayats besides a large number of villagers. We also spoke at length with the Principal Secretaries of the Health and Planning Departments among others of the Governments of UP and MP.

**Table 2: Selected Villages for Sample Survey with some Characteristics**

<b>Raisen (MP)</b>								
<b>Name of Village</b>	<b>Tehsil</b>	<b># of HH</b>	<b>Total Population</b>	<b>% of SCIST Population</b>	<b>Literacy Rate</b>	<b>Female Literacy Rate</b>	<b>Working Population</b>	<b>Worker-Population Ratio</b>
Gadarwara	Silwani	43	256	57.42	0.449	0.352	146	0.570
Imaliya	Goharganj	76	403	84.62	0.524	0.435	188	0.467
Gondi	Raisen	112	689	43.39	0.578	0.481	198	0.287
Pati	Baraily	114	630	16.51	0.402	0.201	353	0.560
Purohit	Gairatganj	86	580	93.10	0.676	0.643	259	0.447
Pipriya								
Salahpur								
Surbarri								
<b>Raisen District</b>	Rural	162945	918354	-	0.571	0.477	349984	0.381
<b>Unnao (UP)</b>								
<b>Name of Village</b>	<b>Tehsil</b>	<b># of HH</b>	<b>Total Population</b>	<b>% of SCIST Population</b>	<b>Literacy Rate</b>	<b>Female Literacy Rate</b>	<b>Working Population</b>	<b>Worker-Population Ratio</b>
Baruaghat	Safipur	364	2009	41.70	0.434	0.259	796	0.396
Behta	Unnao	430	2731	29.50	0.546	0.473	1037	0.380
Bilahaor	Hasanganj	100	510	88.80	0.276	0.176	310	0.608
Digvijaipur	Bighapur	79	600	0.00	0.582	0.419	248	0.413
Majharia	Purwa	184	1062	27.90	0.417	0.272	354	0.333
<b>Unnao District</b>	Rural	398756	2288781	-	0.425	0.309	814741	0.356

Source: *Census of India, 2001*

**Table 3: Some General Findings from the Household Survey**

Category	Raisen District					Unnao District				
	AL	NAL	MF	SF	Raisen	AL	NAL	MF	SF	Unnao
Total # of households	54	27	29	34	144	56	77	49	7	189
Total population	349	179	171	203	902	331	392	274	42	1039
Average Family size	5.6	5.85	5.97	5.9	5.8	5.91	5.09	5.59	6	5.65
Average family annual income (Rs.)	8603	10867	9428	10212	9777	6711	9621	8008	7357	7924
Average land per landowning families (in Ha.)	0	0	1.82	1.27	1.5	-	-	0.438	1.22	1.658
% HH with Cattle	72	67	100	97	83	80	73	86	100	80
Average # of cattle per family	3.08	1.56	3.03	3	2.73	2.04	1.82	2.64	1.14	1.91
% of Households having 2 or more rooms	31.48	33.33	48.28	41.18	37.5	32.14	27.27	44.9	57.14	34.39
% of Households having cement house	1.852	0.000	3.448	2.941	2.083	26.79	42.86	20.41	57.14	32.80
% of Households having Tractor	0	0	3.448	0	0.694	3.57	3.90	10.20	14.29	5.82
% of Households having Cycle	37.04	40.74	44.83	35.29	38.89	48.21	49.35	48.98	57.17	49.21
% of Households having electricity	55.56	77.78	62.07	50.00	59.72	7.14	1.30	2.04	0.00	3.17
Literacy rate %	45.56	51.40	59.06	51.72	51.94	46.53	52.30	56.20	78.57	58.40
% of Earning population	25.79	31.28	27.49	28.08	28.16	24.47	25.26	23.72	23.81	24.31

Source: Sample Survey, 2005

AL – Agricultural labor; NAL - Non-agricultural labor; MF Marginal farmer; SF – Small farmer.

### Healthcare System and Infrastructure

The public healthcare system in the two states is very elaborate and broadly similar. The geographical hierarchies with prevalent norms are summarized in *Table 4*. The intended coverage of the healthcare system with the norms specified is indeed extensive. If such a system had really operated in practice, there would not have been any problems on the supply side and hence perhaps on the demand side making the whole system highly efficient and cost effective because the utilization would have been much higher than what it is. However, the reality is far from the ideal envisaged in terms of specifying the norms of provision of healthcare facilities in rural areas. Let us briefly review our field experience of the healthcare system existing in Raisen and Unnao.

<b>Table 4: Public Healthcare System in Rural UP and MP</b>			
<b>Geographical Unit</b>	<b>Health Facility</b>	<b>Population Norm</b>	<b>Staff and Infrastructure</b>
Village	Health Center (Depot)	1,000	ANM or <i>Anganwadi</i> workers
<i>Gram Panchayat</i>	Sub-Center	5,000 in Plain 3,000 in Hills	1 Male + 1 Female Health Workers + 1 Para Medical Staff
Block	PHC	30,000 in Plain	Block Medical Officer + Child Specialist + 10 Medical & PMS. 3 to 8 beds + vehicle and Residence for Medical Staff
<i>Tehsil</i>	CHC	1,25,000 in Plain 1,00,000 in Hills	Medical Superintendent + 10 specialists + 40 M & PMS, 20 beds (minimum) + vehicle + Residence for medical staff
District	Hospitals	By sex, disease, employment, etc.	Chief Medical Officer + Deputy CMOs + Specialists + Super specialists + Consultant Doctors + M & PMS. 100 to 600 beds + vehicles + Residence for Medical Staff
Source: District Health Office, Unnao and Raisen.			



i) *Village Health Center (VHC)*

This village level facility is run by the *anganwadi* worker<sup>8</sup> or ANM from her home in the village. These workers are supposed to maintain the medical and health records of their village and its residents. We found that in almost all cases, they did not have these records. They are also required to keep first aid medicines and other relevant family planning and nutritional requirements/supplies. However, people of the village rarely visit them and hardly know about this facility. In some cases, the VHCs had outdated and unusable stock of medicines. Moreover, since very small villages would not have this facility, it is operated for a group of villages. The visits to each village by the health worker are not at all regular. In our household survey, poor awareness and impression about this facility was confirmed in both the districts when we found no instance of a VHC that the residents visited or mentioned about.

ii) *Sub-Center (Gram Panchayat Level)*

These sub-centers are supervised by the field health workers. Although as per the official norms, they are supposed to have their own buildings, almost 60 percent of such sub-centers operate from rented premises. They are usually run in the private houses of the field health workers or influential persons from the particular village. Since no qualified doctor or medical professional is available at these sub-centers, the emergency cases are generally referred to PHC/CHC/ District or private practitioners. Some of these sub-centers have their own government building and residence facilities for medical personnel and also enjoy good reputation among people. Several of them have been recently converted into new PHCs. They would be provided in due course of time with required physical, financial and human resource facilities on par with the existing PHCs. In our field visits, we could see the popularity of such new PHCs in terms of visits of patients, respect for the doctor, number of medical shops even though the place is not even a block headquarter. These are only a handful of exceptions. In general, the sub-centers have indifferent timings operating for about 6 hours a day at irregular intervals. Sometimes, ANMs or other paramedical staff (PMS) would not turn up for the whole day. Several of these sub-centers are functioning extremely inefficiently in both the districts. Most of these sub-centers have serious deficiency of essential infrastructural facilities like own building, water supply, electricity, etc. (see *Table 5*).

States	No. of SC's	% SC with					
		SC having Govt. building	Water supply*		Electricity	Toilet*#	ANM staying in Quarter
			Tap	Well			
Madhya Pradesh	1378	46.4	9.5	10.3	31	70.6	23.5
Uttar Pradesh	4346	36.2	1.1	0.6	16.7	79.6	14.8

Source: [www.indiastat.com](http://www.indiastat.com)

\* refers to percentage taken from Sub-centers having government building.

# refers to flush toilets.

<sup>8</sup> Under the Integrated Child Development Scheme, one *anganwadi* worker is allotted to a population of 1000. They are trained in various aspects of health, nutrition and child development.

iii) *Primary Health Center (PHC)*

These are the first formal and professional medical and healthcare facilities available to the rural population at the block level. These are the facilities meant to be visited by people in their initial stages of illness. They have their own buildings and in very few cases their own vehicles. Almost all PHCs have the provision for the necessary medical staff and they are also provided with residential facility so that the medical personnel can stay at the location and are available whenever required. However, in practice, medical personnel do not reside at the location in most cases. They generally commute from nearby urban locations since several modern amenities and conveniences for their family are available only at the urban centers. This is a major problem in ensuring that the medical staff resides at the block headquarter itself. As a result, healthcare services at PHCs suffer in terms of punctuality and even regularity of the medical staff. The problem gets compounded on account of two more aspects of the existing situation, viz. (i) The block medical officer (BMO) reports to the chief medical officer (CMO) administratively, and hence is required to provide a lot of administrative and statistical information from time to time on an urgent basis. This often provides an excuse for the medical staff at PHC to be officially absent from the block. (ii) Since BMO and other medical personnel in PHCs are formally in the government service, all the leave rules and service conditions of a government employee also apply to them. These rules have almost turned counter-productive for any essential services like healthcare.

The services of the PHCs suffer because in the absence of a regular doctor, the paramedical staff (PMS) or the ‘pharmacist’ who runs the medical shop outside the premises of a PHC provides medical advice to the visiting patients. This can and does considerably damage credibility of the public healthcare system at the block level itself. The medical staff at PHCs has hardly been visiting the nearby villages because such visits are not considered mandatory. Most of the pathological facilities and clinical instruments at PHCs are of poor quality and inadequate in quantity. Among the reasons cited for the poor performance and perception of villagers about the healthcare services provided by PHCs, lack of basic infrastructure like electricity, water, road network and transport facilities is the main complaint by the medical personnel (see *Table 6*).

**Table 6: Proposition of PHCs with Infrastructural Facilities, MP and UP, 2003**

		% PHCs with							
State	No. of PHCs	Own Building	Toilet Facility#	Water @	Electricity	Labor Room	Telephone	Vehicle	% of PHCs with at least 1 bed
Madhya Pradesh	721	70.7	56.9	16.4	64.5	41.9	3.7	1.8	54.4
Uttar Pradesh	2083	58.2	14.7	5.7	45	36	5.5	18.1	89.3

Source: [www.indiastat.com](http://www.indiastat.com)

Note: @ refers to water facility through tap water only. # refers to flush toilets.

PHCs regularly procure medicine stocks from the district depot and maintain their own stock for patients. However, there are usually a number of medical stores selling a variety of medicines outside the premise of PHCs. This happens because the government stock of medicines is of limited type and brand. The medical staff (if the doctor is not around) and the doctor often prescribe different medicines, generally not available in the government stock. This could be due to regular visits of medical representatives or sales representatives of companies to the PHCs. On

specific probing, it was found that the medical staffs at the PHCs have to enter into a long procedure and persuasive arguments to procure required physical and financial resources for the PHCs. The procedures are too bureaucratic for introducing any change in the routine. Since the BMO and other medical staff of a PHC are doing their own private practice at different location, the issues gets further complicated.

iv) *Community Health Centre (CHC)*

At *tehsil* level, this facility is more comprehensively provided by the state government with much better infrastructure compared to PHCs (see *Table 7*). They also have a number of sanctioned specialist doctors to be 8 to 10. However, so many doctors at the *tehsil* level are not available in general. On an average, one finds about 50 percent of the sanctioned posts of doctors filled in CHCs. Different specializations like pediatrician, gynecologist, ENT, anaesthetician, surgeon, etc. are available at CHCs. However, these doctors are not necessarily residing at the *tehsil* headquarters though residential facilities are provided to them. As a result, their services are hardly available during the night and the weekends. There are about 20 to 30 beds in a CHC, but the utilization rate is hardly around 25 percent. CHCs have their own medicine stocks and generally get their stocks replenished from the district. The doctors also engage in their private practice and medical/sales representative do visit them regularly. Most of the problems of PHCs are also found in CHCs. The only additional problem of CHCs is the presence of a large pool of medical and paramedical staff numbering about 60 to 100. Since they are in the permanent government job, as per the rules, their level jobs are not transferable from one location to the other. As a result, they tend to develop vested interests, attitude and arrogance, quite disastrous for efficient provision of service such as healthcare. They also tend to have formal and informal unions and adopt unscrupulous and unhealthy practices. They are able to get away with all this largely because the qualified doctors do not always reside at the *tehsil* headquarters for their family welfare and children's education.

CHCs are the referral medical facility and have to be well equipped with testing, diagnostic and curative facilities. Most of their patients come from the nearby villages and are referred to them by either PHCs or local private practitioners when they have crossed initial stage of their illness. There is, therefore, considerable opportunity cost incurred by the patients in coming to CHCs. However, the required pathological and clinical facilities at CHC are either of poor quality or suffer from lack of trained staff to operate them. Very often they use the obvious option of referring the patients to the civil hospitals at the district or nearby towns.

v) *District Hospitals*

These are the public healthcare facilities at the upper end for the rural population. Although they are physically located at the district headquarter, usually a town or a regular urban center, they get most of their patients from the nearby rural areas being referred to them for advance treatment by PHCs, CHCs and private practitioners. Considering the abysmal condition of lower end facilities, the public district hospitals are by and large overcrowded. Quality of the services suffers because of congestion. Improving the quality and quantity of healthcare services at the block and *tehsil* level seems to be the only way to reduce the burden on the district hospitals. Considering our introductory remarks in the beginning, this option is perhaps the only defensible option from a public finance point of view. This calls for a substantial and serious effort to scale up the public healthcare services in the rural areas.

**Table 7: Proposition of CHC with Infrastructural Facilities, MP and UP, 2003-04**

<b>% of CHC with</b>														
<b>State</b>	<b>No. of CHC</b>	<b>Water Facility</b>		<b>Tank &amp; Pump</b>	<b>Electricity all Part</b>	<b>Generator Functional</b>	<b>Telephone</b>	<b>Vehicle Functional</b>	<b>OT</b>	<b>OT For Gynaec</b>	<b>Separate Aseptic labor room</b>	<b>Gynaec OPD Facility</b>	<b>RTI/STI OPD Facility</b>	<b>Linkage with District Blood Bank</b>
		<b>Tap</b>	<b>Well</b>											
Madhya Pradesh	177	21.2	3.4	70.2	92.1	85.4	57.6	89.9	96	15.3	6.2	32.8	7.9	6.2
Uttar Pradesh	257	13.2	0	66.1	92.7	90	25.3	92.8	96.1	34.8	30.4	49.8	19.1	10.5

Source: [www.indiastat.com](http://www.indiastat.com)

## *Private Healthcare*

There is a large dependence on the private healthcare system, most of which comprises of untrained rural medical practitioners. People are not inclined to use public health services for reasons, such as widespread absenteeism among doctors and their support staff in the PHCs, shortages of facilities such as laboratories, lack of medicines, unhygienic conditions in the sub-centers, PHCs and CHCs among others. According to a survey conducted by the World Bank in 1998 in UP and Bihar, over 50 percent of those surveyed who were ill consulted (for the first consultation) an untrained healthcare provider. Since the government run healthcare system is in shambles, even the better off households were forced to make widespread use of the local untrained doctors. As per the survey data, 53.2 percent of the poorest quintile (based on per capita consumption quintile) and 43.1 percent of the wealthiest 20 percent of those surveyed consulted an untrained rural medical practitioner. By contrast, a mere 5.2 percent of all those who were surveyed visited a government doctor (CHC, PHC, sub-center, or a Village Health Worker).

Interestingly, almost a quarter of all those who were surveyed visited a private (qualified) doctor, almost all of these being in urban locations. The large dependence on the private sector underlines the point that mere availability of more healthcare centers does not always lead to better utilization (Nayar, 2000). Although it is important to increase the coverage by building new healthcare centers, the more critical issue of providing these health centers with adequate supplies and staff is often neglected. This has given rise to a feeling that there is actually excess capacity in infrastructure, with corresponding shortages in supplies and staff (Gumber and Gupta, 1999; Nayar, 2000).

*Table 8* provides some findings from our sample survey in the two districts about the utilization and cost of public and private healthcare facilities. It can be seen that morbidity rate broadly defined as the incidence of falling sick during a year is about 15 percent among the poor households in both the districts. It is interesting to note that in both the districts, we found that sickness is not ignored by the poor families. All of these get some treatment as soon as possible because it adversely affects their productivity and earning capacity. Only 17 percent to 22 percent of the sick visit the public health facilities. The rest depend on the private health facilities. This speaks volumes of the perception of population about the quality and effectiveness of the public health facilities available to them. In both the districts, the rating of the public health facility is about 2 on a 0 to 6 scale implying the overall “fair” grade. In Raisen, (MP) district, the rating of the private health facility is in the “good” grade, whereas in Unnao (UP) even the private health facility is rated only as “fair”. It is not surprising when we see that almost 14 percent of the income of the poor is spent on healthcare in Unnao. This proportion is considerably less in Raisen, but still substantial. Thus, in both the districts, the poor are willing to spend a sizeable portion of their income to get healthcare in the rural areas. We can treat it as an estimate of the cost of poor quality of public health facility imposed on the economically backward strata of the society. This is, thus, a case of government failure.

<b>Table 8: Morbidity, Hospitalization and Private Expenditure by the Poor on Healthcare in Unnao and Raisen Districts</b>		
<b>Item</b>	<b>Unnao (UP)</b>	<b>Raisen (MP)</b>
% of Population falling sick during last year	14.24	16.52
% of Population hospitalized during last year	5.97	8.43
% of the sick visiting Public Health facility	22.30	17.45
% of the sick visiting Private Health facility	77.70	82.55
Rating on 0-6 scale of Public Health facility	2.10	2.05
Rating on 0-6 scale of Private Health facility	2.32	2.73
Average per capita family expenditure on health (in Rs.)	187.41	150.88
% of Income spent on health	13.51	9.09
Source: Sample Survey, 2005.		

#### *Sickness Pattern and Causes*

Inspection of records maintained at PHCs and CHCs for OPD and inpatients treated as well as discussion with health personnel working in the districts revealed that major diseases like TB, malaria, leprosy, cancer, etc. are not in alarming proportions in the two districts. Majority of the cases of sickness in the districts arise on account of fever and stomach related disorders like diarrhea, intestine disorders, etc. Thus, a relatively large proportion of income spent by the poor for the treatment is only to avoid loss of productivity and earnings rather than the concerns about saving life of the patients.

Table 9 provides the distribution of cases of illness reported in our sample survey of households. It can be seen that among the poor in Raisen (MP) fever and stomach related illness accounted for 57 percent of the cases, whereas the proportion was 63 percent in Unnao (UP). Malaria had hardly 3 percent in Unnao and 8 percent in Raisen.

<b>Table 9: Illness Pattern among the Poor in Raisen (MP) and Unnao (UP)</b>		
<b>Illness</b>	<b>Unnao (UP)</b>	<b>Raisen (MP)</b>
Fever	24.2 %	33.9%
Stomach related	28.9%	22.9%
Respiratory	05.3 %	14.4%
Chronic	22.1%	11.9%
Others	16.8%	09.3%
Malaria	02.7 %	07.6 %
Total	100.0 %	100.0 %
Source: Sample Survey, 2005.		

The incidence of Malaria among the poor in the two districts as reflected in our sample survey is more or less the same as OPD registration data for the general population in the two districts. Since Malaria in these two districts is not of falsipharam type, it is not considered very serious.

For the infants and child health in the two districts, the common diseases are diarrhea, respiratory infection, fever and anemia. *Table 10* provides the disease pattern obtained from the OPD registration in the two districts.

<b>Table 10: Disease Pattern Among Children &lt;5 Years in Unnao (UP) and Raisen (MP) Districts</b>				
<b>Disease</b>	<b>Unnao</b>		<b>Raisen</b>	
	<b>Cases</b>	<b>Occurrence Per Child Per Year</b>	<b>Cases</b>	<b>Occurrence Per Child Per Year</b>
Respiratory problems	25%	3 to 4	37%	4
Fever	35%	3	40%	3
Diarrhoea	25%	4 to 5	28%	3 to 4
Anemia	12%	-	12%	-
Jaundice	02%	-	02%	-
Typhoid	01%	-	02%	-
Source: OPD Registration from the Sample Survey; and Discussions with Health Personnel.				

For a change, on a positive note, over the last two years the immunization program in the rural areas of the two districts has been a great success, achieving a near 100 percent target. For Pulse Polio, BCG and DPT doses, almost 100 percent immunization was achieved in the last two years in the two districts, whereas for Measles, the rate achieved is 94 percent in Unnao and 90 percent in Raisen. MMR is not provided by the government and being costly, it is not afforded by most of the poor parents. The success of the immunization program is attributed to the efforts made by WHO through stringent monitoring mechanism coupled with incentives for performance given to various functionaries.

Problem of malnutrition is on an average around 12 percent in Unnao as well as Raisen. However, about 12 to 15 percent children in Unnao are underweight against only 2 to 3 percent in Raisen. A possible reason could be the feeding problems faced by mothers to the average extent of 20 percent in Unnao, but hardly 8 percent in Raisen. During our field survey, we found the parents to be concerned and caring for their children's health. The *anganwadi* centers in villages are popular among parents. The *anganwadi* workers do keep records about total number of infants and children below 5 years. These centers also keep playing kits for kids and educational toys for children. They also provide food to the kids listed in their records under the supplementary nutrition schemes. Both the districts had these centers working reasonably well.

In terms of maternal health, rural MP has been doing relatively better. This is also evident in Raisen. Almost all cases of pregnancy are reported to the health facilities and the pregnant women are regularly visited by the ANMs and field health workers. 95 percent of the deliveries are conducted by the skilled attendants – either *Dai* or ANM. The field health workers provide regular antenatal and post natal advice and care. They also provide the post-delivery medicines for 10 days worth Rs.150 to 200 free of cost to mothers. As a result of all these efforts although 90 percent of the pregnant women are anemic, miscarriages and maternal mortality are somewhat lower. Incidence of Syphilis and other STDs is only 6 percent in Raisen.

By contrast, the situation is very different in Unnao on the maternal health front. 80 percent of the pregnant women are anemic and incidence of Syphilis is around 15 percent and other STD around 10 percent. ANMs and field health workers visit the pregnant women, but not regularly. Moreover, only 35 to 40 percent of the deliveries are conducted by the skilled attendants. The rest of the deliveries are conducted privately by family members or other non-skilled persons from the neighborhood. Unnao also has the same scheme of post delivery medical kit for the mothers for 10 days, but the difference in the quality of the healthcare in the two districts shows up in the very high MMR and IMR in UP. Later in the paper, we will suggest ways for the UP government to bring down these very high mortality rates.

The basic cause for the health problems in rural areas of Raisen and Unnao seems to be different. In Unnao, it appears to be the quality of drinking water. Availability of drinking water is not a problem, but its quality is. Medical officials said that water contains high amounts of fluoride causing orthopedic problems<sup>9</sup>. Unnao is also located near Kanpur, a major city in UP, where several tanneries are located. As a result, the water of the river is polluted. Hand pump and tube wells are provided by the government, but face the problem of high arsenic content. On the other hand, Raisen being a tribal area faces the problem of food habits of people leading often to food poisoning. These problems need totally different remedies, perhaps outside the conventionally defined 'health intervention' confined to the health department. In Unnao, it is the negative externality of industries in surrounding area, and in Raisen it is the education and awareness issue.

However, there are several other causes that are common and can be addressed by the health and hygiene department. Personal hygiene can be improved through regular contact and awareness campaigns. Public hygiene is again an issue in both the districts. The hand pump and tube well sites are not maintained properly with drainage facility. As a result dirt and swampiness surround these facilities. Seasonal factors, therefore, play important role in disturbing the health of people. Health and hygiene education and communication with rural population in an extensive and intensive way are urgently needed in both these districts. But all this effort can yield results only when certain basic infrastructure and amenities are made available to the rural population. Our sample survey of the poor households in both these districts was highly revealing in this regard.

In Unnao, only 3 percent of the poor household had electricity connections, whereas in Raisen the proportion was around 60 percent. However, in both the districts, electricity was available on an average only for 4 to 5 hours a day for about 5 days a week. No family in the sample was found either to boil or to filter the drinking water in both the districts. Similarly, less than 1 percent of the households had toilet facility. Sewerage, drainage and waste removing facilities were absolutely absent in all the houses of the poor in these two districts. Wells and hand pumps are the major sources to get the drinking water throughout the year and are accessible to most of the poor households in our sample within one kilometer range. However, distance to the health facility on an average is about 6 km in Unnao and 10 km in Raisen. All these infrastructural facilities need urgent attention if the rural health issues in MP and UP have to be addressed effectively.

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<sup>9</sup> High fluoride content leads to fluorosis. Dental Fluorosis and Arthritis are the major diseases due to high fluoride content in the water. This causes deformity in muscles and bones. Due to over-usage of one leg or one arm, the other limb gets weakened and shorter. Corrective surgery is the only way to deal with this problem.



### Gap in Human and Physical Resources

In order to estimate the gap in the primary healthcare services provided to the rural population in MP and UP, we needed to have information about the existing level of the service and the manpower engaged in these states. The government has some estimates of its own and has, therefore, created and sanctioned some posts for medical staff to work in the rural areas. However, for whatever reasons they have not been able to fill all these posts. Sometimes, there is even a gap in sanctioning the posts. These estimates are available and we can consider them as a starting point. These estimates are presented in *Table 11*.

The shortfall from the requirement of the health personnel is based on norms derived from the existing facilities in the states. *Tables 12 and 13* provide the staff position in PHCs and CHCs in the two states. From these tables, it can be readily seen that there is an acute shortage of all types of health personnel to work in the rural areas in these two states. However, we should apply the overall population based norms to the rural areas of these two states to assess the requirement in line with the basic principles of public finance. These are essential services falling in the category of basic needs of the population, and therefore, population based norms are logical to apply. *Table 14* provides estimates of rural population in UP and MP for the year 2006.

Post	Required (R)	Sanctioned (S)	In Position (P)	Vacant (S – P)	Shortfall (R – P)
<b>Madhya Pradesh</b>					
Specialist Doctors (Surgeons, OB & GY, Physicians, Pediatricians)	1368	485	100	385	1268
Health Assistants – Female	1690	2160	1558	602	132
Health & Multipurpose worker (MPW) – Male	11947	11755	11230	525	717
Multipurpose Worker – female/ANM	13637	12774	10426	2348	3211
<b>Uttar Pradesh</b>					
Specialist Doctors (Surgeons, OB & GY, Physicians, Pediatricians)	1240	1152	577	575	663
Health Assistants – Female	3808	4017	3544	473	264
Health & Multipurpose worker (MPW) – Male	20153	9935	8570	1365	11583
Multipurpose Worker – female/ANM	23961	23645	22629	1016	1332
Source: <a href="http://www.indiastat.com">www.indiastat.com</a>					

<i>Table 12: Staff Position in PHCs in MP and UP, 2003-04</i>							
State	No. of PHCs	% of PHCs with					
		Medical Officers		Health Assistant		Female Health Worker(MPW)	Laboratory Technician (@)
		All	Medical Officer Female*	Male	Female		
Madhya Pradesh	721	49.1	4	72.7	78.9	78.6	45.5
Uttar Pradesh	2083	80.8	3	92.2	88.6	89.7	52.8
Source: <a href="http://www.indiastat.com">www.indiastat.com</a>							

*Table 13: Staff Position of CHCs in MP and UP, 2003-04*

<i>Table 13: Staff Position of CHCs in MP and UP, 2003-04</i>											
		% of CHCs with									
State	Number of CHCs	Percent of CHCs Having at Least One Obstetrician Gynecologist	Pediatrician	RTI/ SSTI Specialist	Pathologist	Anaesthetologist	General Duty Doctor		Staff Nurse	ANM	LA
							Male	Female			
<b>Madhya Pradesh</b>	177	26.4	23.5	33.3	0	10.9	92.1	76	94.5	97	93.7
<b>Uttar Pradesh</b>	257	41.1	61.1	60	25.6	45.2	85.4	85.4	79.8	98.5	75.3

Source: [www.indiastat.com](http://www.indiastat.com)

<b>Table 14: Estimates of Rural Population, 2001 and 2006 in Million</b>		
<b>States</b>	<b>2001</b>	<b>2006</b>
Madhya Pradesh	44,282,528	48,710,780
Uttar Pradesh	131,540,230	144,694,250
All-India	741,660,293	800,993,110
Source: <i>Census of India, 2001</i> and assuming 2% p.a. growth for MP and UP and 1.6% p.a. growth for all-India rural population.		

Applying the norms given in *Table 4* above, we can get the required number of health facilities in the rural areas of the two states. Further, applying the norms of the medical personnel per facility, we can obtain the required staff for the states. *Table 15* provides the estimates.

It is clear from our calculations that the shortfall of the medical personnel in both the districts in rural areas is considerable. The situation is grave when it comes to doctors and specialists. In MP, the shortfall of doctors is 4.5 times the actual number in position, and in UP, the shortfall of doctors is more than 7 times the actual number in position. For paramedical staff also, the shortfall is serious in both the states; and again it is more in UP than in MP. The real challenge is to scale up the availability of trained manpower such that the required number of medical personnel is available to work in the rural areas. Thus, the number of seats in medical colleges has to be increased by at least 7 to 8 times. Moreover, there has to be a system whereby either incentives or some element of compulsion is introduced for the doctors and paramedical staff to spend 2 to 3 years in the rural areas. The increase in supply can be achieved by augmenting seats in alternative medicines like *Ayurveda*, Homeopath, *Unani*, etc.

**Table 15: Estimates of Required Health Facilities and Staff, 2006**

<u>Facility</u>	<u>Required number (R)</u>	<u>Existing number (P)</u>	<u>Shortfall (R-P)</u>	<u>Required number of Doctors</u>	<u>Required number of Paramedics</u>
<b>Madhya Pradesh</b>					
Village Health Center	48,711	21,656	27,055	-	48,711
Sub-Center	12,178	1,378	10,800	-	36,534
PHC	1,948	721	1,227	3,896	19,480
CHC	406	177	229	4,872	16,240
Manpower : Doctors	8,768	1,569	7,199	-	-
Paramedics	120,965	35,000 #	85,965	-	-
<b>Uttar Pradesh</b>					
Village Health Center	144,694	31,199	113,495	-	144,694
Sub-Center	28,939	4,346	24,593	-	86,817
PHC	4,823	2,083	2,740	9,646	48,230
CHC	1,158	257	901	13,896	46,320
Manpower : Doctors	23,542	2,840	20,702	-	-
Paramedics	326,061	50,000 #	276,061	-	-

Source: Tables 4 and 14 above.

#: Approximate Number.

The calculations in *Table 15* also show that the number of health facilities needed is far in excess of what is provided in the rural areas of these two states. Moreover, the available PHCs and CHCs lack several infrastructural facilities. If the healthcare service is to be qualitatively satisfactory, the health facilities should be strengthened not only in terms of quantity, but also in terms of numerous essential infrastructures. Thus, the costing of the facilities needs serious upward revision and the budget provision should be realistic to reflect better infrastructure accompanying the creation and installation of new facilities. Existing facilities also need to be provided such essential infrastructure on an urgent basis. We have considered unit costs for different health facilities along with salary cost of personnel as the total budget requirement to scale up healthcare services in these two states as given in *Table 16*. These norms are different from the ones used in the two states because of the reasons described above.

Based on the norms in *Table 16* and the estimates of the shortfall in *Table 15*, we get the estimates of required expenditure of capital and recurrent nature to scale up the rural healthcare in MP and UP.

**Table 16: Unit Cost and Salary Norms for Healthcare Facilities and Personnel in Rural Areas (Rs. In lakhs<sup>10</sup>)**

Facilities	Unit Cost	Salary Norms (Annual)	
		Doctor	Paramedics
Village Health Centre	-	-	0.60
Sub-Centre	2	-	0.60
PHC	25	1.2	0.84
CHC	125	2.4	0.84

<sup>10</sup> One lakh = 100,000

We have assumed that the maintenance, improved management, better mass communication, public awareness campaign, cost of medicines and kits, and other operating charges for infrastructural facilities are Rs.20 thousands for VHC, Rs.40 thousands for a sub-center, Rs.0.5 million for a PHC, and Rs.3 million for a CHC. We present our estimates of additional requirement of expenditure in *Table 17*.

<b>Table 17: Expenditure Requirement for Scaling up of Rural Healthcare in UP and MP</b>		
<b>Type of Expenditure</b>	<b>MP</b>	<b>UP</b>
<i>Absolute Expenditure (Rs. Billion)</i>		
Recurrent Expenditure	9.33	29.55
Capital Expenditure	8.09	23.03
Total	17.42	52.58
<i>On Per Capita Basis (in Rs.)</i>		
Recurrent Expenditure	140	162
Capital Expenditure	122	126
Total	262	288
Source: <i>Tables 15 and 16</i> above.		

It can be seen from *Table 17* that total additional requirement of financial resources in the health sector in MP would be Rs.17.42 billion and Rs.52.58 billion in UP for scaling up rural healthcare. This estimate excludes the cost of training and increasing the supply of doctors, specialists, and paramedical personnel in the rural areas. Moreover, we have again worked out these estimates applying the current levels of remunerations and salaries of the medical and paramedical personnel. We have not factored in the efficiency wages or greater incentives to attract such personnel to work in the rural areas. Thus, our estimate of the requirement of additional financial resources represents a lower bound or minimum effort needed to scale up the services in rural areas. Converted to dollars at the exchange rate of \$1 = Rs.45, these figures imply additional resources of the magnitude of \$0.4 billion for MP and \$1.2 billion for UP.

It is interesting to compare this additional requirement with the existing budget allocation in the two states for health and related sectors. *Table 18* provides data for MP and UP, and *Table 19* provides the similar budget allocation for All-India, *i.e.* Centre + States combined for the year 2003-04.

It can be seen that both UP and MP allocate considerably lower budget to health and sanitation than the combined All-India average. This happens because their allocation to the social sectors in aggregate is far less than the average. UP, in particular, allocates only Rs.683 per capita to social sectors and only Rs.105 per capita to medical and public health. Recognizing the problems arising out of deficiency of fiscal capacity and low expenditure preference, the Twelfth Finance Commission (TFC, 2004) has specifically augmented grants-in-aid to MP and UP respectively by Rs.1.8 billion and Rs.23.1 billion over the period 2006-10.

As per our estimate of scaling up, additional budget of Rs.288 per capita is needed in UP and Rs.262 per capita in MP. Per capita expenditure on medical and public health in MP is Rs.128 and in UP is Rs.105 in 2004-05. What is required additionally is Rs.262 per capita in MP and Rs.288 per capita in UP. Thus, total per capita expenditure should be Rs.128+262 = Rs.390, *i.e.*, roughly three times the current per capita health spending in MP, and Rs.105+288 = Rs.393,

i.e., roughly four times the current per capita health spending in UP. This is a big challenge, but certainly a feasible proposition considering that the total annual budget in MP is around Rs.3,700 per capita and in UP around Rs.2,700 per capita (*Table 18*). The required additional effort is less than 10 percent of the overall budget in UP and around 6.5 percent in MP. It is, therefore, possible to generate some resources by carefully reallocating the budget, particularly by cutting unproductive expenditures. The federal government too should step in and increase its programs in these two states over and above what TFC has recommended. The remaining amount can be generated through international funding of specifically designed projects to scale up the healthcare services in rural areas. Moreover, such a scaling up of services need not be only within one year. It can be spread over two to three years to make it more manageable. However, the biggest constraint is the trained manpower and doctors, and the problem of ensuring that they reside in rural areas and are available regularly to provide the much needed health services.

### *Specific Recommendations on Scaling up Health Services*

Based on our analysis and findings, we recommend the following specific steps the government of India and state governments of UP and MP need to take to scale up the healthcare services in the rural areas.

The public expenditure on healthcare facilities in rural areas should be increased almost four-fold in UP and almost three-fold in MP. Such a major increase in budgetary allocation is feasible considering the overall size of the state budget, because it represents 6 to 10 percent increase only. The entire increase in allocation to health sector can be achieved by spreading it over 3 to 4 years, i.e., by 2009. In that case, annual increase to be achieved would be of the order of 1.5 to 2.5 percentage points. By meticulous reallocation of expenditures and cutting unproductive expenditures, (we discuss some options below) it should be possible to gain equivalent to about 1 percentage point increase. For the remaining amount, the resources could be mobilized either from the Center through increased grants and foreign assistance based on specific project to scale up healthcare in rural areas. In general, we do not favor the option of increased taxation as the tax rates are already at a very high level. However, a small cess not exceeding 2 percent, called “Health Cess” could be levied for a fix period of 4 years, with a clear condition that its proceeds would be shared with the states for scaling up the public health services.

The government should ensure availability of essential drugs and supplies, vaccines, medical equipments, along with the basic infrastructure like electricity, water supply, toilets, telecommunications, computers for maintaining records, and road network linking PHCs and CHCs with villages. While some of this infrastructure is considered within our costing exercise, provision of external infrastructure will have to be additionally provided by the government. Without such facilities, the quality of healthcare services in rural areas cannot improve substantially.

Increased supply of doctors, specialists, pharmacists, technicians, trained nurses and midwives, etc. has to be ensured for the success of the scaling up effort. This requires large scale training and specialized education by encouraging private sector institutions to operate and expand the number of seats in such professional courses. Such institutions need to be formally recognized and properly monitored and supervised to ensure quality of training and education imparted. Although all this can take 4 to 5 years before qualified doctors and specialists can emerge in adequate numbers, it can increase the supply of paramedics very quickly. If the expansion of facilities is properly planned and phased out, the problem can be solved to a considerable extent.

There is a major problem of ensuring that the medical and paramedical personnel reside in the village itself so as to be available all the time to the villagers. This can happen voluntarily only if the overall facilities like schools and infrastructure like electricity, sanitation, water supply, etc., in the villages improve considerably. We cannot expect such an overhaul of Indian villages in short time. As an alternative, government can consider two pronged strategy of encouraging and increasing the supply of alternative medicines like *Ayurveda*, *Unani*, homeopathy, naturopathy, etc., and simultaneously making it obligatory for all these as well as allopathic doctors to spend at least 2 to 3 years in villages before they are eligible to practice in an urban area.



**Table 18: Budget Allocations in Madhya Pradesh and Uttar Pradesh, 2004 – 05.**

Expenditure Head	Budget 2004-05 (Rs. Million)				Revenue + Capital Outlay		Per Capita (in Rs.)	
	Madhya Pradesh (MP)		Uttar Pradesh (UP)		MP	UP	MP	UP
	Revenue	Capital Outlay	Revenue	Capital Outlay				
Medical & Public Health	7,799.9	394	16,632.2	1,776.4	8,193.9	18,408.6	128	105
Family Welfare	1,471	5	5,435.0	-	1,476	5,435	23	31
Water Supply & Sanitation	3,278.9	1,646.2	5,252.9	1,311	4,925.1	6,563.9	77	37
Sub-Total	12,549.8	2,045.2	27,320.1	3,087.4	14,595	30,407.5	228	173
Total on Social Service	59,358.3	5,037.5	115,747.3	4,540.2	64,395.8	120,287.5	1,006	683
Grand Total	182,611.6	56,834.9	427,857.1	48,913.3	239,446.5	476,770.4	3,741	2,709

Source: RBI (December 2004): *State Finances – A Study of Budgets of 2004-05.*

**Table 19: Budget Allocation for All India (Centre + States), 2003-04**

Expenditure Head	All India Budget (Centre + States) 2003-04 (Rs. Lakhs)		Total (Rs. Lakhs)	Per Capita (in Rs.)
	Revenue	Capital Outlay		
Medical, Public Health, Sanitation & Water Supply	26,02,867	5,24,817	31,27,684 (4.11%) (20.33%)	295
Family Welfare	4,34,757	2,257	4,37,014	41
Sub-Total	30,37,624	5,27,074	35,64,698	336
Total Social Service	140,66,687	13,15,611	153,82,298 (20.23%) (100.00)	1,451
Grand Total	661,86,512	98,68,357	760,54,869 (100.00)	7,176

Source: MoF: *Indian Public Finance Statistics, 2003-04, August 2004.*

Different districts and even *tehsils* within a district may have very different set of root causes for health problems of population. Systematic efforts are, therefore, necessary to address those problems directly. A very narrow and traditional administrative approach of considering public health issues as pertaining to only health department and health ministry cannot work. There has to be an overall coordinated action across relevant departments and ministries to solve some of these problems (e.g. water and air pollution due to industries, food habits due to culture, etc.).

There is an urgent need to introduce some administrative flexibility in the health delivery system at the district and lower levels. In the present system, approvals from higher authorities on practically every minor matter hamper the efficient delivery of the health services. The norms about administrative and financial powers and control to various officers and functionaries need to be revised upwards since they are outdated considering the inflation and technology changes in the sector. This will introduce an element of discretion and accountability among the lower level functionaries to benefit the consumers.

Labor laws need to be revisited and revised to improve the efficiency and delivery of health services. Health services should be considered essential services and the leave rules should accordingly apply. Further, if the existing workers cannot be affected by the new labor regulations and laws, the new employees can be put on the new labor conditions. Such an incremental approach is perhaps the only solution to this thorny issue. Moreover, all those services that are not strictly health oriented, like laundry, cleaning, security, provision of food and beverages, etc. should be given out on contracts or privatized. This will improve the efficiency and quality of services.

#### *Uttar Pradesh – An Alarming Situation on Infant mortality and Maternal mortality*

Below, we take up a discussion of infant, under-5, and maternal mortality in India in general and UP in particular. On all of these heads, the situation in UP is alarming, especially in the case of maternal mortality<sup>11</sup>. We discuss causes for very high mortality rates and suggest specific initiatives, especially to address the shockingly high death rate of women in childbirth by putting together a new model of safe delivery into practice. The maternal mortality rate in UP is estimated to be 707 deaths per 100,000 births. This is roughly 100 times the mortality rate of the rich countries. We focus especially on infant and child mortality in the section below as the state of infant and child mortality is perhaps the best way to assess the state of primary healthcare, quality and coverage of health delivery, general environment for health, crucial health determinants, such as nutrition, sanitation, and safe drinking water and the like.

On the current trajectory, UP is unlikely to meet the MDGs relating to IMR, under-5 mortality, and maternal mortality (*Tables 20*). MP is likely to meet the IMR goal, but not under-5 and maternal mortality goals (*Table 21*) unless public health spending in these states is raised substantially and there are major reforms in public health centers for much better control and oversight of the sub-centers, PHCs, CHCs and the district hospitals.

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<sup>11</sup> According to WHO estimates for 2000, of the 529,000 maternal deaths globally each year, 136,000 or about 26 percent of them occur in India. Maternal mortality rates are extremely high, with 407 deaths per 100,000 births in 1998. As with other indicators, there is wide interstate variation in MMR. According to the Registrar General of India, in 1997, the variations were ranging from 29 deaths (per 100,000 births) in Gujarat, to an astounding 707 deaths in Uttar Pradesh, followed by 670 deaths in Rajasthan and 498 in Madhya Pradesh.

<i>Table 20: Status of Progress towards the MDGs in Uttar Pradesh</i>						
Sr. No.	Indicator	Starting Year Value	Ending Year Value	Linearly Projected 2015 Value	MDG Target Value	Status
1	% below poverty line	33.3 (1993)	26.8 (1999)	9.5	18	On Track
2	Poverty gap index	7.10 (1993)	4.92 (1999)	0	4.1	On Track
3	% underweight children	59.0 (1992)	51.7 (1997)	25.4	31	On Track
4	Primary enrolment (gross)	65.8 (1992)	91.25 (2002)	100	100	On Track
5	Literacy of 15-24 year old	51.1 (1991)	66.1 (1997)	100	-	-
6	Female to male enrolment (Primary)	57.5 (1991)	96.0 (2002)	100	100	On Track
7	Female to male enrolment (Secondary)	35.2 (1991)	41.2 (2001)	49.6	100	Off Track
8	U5MR (per 1000)	134 (1991)	123 (1998)	96	44	Off Track
9	IMR (Infant Mortality)	99 (1991)	80 (2002)	57.5	33	Off Track
10	MMR (Maternal Mortality)	707 (1995)	706 (1998)	689	179	Off Track
11	Death due to Malaria (Per 100,000)	N.A.	N.A.	-	-	-
12	Death due to TB (Per 100,00)	0.15 (1998)	0.40 (2001)	-	-	-
13	% access to safe water (Urban)	85.8 (1991)	97.2 (2001)	100	93	On Track
14	% access to safe water (Rural)	56.6 (1991)	85.5 (2001)	100	78	On Track
15	% access to improved sanitation (Urban)	66.5 (1991)	80 (2001)	98.9	83	On Track
16	% access to improved sanitation (Rural)	6.44 (1991)	19 (2001)	36.6	53	Off Track
17	% population with safe tenure (Urban)	92.6 (1991)	93.0 (2001)	93.6	96	Off Track
18	% population with safe tenure (Rural)	66.3 (1991)	75.4 (2001)	88.1	83	On Track
19	% land under forest	11.4 (1987)	11.6 (1999)	-	-	-

Source: Dholakia et al. 2004.

Sr. No.	Indicator	Starting Year Value	Ending Year Value	Linearly Projected 2015 Value	MDG Target Value	Status
1	% below poverty line	32.3 (1993)	34.4 (1999)	40	16	Off Track
2	Poverty gap index	6.99 (1993)	7.26 (1999)	7.98	3.43	Off Track
3	% underweight children	57.4 (1992)	55.1 (1997)	46.8	29	Off Track
4	Primary enrolment (gross)	81.8 (1992)	95.02 (2002)	100	100	On Track
5	Literacy of 15-24 year old	54.0 (1991)	67.2 (1997)	100	-	-
6	Female to male enrolment (Primary)	67.8 (1991)	92.4 (2002)	100	100	On Track
7	Female to male enrolment (Secondary)	42.4 (1991)	58.0 (2001)	79.8	100	Off Track
8	U5MR (per 1000)	147 (1991)	138 (1998)	116	48	Off Track
9	IMR (Infant Mortality)	133 (1991)	85 (2002)	28.3	44	On Track
10	MMR (Maternal Mortality)	498 (1995)	498 (1998)	498	125	Off Track
11	Death due to Malaria (Per 100,000)	0.10 (1994)	0.13 (2003)	-	-	-
12	Death due to TB (Per 100,00)	0.24 (1998)	0.27 (2001)	-	-	-
13	% access to safe water (Urban)	79.5 (1991)	88.6 (2001)	100	90	On Track
14	% access to safe water (Rural)	45.6 (1991)	61.5 (2001)	84	73	On Track
15	% access to improved sanitation (Urban)	53.0 (1991)	68 (2001)	89	76	On Track
16	% access to improved sanitation (Rural)	3.64 (1991)	9 (2001)	16.5	52	Off Track
17	% population with safe tenure (Urban)	91.4 (1991)	92.1 (2001)	93.1	96	Off Track
18	% population with safe tenure (Rural)	54.7 (1991)	71.8 (2001)	95.7	77	On Track
19	% land under forest	30.7 (1987)	29.7 (1999)	-	-	-

Source: Dholakia et al. 2004.

### *Infant and Under Five Child Mortality and Morbidity*

Uttar Pradesh has a very poor track record in child health care with under - 5 mortality rates<sup>12</sup> being as high as 123. Uttar Pradesh along with Madhya Pradesh and Bihar (prior to their respective bifurcations) accounted for over half of all newborn deaths in India in 2000, or roughly 15 percent of the entire global burden (State of India's Newborns, 2004). Infant mortality rate<sup>13</sup> (IMR) for Uttar Pradesh (83 for year 2000) has come down from levels of nearly 100, (in 1991) but is still high when compared to the nationwide average of 68. The IMR rate in urban Uttar Pradesh is lower by about 22 percentage points compared to that of rural Uttar Pradesh. It is however significant that in urban areas, the male infant mortality rate (68) is higher than that for females (60).<sup>14</sup> Infant mortality can be broken down into two stages neo-natal mortality and post natal mortality.

#### *Neo-natal mortality*

The neonatal mortality rate (NMR)<sup>15</sup> for Uttar Pradesh is 53 against the Indian average of 44 (Sample Registration Survey, 2000) and singularly contributes to about 26.1 percent of the total newborn deaths in India (State of India's Newborns, 2004). It has been seen that nearly two-thirds of all infant deaths and about half of all under-five childhood deaths occur in the neo-natal period. Hence focusing on prevention of neo-natal deaths can go a long way in reducing child mortality. Neonatal deaths (deaths among live births during the first 28 completed days of life) may be subdivided into early neonatal deaths, occurring during the first seven days of life, and late neonatal deaths, occurring after the seventh day, but before 28 completed days of life (WHO, 2001).

The early neo-natal mortality rate (ENMR) in India is about 32 per 1,000 live births. This means that approximately three-fourths of neonatal deaths, half of infant deaths and one-third of under-five child deaths occur within the first seven days of life. One must also note that the reported figures on early neo-natal deaths may be lower than actual numbers as parents are reluctant to reveal the birth and subsequent death of their babies given that there is such a high death rate of newborn infants. In many communities a child is not assigned a name till he or she has survived a few days or even weeks to avoid the embarrassment and guilt in the event of death.

Neo-natal mortality rate has decreased over time in India. However, there continues to be important rural-urban and socio-economic variations in the NMR. Firstly, the NMR among the poorest 20 percent of the population is nearly double the NMR of the richest 20 percent. Secondly, the NMR in rural areas is one-and-a-half times that in urban areas.

Neo-natal deaths are caused by neo-natal tetanus (NNT), neo-natal sepsis (NNS), including septicemia and pneumonia, birth asphyxia and premature birth (State of India's Newborns, 2004). Some of these causes of neo-natal deaths can be dealt with large scale maternal

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12 Under-five mortality rate (U5MR): The annual number of deaths of children under five years of age per 1000 live births. (UN, Mortality of Children under Age 5: World Estimates and Projections, 1950-2025)

13 Infant mortality rate (IMR): The number of infants who die before reaching one year of age per 1000 live births in a given year. More specifically this is the probability of dying between birth and exactly one year of age (UN, Demographic Yearbook 1988), <http://www.euro.who.int/document/e68459.pdf>

14 Note: Estimates of Infant Mortality rate by sex are subject to year to year fluctuations. Source: Sample Registration System (SRS) Bulletin, Volume 36, No. 1, April 2002, Registrar General, India.

15 The neonatal period commences at birth and ends 28 completed days after birth.

Neonatal mortality rate (NMR): Number of deaths among live births during the first 28 completed days of life per 1,000 live births. (Office of Population Censuses and Surveys (OPCS) (1991) <http://www.euro.who.int/document/e68459.pdf>

tetanus toxoid immunization programs, increase in institutional delivery and skilled attendance and indirect benefits through birth spacing<sup>16</sup>.

NFHS II reported the mean age at first birth among 25-29 year old women as 19.6 years. NMR in mothers under 20 years of age at delivery (63 per 1,000 live births) was almost one-and-a-half times that of mothers who were 20-29 years old (41 per 1,000 live births). The mean age of marriage in most districts of Uttar Pradesh is around 16 (Mohan, 2004) and mean age at first birth is likely to be less than the national average increasing the risk of neonatal mortality.

### *Immunization*

Immunization is an essential component for reducing under-five mortality and yet only 21.2 percent of the children in UP have received all the requisite vaccinations (NFHS II)<sup>17</sup>. Among these vaccine-preventable diseases of childhood, measles is the leading cause of child mortality across the world (UNDP, 2003). It is estimated that vaccination coverage for measles needs to be above 90 percent to stop transmission of the virus, not only because of its highly contagious nature, but also because up to 15 percent of children vaccinated at nine months fail to develop immunity. With such low levels of immunization coverage in UP, it is unlikely that the immunization program will have much effect on the child mortality levels in the state. One of the issues of the immunization program in India is that there is often the routine of supervised immunization is substituted by the pulse campaign, which in the long-run proves to be counter-productive (Srinivasan, 2000).

A large number of infants and children under-5 years of age who die prematurely of causes such as low birth weight, pneumonia, and certain vaccine preventable diseases, such as measles can be saved through primary healthcare interventions.

To reduce infant and under-5 mortality rates in UP, special attention should be focused on the following areas:

- Higher emphasis on interventions to address prenatal and neonatal mortality through comprehensive ANC, safe delivery and improved new-born care
- Awareness programs for rural households so that women deliver at health centers rather than at home
- Provision of requisite manpower and equipments in all CHCs and 24-hour PHCs to handle institutional deliveries
- Better training of ANMs, dais, and anganwadi workers in clean deliveries and new-born care
- Immunizations of infants and mothers and Vitamin A coverage levels and timely medical interventions to control infections
- Regular programs for screening and referral for low-weight fetuses by ANMs and PHC doctors
- Targeted supplemental nutrition programs for infants and expectant and lactating mothers
- Education programs that empower women with knowledge on issues such as nutrition and hygiene, and
- Access to safe drinking water and improved sanitation.

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16 NFHS II data shows that NMR was 50 percent less if the birth interval was 2-4 yrs compared to that if the interval was less than two yrs (36 and 71).

17 BCG, Measles, and three doses each of DPT and Polio vaccines.

## *Maternal Mortality and Morbidity*

UP resembles strife-torn western African nations like Cote d'Ivoire, Guinea or Liberia<sup>18</sup> with a very high maternal mortality ratio (MMR)<sup>19</sup> of 707. Most maternal deaths occur due to post-partum hemorrhage, puerperal complications, obstructed labor and anemia (Bajpai and Goyal, 2004). It is worth noting the lack of ability of the health centers and staff in UP to handle the conditions, which have been cited above as important causes of maternal death. In addition to the lack of adequate facilities available at the government-run PHCs and the sub-centers, most women in rural households prefer to deliver at home rather than in the health centers due to age-old beliefs. In UP's poor rural communities, obstetricians are scarce, ANMs are overburdened<sup>20</sup> and home births are common leading to large numbers of maternal deaths if complications develop at the time of delivery.

### *Hemorrhage<sup>21</sup>*

Post-partum Hemorrhage is the most common cause of maternal deaths in UP accounting for almost one-third of the total maternal deaths in the state. Hemorrhage is sudden, unpredictable and particularly dangerous for anemic women. Data from NFHS II reveal high levels of anemia among women. The recommended course for ante-partum hemorrhage is management for shock and referral to a hospital (WHO, 2003). Hemorrhage during delivery and post-partum is more serious and managed by treatment for shock by administration of oxytocin, antibiotics and IV fluids and subsequent referral to a hospital. Ramarao et al's study indicated that stabilizing the hemorrhaging woman before transfer and referral is not a common practice. Patient stabilization if done at all, tends to be restricted to postpartum centers and is thereafter referred to the nearest district hospital. Oxytocin is available only at big healthcare centers like CHCs and postpartum centers. To make matters worse transportation to a bigger health center is the responsibility of the villagers as ambulances are only found in district hospitals (Ramarao et al, 2001).

### *Puerperal Complications*

Puerperal sepsis<sup>22</sup> is the main life threatening condition in the post-natal period (WHO, 1994). Almost one-fifth of the total maternal deaths in UP are on account of puerperal complications. An important cause of sepsis is unhygienic delivery practices. In rural UP where almost 70 percent of the deliveries are attended by untrained individuals (family or traditional birth attendants) the risk of infection is exceptionally high. Sub-centers are not equipped to attend to cases of sepsis. Studies reveal that there is also a further need of training the ANMs in methods of safe and hygienic delivery conditions (Ramarao et al, 2001). In India almost a quarter of pregnant women did not receive tetanus toxoid (TT) immunization. Two or more doses of TT, recommended as an essential component of antenatal care (ANC) were served to 66.8 percent of women in India. The percentages for UP are worse at 51.4 percent (NFHS, 1998).

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18 [www.undp.org/hdr2003/indicator/indic\\_289.html](http://www.undp.org/hdr2003/indicator/indic_289.html) - 83k

19 Maternal Mortality Ratio: Number of women dying per 100,000 live births while pregnant or within 42 days of termination of the pregnancy, irrespective of the durations and the site or pregnancy from any cause related to or aggravated by the pregnancy or its management, but not from accidental or incidental causes.

20 Due to UP's high fertility rate, each ANM on average has to deal with an estimated 200 pregnancies and 180 child births each year. By contrast, ANMs in Tamil Nadu on an average have to deal with 100 pregnancies and 90 childbirths per year.

21 Maternal hemorrhage consists of bleeding from the genital tract during pregnancy (ante partum), during or after the delivery of the infant (intra- and post-partum) (Abou Zahr, 2003).

22 Puerperal sepsis is a common pregnancy-related condition, which can eventually lead to obstetric shock or even death. Puerperal infection is a general term used to describe any infection of the genital tract after delivery (Abou Zahr 2003).

### *Obstructed Labor*<sup>23</sup>

Obstructed labor can be handled only at healthcare units which have skilled staff including female gynecologists, anesthetists, and physical facilities to conduct caesarian deliveries and have adequate drugs and emergency supplies. Sub-centers and PHCs do not have these facilities and CHCs which were meant to be first referral units are often not adequately staffed in UP. Obstructed labor is often associated with a women's age, that is the younger the mother, the higher the chances of obstructed labor. As mentioned above, the mean age of marriage in most districts of Uttar Pradesh is around 16 years and the mean age at first birth only around 19.6 years. According to the data from the Registrar General of India, roughly 12 percent of the maternal deaths in UP were on account of obstructed labor.

### *Anemia*

In UP, 48.7 percent of the women suffered from some form of anemia with 1.5 percent of the women suffering from severe anemia (NFHS, 1998)<sup>24</sup>. Rural Health centers are not adequately geared to detect anemia because of unavailability of blood testing tools. Low body weight can be used as a proxy to measure anemia if other testing methods are unavailable. Even then only 10 percent of the sub-centers have weighing machines and less than 50 percent are in working conditions in the PHCs (Ramarao et al, 2001). According to the data from the Registrar General of India, in around 19 percent of the maternal deaths in UP, anemia was the major contributing cause of death. Even when antenatal care is sought in UP, it usually tends to be in the second trimester and the primary purpose is to confirm the pregnancy (Ramarao et al, 2001). Iron and folic acid consumption is an essential component of prophylaxis for anemia. Yet only 32.4 percent of the pregnant women in UP consumed iron and folic acid tablet (NFHS, 1998) even though studies indicate that there was adequate supply of iron and folic acid tablets (Ramarao et al, 2001).

Contact with the health system is useful to detect and treat various conditions like anemia and other forms of malnutrition, protein urea and pre-eclampsia and for monitoring fetal growth during pregnancy and especially, antenatal care is essential for detecting any systemic problem and improving the general health of the pregnant women. It has been seen that chances of survival are higher among women who had at least one antenatal visit compared to those who had none (Ramarao et al, 2001)<sup>25</sup>. It is crucial to note that only 34.6 percent of women in UP received at least one antenatal checkup whereas the figures for Kerala, Tamil Nadu and Andhra Pradesh are more than 90 percent (State of India's Newborn, 2004). It is more appalling to observe that a mere 4.4 percent of women received all recommended types of antenatal care (NFHS, 1998)<sup>26</sup>.

### *Pre-eclampsia*

Pre-eclampsia can be detected by measuring blood pressure or alternatively by checking protein levels in urine (Guidotti and Jobson, 1992). However, in a study in two districts of UP it was found that only half the sub-centers and about 70 percent of the PHCs had basic equipment like sphygmometer for measuring blood pressure (Ramarao et al, 2001). Facilities for testing urine for sugar and albumin were not available at any sub-center and in less than one-third of the PHCs. A large majority of ANMs were not able to correlate high blood pressure and weight gain to indicate pre-eclampsia (Ramarao et al, 2001).

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23 Obstructed Labor: Labor is considered obstructed when the presenting part of the fetus cannot progress into the birth canal, despite strong uterine contractions.

24 The total population of women considered is the total population of ever-married women

25 Ramarao et al's study is based on 2 districts in Uttar Pradesh – Agra and Sitapur. The condition of healthcare in other districts of Uttar Pradesh is not likely to be any different.

26 Three or more antenatal check-ups with the first check-up in the first trimester of the pregnancy.



A number of complications can crop up during delivery. Providing skilled attendance to detect and manage obstetric complication, backed with tools for effective management is the most important factor in preventing maternal death (WHO, 1999 b). However, only 15.5 percent of the births were delivered in a medical institution and 22.4 percent of the deliveries were assisted by a health professional (NFHS, 1998). National level estimates suggest that the percentage of safe delivery for rural and illiterate women is likely to be much lower than those for the urban and those who have had some form of education. Also, preference for male offspring has a significant impact on levels of institutional delivery. Many women in India, who do not have a male child and are pregnant, avoid coming to the PHC for delivery as that makes it difficult for them to kill the child if it is a girl (Visaria et al, 1999). Furthermore, ability of health centers to handle obstetric emergencies is poor. Even where equipment and supplies are available, it is not possible to provide emergency obstetric care because obstetricians and anesthetists are absent and operating theatres do not have blood for emergency transfusion (Ramarao et al, 2001).

Reductions in maternal mortality will not be possible without increased trained attendance, with better supply of amenities at the sub-center and PHC level backed by a more holistic approach towards healthcare. The issue is compounded by the fact that in India women's healthcare utilization is low and pregnancy is not considered an event requiring any medical attention (Ramarao et al, 2001) and requires an intensive awareness campaign to change rural attitude towards maternal healthcare.

In order to reduce the high MMR in UP, we believe it can be brought down decisively through a package of relatively low-cost interventions, including:

- \* Putting together wide-ranging awareness programs for rural households so that women deliver at health centers rather than at home and provision of comprehensive ANC
- \* Widespread screening for anemia and high-risk conditions and access to effective EOC including blood transfusion
- \* Training of personnel at the PHCs and CHCs to perform emergency obstetrical procedures, especially c-sections
- \* Expand the ANMs and other outreach programs, particularly in the areas of health education and maternal counseling for improved maternal and child survival
- \* Providing ANMs in the sub-centers and doctors in PHCs with cell phones for improved communications and a emergency ambulance service to bring mothers in complicated labor to the health facilities in time, and
- \* Provisioning surgical equipment (surgical kits, autoclaves, basic operating theaters, with power and running water, etc.) in each of the PHCs and CHCs.

Taken together, the above mentioned interventions, at modest cost, can help make a breakthrough in UP in gender equity, public health, and of course mother's survival.

### *Raising Public Expenditure and Health Sector Reforms:*

We propose various options that are available to the government to generate the necessary resources to strengthen the system of primary healthcare in the country: to increase access and to make it more efficient, equitable, and responsive to the demand for healthcare in the country. In terms of mobilizing additional funds for health, we suggest these to mainly come from cutting unproductive government expenditures (both central and state governments) relative to GDP rather than by raising revenues relative to GDP.

#### *Restructuring public expenditure: reforming the subsidy regime*

Among the options available to the government to raise resources to finance publicly provided primary health care is the gradual elimination of wasteful and inefficient subsidies. Subsidization by the government of the provision of goods and services is justified when there are large positive externalities present; or to attain redistributive and equity goals; or for the provision of merit goods. However, in India, more than 50 percent of the subsidization cannot be rationalized on the basis of the criteria listed above and hence should be gradually eliminated.

Subsidy reforms can also take the form of ‘life-line tariffs’: in which all of India’s below poverty line rural citizens would be ensured a fixed, but limited, amount of say water, electricity, and fertilizer at zero price, to ensure that every family can at least meet its basic needs. Above that fixed amount, families would be charged a proper tariff to cover the costs of supplying those services in amounts in excess of basic needs. This strategy – free access to meet basic needs, and an unsubsidized price for amounts above the basic needs would save vast sums of money for the budget, and yet still ensure that the poor have guaranteed free access to meet their essential needs. South Africa has recently introduced life-line rates in the electricity sector successfully. The savings realized from life-line tariffs can be invested in health and other social sectors. Our companion report on the electricity sector provides details on how such a reform has been implemented in other countries, most notably in South Africa and how it could possibly be implemented in the Indian setting.

#### *Disinvestment of state-owned enterprises*

The central and state governments could work on major programs of disinvestment of central and state public sector units (PSUs) and announce that the proceeds would be spent on the health sector. For the central PSUs, all the sitting members of Parliament (Lok Sabha) could be given a share of the disinvestment proceeds, (those constituencies which are predominantly urban could be given a lower share) but with the specific purpose of the funds being used ONLY on primary healthcare given their respective constituency’s needs and priorities. Similarly, for the state PSUs, such proceeds could be for all the sitting members of the respective State Legislative Assemblies.

This will, of course, require strict monitoring, preferably from the Prime Minister’s office for the central PSUs and from the Chief Ministers’ in the case of the state PSUs so as to ensure that the funds are being utilized for the purpose they were meant for. Such a scheme is likely to bring together the Members of Parliament/Members of State Legislative Assemblies from across party lines since they will be able to see the gains for themselves as well as for their constituencies. This could possibly unite them to support disinvestment plans on the floor of the House. Securing political acceptability to such an idea at the level of Members of Parliament/Members of State Legislative Assemblies is likely to help a great deal in dealing with the opposition to disinvestment plans from trade unions and others traditionally opposed to them.

This might seem like a long shot, but should such a scheme work, it will not only help the government withdraw relatively easily from the loss-making public sector, from running textile mills to steel plants, from managing hotels to operating airlines and a variety of other sectors, but will also divert much needed resources towards primary health care.

### *Mobilizing external assistance*

Development assistance from abroad can supplement resources raised domestically to finance public investment, especially if the options available to governments to raise resources through domestic savings are limited and are likely to have adverse effects on the economy by crowding out resources available to the private sector and raising the market interest rate. Development assistance from abroad can therefore add to domestic savings without adversely affecting domestic investment which is essential for economic growth.

The federal government's 'Education for All' project (Sarva Shiksha Abhiyan, or SSA) is an excellent example of how additional public investments could be mobilized to enhance the quality and quantity of primary education for all<sup>27</sup>. This is a really good project and model of aid for India -- a national project on social priorities, and a few big donors that pool their resources. Currently, India receives \$1.4 billion in the form of official development assistance. This amounts to approximately \$1.40 per Indian and is far below what some other countries with India's level of income receive (Bajpai et al, 2005). In order to raise additional funds externally, we suggest that the Ministry of Health put together a major project proposal to donors, such as the World Bank's IDA, UK's Department for International Development and the European Commission to seek funding for the National Rural Health Mission. Budgetary aid from external donors can be mobilized for high-priority, well-targeted, and mainly for raising rural health spending.

### *Introducing a cess for the primary health sector*

Earmarking taxes for an identified specific program are easier to implement politically than a general new tax which can give rise to much public and political resistance. These taxes can be imposed either at the central or the state levels of government. India recently imposed a 2 percent cess on income tax, corporation tax, excise and customs duties and service tax, the revenues from which have been earmarked for primary education, including the provision of mid-day meals in schools. This cess is expected to yield Rupees 40-50 billion, around 0.1 percent of GDP. International experience suggests that if properly administered, earmarked funds can be used to raise additional resources for funding education and health. Indiana, Arkansas and South Carolina in the United States used earmarked taxes for educational financing purposes. Similarly, Korea introduced a five year education tax on liquor, tobacco, interest and dividend income and on banking and insurance industries raising 15 percent of its education budget in this manner. Earmarked taxes have also been used in Latin America and Africa. Brazil used a federal levy on financial transactions which was used to finance health care.

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<sup>27</sup> As part of this project, three agencies -- the World Bank, UK's Department for International Development and the European Commission -- are providing \$1 billion for this project. World Bank's International Development Association will provide \$500 million, while the DfID will contribute \$300 million and European Commission \$200 million. The project is estimated to cost \$3.5 billion. The Centre and state governments would provide the remaining \$2.5 billion for the project that aims to achieve universal enrollment and completion of elementary education of children of 6-14 years of age by 2010.

## *Improvements in the Delivery of Health Care Services*

### *Decentralization*

The failure of India's public health system to deliver basic health services to the poor requires serious rethinking of its institutional design and the structure of incentives that health service providers in the system face. In India, decentralization has to be viewed in the context of devolving authority and power to the States by the Centre, to the districts by the States and from the districts to the multi-layered local bodies. For all practical purposes, such devolution of authority has taken place only in Kerala, which invested time and resources in systematically building capacity for governance by local bodies. Leadership and governance means having the ability to plan, budget, implement, manage, monitor, review and accept responsibility for decisions taken.

As noted above, while health is a 'state' subject, the nature of the health policy at the state level is shaped to a significant extent by the central government through budgetary help as well as via the many centrally sponsored schemes. This often leads to misallocation of funds vis-à-vis local needs. The advantages of decentralization are in general local information availability that allows for better matching of needs of diverse local communities and the provision of public services; it can also identify cheaper and more appropriate alternatives in provision and delivery. Moreover, by putting more pressure on local politicians, it can generate greater accountability on the part of the government to the electorate. Also, in some cases, a decentralized institutional setup can outperform even the market by providing a more stable and efficient coordinating device (Bardhan, 1997).

Decentralization, in the sense of devolution of political, administrative and fiscal decision-making power to local governments has been proposed as a solution to the problems of weak local democracy and local accountability mechanisms. Endemic absenteeism of teachers in the public school system and of doctors in the public health system, especially in rural health centers, are consequences of weak incentives to perform and lack of any institutionalized punitive correctives to such malfeasant behavior. In almost all of the Indian states, teachers and doctors are answerable to state governments and not to the local community.

India has had a long tradition of interest in some form of decentralization, but serious steps towards making it a reality were taken only in 1992 with the 73<sup>rd</sup> and 74<sup>th</sup> amendments to the Indian Constitution. Before 1992, only Kerala, Gujarat, Maharashtra, West Bengal and Karnataka had some form of decentralization. The 1992 amendments empowers Panchayati Raj institutions as bodies of local self-government. The amendments provide for direct elections to local bodies every five years at different levels – the village, block/taluka and district in the rural areas and metropolitan and municipal levels in urban areas. These local bodies have the power to assume appropriate local development responsibilities. Women are allotted a quota of one-third seats in these bodies as well as one-third of all leadership offices. Scheduled castes, tribes and other minorities are guaranteed proportionate representation. State legislatures have the power to pass laws that devolve specific taxation powers to these bodies as well as revenue sharing based on the recommendations of independent state finance commissions that are set up for advisory purposes. Lack of data below the state level makes it difficult to assess quantitatively the successes and prospects of decentralization for the provision of basic services at the local community level. Narayana (2005) looks at local governance in three Indian states – Kerala, Madhya Pradesh, and Tamil Nadu. He concludes that while Kerala seems to be successful, Madhya Pradesh and Tamil Nadu were not largely due to lack of capacity building of the elected

representatives at the gram panchayat level and inadequate levels of devolution of powers and resources.

Decentralization of the health care sector has been quite comprehensive in the southern Indian state of Kerala. In September 1995, the control over PHCs and government dispensaries were transferred to the village panchayats; blocks PHCs, CHCs, block hospitals and government hospitals to block panchayats; and CHCs, block headquarter hospitals and government hospitals in corporation and municipal areas to corporation and municipal councils. Employees of these healthcare centers came under the direct supervision of the local government bodies, though their salaries, allowances and other dues were paid by the state.

Narayan and Kurup (2000) from their study of four districts in Kerala found that the transfer of authority to local government bodies in general had resulted in greater flow of funds to these bodies, more autonomy over spending decisions, faster project implementation, less corruption, and greater advocacy of preventive and curative care and provision of family planning services through PHCs. In Erattupettah village in Kerala, the panchayat fixed the door, flooring and electricity of the PHC in the village, which before then had lacked supplies and basic infrastructure. They purchased new furniture, an ECG machine and a jeep for ambulatory purposes. Regular medical supplies were arranged for by constant communication between the head of the panchayat and the district medical officer. There was also greater co-ordination and communication between the panchayat, the PHC and the district hospital. In 2000, the number of out-patient visits to the PHC in the village increased to 250 a day from 68 a day in 1996, largely due to more regular attendance by medical personnel and greater availability of medical supplies (Franke, 2002). In another study, Mahal et al (2001) using data for Indian states found some evidence that states with decentralization had lower infant mortality and child mortality rates.

Decentralization of education services has also been undertaken in some states of India. Madhya Pradesh, for example, started the Educational Guarantee Scheme (EGS), a large scale scheme of decentralized provision of education to improve literacy rates in the state which has a large population of scheduled castes and tribes with very low literacy rates. Under this scheme, the government provides a school within 90 days of a local community's request for such a school within one kilometer of habitation, provided no school existed before. As a result, 26,000 new schools have been built in the state since 1997, especially in areas which are predominantly inhabited by tribals and Dalits. These schools are jointly managed by the state government, the local government body and the local community. The impressive jump in literacy rates in Madhya Pradesh, from 44 percent in 1991 to 64 percent in 2001 (Census of India, 2001), is largely ascribed to the EGS.

In a cross-country study, Crook and Manor (1998) compared the effects of decentralization in the southern Indian state of Karnataka, and the countries of Bangladesh, Cote d'Ivoire and Ghana. They found that decentralization led to increased attendance of school teachers in Karnataka and there was greater efficiency and speed with which local governments responded to popular pressure, more than in the other three countries.<sup>28</sup>

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<sup>28</sup> While, popular participation was higher in Bangladesh, Karnataka outperformed all three countries because of the presence of combination of other factors, namely, a more effective system of democratic accountability, an established party system, and a free press. These factors were missing individually or in combination in the three countries.

The success of decentralization in the delivery of basic services to the poor also depends on the institutional context in question. Local democracy and decentralization can lead to both positive and negative results depending on the levels of development at the local and national levels and local and national level institutions of governance. One of the major problems with decentralization especially in developing countries is the capture of local governments by local elites. This may give rise to rent-seeking behavior and the distribution of resources away from the poor and the powerless, and the allocation of resources to public goods will reflect the interests and strengths of locally vested interest groups. In India, especially in rural areas, caste, land ownership and gender are often decisive in local level decisions in the provision of basic public services. Moreover, as Bardhan (1997) points out, decentralization with its informational advantages has to be balanced with economies of scale and scope which can be realized at a more central level of government. This may mean that a more efficient system of governance would involve coordinated tiers each with the responsibility of functions in which it has comparative advantage.

Although village *Panchayats* have not been performing up to expectations in several states, they are the lowest level democratic institutions in the country. They have to be empowered and involved in public services like healthcare and education. If they are given the responsibilities of supervising and monitoring the functioning of VHCs and Sub-Centers, the delivery and quality of healthcare services in rural areas can improve considerably. Currently, there could be a resistance because these PRIs are not properly functioning and villages at large feel alienated from them. But they have to be strengthened and empowered to build capacity.

### *Information Technology*

India's health system is terribly outdated. As noted above, the healthcare delivery system in each state is made up of a network of sub-centers, PHCs, CHCs, District Hospitals, Teaching Institutes and the First Referral Units or FRUs, with overlapping functions and responsibilities and little communication. In order to develop a more efficient, effective and less wasteful healthcare system, the need is to streamline healthcare delivery and develop an integrated healthcare system that will avoid duplication of duties and make optimum use of personnel, infrastructure and resources. In this endeavor, information technology can play a very important role. Appropriate delivery of health care requires complete and timely information management – to keep track of patients' medical history, to make quick referrals to hospitals and other health facilities, both for more complicated healthcare needs as well as in the case of emergencies. India has made rapid advances in the field of information technology (IT) and therefore, is very advantageously placed to innovate in the field of healthcare delivery using IT. Within India, states such as Tamil Nadu, Karnataka and Andhra Pradesh that lead in the IT sector, and are also more advanced in terms of health administration can provide leadership and precedent in innovative health management and delivery for UP and MP.

An example of such an innovation is the idea of an Integrated Health Management Information System. Under this system, each service delivery point in the health system at the primary, secondary and tertiary levels as well as the administrative offices in the state health sector would be connected via computers. This would enable speedy flow of information as well as allow the state to monitor both the operation of its health system and health outcomes. It will enable on-line receipt and exchange of information thereby ensuring timely patient and health system management, including crisis management in cases of emergencies. Since most national and state health programs and health camps in UP and MP cut across many directorates and their line district health administrations, the use of IT will vastly improve healthcare delivery. An integrated health management and information system will help achieve the following:

- Convergence of strategies required for achieving the goals
- Coordinated team planning for achieving objectives of various programs
- Personnel Management
- Strengthening of existing MIS to generate essential information to monitor achievements and support decision-making at various levels
- Facilitating data retrieval and consolidation at various levels for effective supervision
- Integrating services/information to improve overall quality of service delivery
- Evolving systems for logistics and supplies, storage and distribution and availability at service delivery points
- Optimum utilization of funds available in the health sector
- Reducing paper work to improve service delivery
- Assessing training requirements
- Assessing infrastructure equipment requirements
- Help in decentralized planning
- Better management of hospitals/FRUs
- Improving referrals within FRUs and hospitals, and
- Improving institutional administration

*Concluding remarks:*

Statistics bears testimony to the fact that the state of primary healthcare being provided in the rural areas of both MP and UP is far from satisfactory and that on the current trajectory neither of the two states are likely to meet any of the MDGs relating to infant, under-5 or maternal mortality. While on the one hand the public investment on health is grossly inadequate in both the states individually and on an all-India level as well, on the other, whatever health infrastructure does exist in the rural areas comprises of mostly dysfunctional health centers.

The health conditions, of course, cannot be studied in isolation. The shortfalls in health, education, and population control among others are all mutually interactive. Illiterate mothers are much more likely than literate mothers to suffer the deaths of young children due to disease, since literate mothers are more effective at care giving and at seeking out medical help in emergencies. High infant mortality rates promote high fertility rates, since households have many children to compensate for the risks of childhood deaths. High fertility rates, in turn, promote a social bias against educating young girls, since parents lack the resources to provide a quality education for all of their children, and therefore invest scarce resources in boys, for whom the market returns to investment are higher as we discuss in our companion report on scaling up education services in rural India (Bajpai et al. 2005b).

Since we have listed all our key findings and recommendations in the sections above, here it will suffice to say that not only is there a challenge for the authorities to raise the public health spending considerably, but there is the additional challenge to scale up the availability of trained manpower such that the required number of medical personnel is available to work in the rural areas. On the public spending front, expenditure on healthcare facilities in rural areas should be increased by Rs.288 per capita in UP and Rs.262 per capita in MP. Additionally, the shortfall of the medical personnel in the rural areas of both the states is considerable. The situation is especially grave when it comes to doctors and specialists. In MP, the shortfall of doctors is 4.5 times the actual number in position, and in UP, the shortfall of doctors is more than 7 times the actual number in position. The scale of the challenge is, of course, immense, but so too is India's capacity.

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**Appendix 1**  
Household Questionnaire

Village: \_\_\_\_\_ Tehsil: \_\_\_\_\_ District: \_\_\_\_\_  
State: \_\_\_\_\_

Head of HH: \_\_\_\_\_ (M/F); Investigator:  
\_\_\_\_\_

Date: \_\_\_\_\_

A. 1 Type of HH: MF/SF/OF/AL/RA/Others; 2. Size of HH: \_\_\_\_\_

3. Family Income: Rs \_\_\_\_\_ p.a

4. Caste: SC/ ST/ OBC/ Others;  
Hindu/

5. Religion:

Others

Muslim/

B. HH Assets: 1. Land in Ha.: \_\_\_\_\_; 2. Irrigated Land in Ha.:  
\_\_\_\_\_;

3. Well: Yes/No; 4. Canal: Govt./ Society/ Private/ Pipe

Type of Dwelling: 5. Rooms: One/ Two/ Three/ More(\_\_\_\_)

6. Material: Cement/ Wood/ Mud/ Grass/ Steel sheet 7. No. of  
Animals/ Cattle: \_\_\_\_\_

Buffalo: \_\_\_\_\_; Cows: \_\_\_\_\_; Bullocks: \_\_\_\_\_; Goats & Sheep: \_\_\_\_\_; Donkey:  
\_\_\_\_\_; Poultry: \_\_\_\_\_

8. Vehicles: Car: Yes/ No; Two-wheeler: Yes/ No; Tractor: Yes/ No;  
Cycle: Yes/ No;

Tempo: Yes/ No; Cart: Yes/ No; Others ( \_\_\_\_\_ ): Yes/ No;

9. Durable Goods: TV: Yes/ No; Radio: Yes/ No; Fridge: Yes/ No; Stove:  
Gas/ \_\_\_\_\_ Kerosene/ Earthen

Sewing Machine: Yes/ No; Thrasher: Yes/ No; Pump/ Engine: Yes/ No  
In Numbers: Cots: \_\_\_\_\_; Tables: \_\_\_\_\_; Chairs: \_\_\_\_\_; Cupboards:  
\_\_\_\_\_

**C. Information on HH Amenities:**

1. Is the HH electrified? Yes/ No.                                  2. How many points of  
electricity? \_\_\_\_\_

3. Electricity available for: \_\_\_\_\_ hrs./ day.    4. For \_\_\_\_\_ days/  
week.

5. Amount of light bill: Rs. \_\_\_\_\_ p.a.;

6. Source of drinking water:

Winter: Tap/ Well/ Public Well/ Public Tap/ Pond/ Canal/ Other ( \_\_\_\_\_ )

Summer: Tap/ Well/ Public Well/ Public Tap/ Pond/ Canal/ Other ( \_\_\_\_\_ )

Monsoon: Tap/ Well/ Public Well/ Public Tap/ Pond/ Canal/ Other ( \_\_\_\_\_ )

7. Distance to the source of drinking water: \_\_\_\_\_ k.m.    8. Do you  
filter water? Yes/ No

9. Do you boil the water? Yes/ No.                                  10. Money spent on drinking  
water: Rs. \_\_\_\_\_

11. Facility for Latrine and Toilet: Exclusive/ Common/ Open space

12. Sewerage: Underground/ Covered path/ Open path/ No system

13. Drainage: Underground/ Covered path/ Open path/ No system

14. Road cleaning and waste removing facility: Yes/ No;    15. \_\_\_\_\_  
times per week.

**Information on HH Members:**

Sl. No	Questions	Member							
		1	2	3	4	5	6	7	8
1	Name								
2	Relation with Head of HH.								
3	Sex (M/F)								
4	Age (yrs.)								
5	Main activity during year @								
6	Subsidiary activity@								
7	Level of education.								
8	Enrolled in school? (Y/N)								
9	Gainfully employed (Y/N)								
10	Where?--In Family/Outside								
11	For how many days / year?								
12	Earnings per month. (Rs.)								
13	Hospitalization last year (Y/N)								
14	Any major sickness last year (Name the disease)								
15	How many days in the year for the sickness?								
16	Is medicine taken? (Y/N)								
17	For how many days?								
18	From where? (Public/ Private)								

19	At what cost? (Rs. /p.m.)								
© Farmer - <b>Ag.</b> ; Animal Husbandry - <b>AH</b> ; Poultry - <b>P</b> ; Rural Artisan - <b>RA</b> ; Any Service - <b>SS</b> ; Agri. Labor - <b>AL</b> ; Other Labor - <b>OL</b> ; Household work - <b>HH</b> ; Attending school - <b>ST</b> ; No Activity - <b>nil</b> .									

**E. Health Related Information:**

**a) Maternal Health:**

1. # of deliveries performed in the HH: \_\_\_\_\_ so far.
2. # of children survived: \_\_\_\_\_ (out of the above)
3. # of children died during the delivery: \_\_\_\_\_
4. # of deliveries attended by *Dai*: \_\_\_\_\_
5. # of deliveries in hospital: \_\_\_\_\_; Govt. \_\_\_\_\_; Private: \_\_\_\_\_
6. # of deliveries at home not attended by a trained *Dai*: \_\_\_\_\_
7. Did the mother get antenatal checkups? Yes/No; \_\_\_\_\_ times.
8. Did the mother receive any injection / vaccination? Yes/No
9. Did the mother get any medicines / tablets? Yes/No
10. Did the mother die at the time of delivery? Yes/No; Which delivery?  
\_\_\_\_\_
11. If yes, the cause. \_\_\_\_\_
12. Was THE delivery attended by a *Dai* / Nurse/ doctor? Yes/No

**b) Infants' Health (<3 months):**

1. Do infants get normal breast-feeding? Yes/No
2. If no, is it attended by medical personnel? Yes/No

3. Do infants (< 3 months) suffer from:
4. Infections? Yes/No; If yes, which type? \_\_\_\_\_
5. Diarrhoea? Yes/No
6. Do they receive medical treatment? Yes/No

**c) Child Health:**

1. # of children surviving below 5 years: \_\_\_\_\_
2. # of children died within one year of birth: \_\_\_\_\_
3. # of children died before reaching 5 years of age: \_\_\_\_\_
4. These deaths occurred due to: Diarrhoea/ Jaundice/ Malaria/ Respiratory/ Anemia/ Underweight/ Others ( \_\_\_\_\_ )
5. Did the children receive immunization/ vaccination/ *Tika*?  
Yes/No
6. BCG: Yes/No; DPT1: Yes/No; DPT2: Yes/No; DPT3: Yes/No;  
Polio: Yes/No; MMR: Yes/No; Measles: Yes/No.

*(Note: If more than one child is below 5 years of age, mention separately if any one/more of them did not receive immunization / vaccination.)*

7. Do children (< 5 yrs.) suffer from :
  - Diarrhoea: Yes/No; \_\_\_\_\_ times/year.
  - Fever: Yes/No; \_\_\_\_\_ times/year.
  - Malaria: Yes/No; \_\_\_\_\_ times/year.
  - Typhoid: Yes/No



- Ear Infection: Yes/No; \_\_\_\_\_ times/year.
  - Respiratory Disease: Yes/No; \_\_\_\_\_ times/year.
  - Jaundice: Yes/No
8. Do the children (< 5 yrs.) receive medical check-up? Yes/No
9. Do they get medicines? Yes/No
10. From where? Public/Private

**d) Medical Facilities:**

1. Are you satisfied with existing medical facilities in your village?  
Yes/No
2. Do you go to the Govt. PHC/ CHC/ Town Referral/ Private Doctor/ Tantrik?
3. When you visit, is the doctor available? Yes/No  
  
If No, what do you do? Buy/ Go to private doctor.
4. What is the distance you travel for medical facility? \_\_\_\_\_ k.m.
5. On the whole, how do you rate the medical facilities available to you? By Govt. \_\_\_\_\_; by Private Sector: \_\_\_\_\_  
(Excellent - 5; Very good - 4; Good - 3; Fair - 2; Poor - 1; Very poor - 0)
6. Who manages the health facility in your village? Village Panchayat/ District Panchayat / District Administration

7. Will the situation improve if the management and oversight functions are shifted to: Village Panchayat/ District Panchayat / District Administration?

Y/N

#### F. Education Related Information

Number of children eligible for schools (>5)

	1	2	3	4
Age				
Sex				
Going to school? (Y/N)				
If yes, which? Govt./Pvt.				
Which standard?				
If not going to school, what activity?				
Earnings (in Rs. P.m.)				
Distance to school in k.m.				
Is cash subsidy given (Y/N)				
How much? (In Rs. P.a.)				
School uniform given? (Y/N)				
Text books given? (Y/N)				
School supplies given? (Bag, notebook, pencil, etc.) (Y/N)				
Mid-Day meal given? (Y/N)				
Food grains given? (Y/N)				
Transport provided? (Y/N)				
Library available? (Y/N)				
Sports facilities available? (Y/N)				
Attending the school regularly? (Y/N)				
How many days absent in a month?				
Does teacher come regularly? (Y/N)				
If not attending school, why? @				
Are you satisfied with the school facilities? (Low/Medium/High)				

What is the cost of studying in Rs./p.a.				
Fees				
Private Tuition				
School supplies				
@ HH activities - HH; Employment - Em; Sickness - Sk; Marriage - Ma; No interest - Ni; Irregularity of teachers - It; Behavior of teacher - Bt; Others - Ot (specify).				

1. Who manages the primary school in your village? Village Panchayat/ District Panchayat / District Administration
2. Will the situation improve if the management and oversight functions are shifted to: Village Panchayat/ District Panchayat / District Administration?  
Y/N

**G. Investigator's Notes / Observations:**

**Appendix 2**  
Health Facility Questionnaire

Village: \_\_\_\_\_; Tehsil: \_\_\_\_\_; District: \_\_\_\_\_; State: \_\_\_\_\_

Head of institution: \_\_\_\_\_; Investigator: \_\_\_\_\_

**General**

Name of the Facility/Institution: \_\_\_\_\_

Type of Facility: Sub-Centre/PHC/CHC/Referral/Others

Managed by: Panchayat/District Panchayat/ District Administration/ Private

Overseeing Functions by : Panchayat/District Panchayat/ District Administration/ Private

Timings of the Facility: from \_\_\_\_\_ to \_\_\_\_\_.

Number of beds: \_\_\_\_\_ ; Bed utilization rate: \_\_\_\_\_

No. of Employees in the Facility:

General Physician: \_\_\_\_\_ Pediatrician: \_\_\_\_\_ Gynecologists: \_\_\_\_\_

Other Doctors: \_\_\_\_\_ ANMs/Nurses: \_\_\_\_\_

Attendants: \_\_\_\_\_ Lab technician: \_\_\_\_\_ Others: \_\_\_\_\_

Does the Health Facility having any vehicle: Yes/No ; Drivers: \_\_\_\_\_

Are Doctors provided with residence: Yes/No

Are Nurses provided with residence: Yes/No

Who is available at night in the Health Facility?

Doctor: - Yes/No; ANMs/Nurse: - Yes/No; Attendants: - Yes/No;  
 Others:- \_\_\_\_\_

Does the Health Facility have its own medicine store/stock? Yes/No

Does the medical team visit the villages at regular intervals? Yes/No  
(Get the chart for Mobile Vans)

Do Medical Representatives of companies visit the doctors? Yes/No

Major diseases prevailing in the village/area:

1. \_\_\_\_\_, 2 \_\_\_\_\_, 3 \_\_\_\_\_.

Patients registered by disease with the Health Facility in last three years

Disease	2004-05	2003-04	2002-03
T.B			
Malaria			
Typhoid			
Diarrhea/Dysentery			
Respiratory			
Jaundice			
Others			
Delivery Conducted			
Family planning operation			
Abortions			

Do patients consult the Health Facility regularly: Yes/No

When?- Preliminary Stage/In-between/Last stage

How do you rate awareness of village people towards the medical facilities here? : - Excellent/Very Good/Good/Fair/Poor /Very poor

How would you rate the health facilities? :-  
Excellent/Very Good/Good/Fair/Poor/very Poor

Will the situation improve, if management and oversight functions are shifted to : Village Panchayat/ District Panchayat/ District Administration? Y/N

How many private Health Facility beds nearby? \_\_\_\_\_

How many private Doctors nearby? \_\_\_\_\_

Number of patients' hospitalized last year: \_\_\_\_\_ , Where?: \_\_\_\_\_

How many total days? : \_\_\_\_\_

Bed Utilization rate: \_\_\_\_\_% (Define: \_\_\_\_\_

What in your perception are the important causes for health problems in the village?

Drinking water Problems: \_\_\_\_\_%; Sanitation problem: \_\_\_\_\_%; Drainage problem: \_\_\_\_\_%; Lack of cleanliness(hygiene): \_\_\_\_\_%; Climate/seasonal factors : \_\_\_\_\_%; Others(specify): \_\_\_\_\_% ; (Total should be 100%)

**Infant/Child Health:**

Child (< 5 yrs) patients by disease for last three years:

Disease	2004-05	2003-04	2002-03
Fever			
Eye & Ear Complications			
Anemia			
Diarrhea/Dysentery			
Respiratory			
Jaundice			
Typhoid			
Others			

How many children in the village suffer from malnutrition? (Get the data from ANM): \_\_\_\_\_%

Do the parents report such cases in the Health Facility? Yes/No

Does the Health Facility staff attend to such cases promptly? Yes/No

Is it covered under Supplementary Nutrition Program? (Ask ANM) : Yes/No

How many children are covered under SNP in the village during the last year? : \_\_\_\_\_.

In case of severity of the disease, which is the nearest referral Health Facility? : Distance in Km: \_\_\_\_\_;

How long does it take to travel? \_\_\_\_\_

Estimates of episodes for the following diseases per child per year:-

LRI / ARI: - \_\_\_\_\_ Diarrhea: - \_\_\_\_\_ Fever: - \_\_\_\_\_

Eye/Ear Infection: - \_\_\_\_\_

Prevalence of bacterial infections among the infants:

severe/not so severe

Prevalence of feeding problem for infants: \_\_\_\_\_%

Problem of low birth weight among the infants? : \_\_\_\_\_%

Coverage under various immunization schemes during last year:-

Number administered	Number administered
BCG: - _____	DPT1:- _____
DPT2:- _____	DPT3:- _____
Polio1:- _____	MMR:- _____
Polio3:- _____	Measles:- _____
	Total:- _____

Total number of children (less than 5 years) in the village: - \_\_\_\_\_

Total number of live births in the village during the last year: - \_\_\_\_\_

### **On Malaria**

Is malaria a major problem in the village?: Yes/No

Are all malaria cases reported to the Health Facility?: Yes/No

Number of malaria cases reported in the Health Facility during last year:  
% of falciparum: - \_\_\_\_\_%                      Vivax: - \_\_\_\_\_

% of malaria cases receiving treatment: - \_\_\_\_\_  
Monotherapy: - \_\_\_\_\_%    Combination treatment: - \_\_\_\_\_%

**On Maternal Health**

Nature of complications during pregnancy (number of cases):-  
Severe anemia: - \_\_\_\_\_                      Syphilis: - \_\_\_\_\_  
STDs: - \_\_\_\_\_                                      Miscarriages: - \_\_\_\_\_  
Caesarean: - \_\_\_\_\_

How many are reported to the Health Facility? \_\_\_\_\_%

How many are receiving antenatal care and advice? : \_\_\_\_\_%

How many are having access to EmOC(Emergency obstetric care)? : \_\_\_\_\_%

How many deliveries performed by skilled attendant in this village? :  
\_\_\_\_\_%

Is there any practice of providing postnatal advice/care to the new mothers  
by the Health Facility staff? : Yes/No

What is your opinion about the awareness of the villagers on family planning?  
Very much/Much/Average/Fare/Less/No

What are the prevailing practices of family planning in the village?  
(Ask ANM)

Condoms: \_\_\_\_\_%    IUDs: \_\_\_\_\_%    Oral contraceptives: \_\_\_\_\_%  
Male sterilization: \_\_\_\_\_%    Female sterilization: \_\_\_\_\_%

How many people come forward for family planning voluntarily? : \_\_\_\_\_%

Is there any explicit campaign by the Health Facility towards family  
planning? : Yes/No



Are the families provided with incentives for undergoing family planning operation? Yes/No: -

How much? : - Rs\_\_\_\_\_, Cash and/or Rs\_\_\_\_\_, kind

Is there any incentive for the Health Facility staff for achieving family planning targets? Yes/ No; What? \_\_\_\_\_

Is there any target given to the Health Facility for family planning?: Yes/ No

**G. Investigator's Notes / Observations:**

Please ask about regularity and punctuality of doctors / nurses; their behavior with patients, patients behavior with the doctors, nurses and others etc. What are the problems of the quality of drinking water in the village?